

राष्ट्रसंत तुकडोजी महाराज नागपूर विद्यापीठ २०२२

कमला नेहरू महाविद्यालय नागपूर

बी.ए. तृतीय सत्र

विषय - आवश्यक मराठी

गुण-८०

३ तास

सूचना: १. सर्व प्रश्न सोडविणे अनिवार्य आहे.

२. सर्व प्रश्नांना समान गुण आहेत.

प्र.१ गोपाळ गणेश आगरकर यांनी वाचनाचे महत्त्व ^{कुसे} ~~इसे~~ पटवून दिले आहे ? १६
किंवा

नियतिच्या विक्राळ जबड्यात यात सिंधूताईचा संघर्षाचे कसे चित्रण आलेले आहे ?

प्र.२ संत तुकारामाच्या अभंगातील आशय उलगडून दाखवा. १६
किंवा

बहिणाबाई निसर्गाच्या रुपात परमेश्वराचे अस्तित्व कसे शोधतात. ?

प्र.३ खालील होणत्याही एका गटातील प्रश्न सोडवा १६
गट अ

- १) आंधळ्यांना हत्ती कसा जाणवता ^{ला} ?
- २) जी.एच्या कथेतील सर्प हे कशाचे प्रतीक आहे. ?
- ३) उन्हउत्तरणी या अर्थ उलगडून दाखवा. ?
- ४) अंतराळातील उपग्रहाने कोणता मॅसेज ^{थाडला} ~~थाडला~~ ?

गट ब

- १) देशपांडेच्या गच्चीवर वानरांच्या बाया काय करत?
- २) सिंधूताईच्या जीवनातला पहिला लढा कोणता?

३) 'रीताच राहीन शेवटी' असे कवी का म्हणतात ?

४) सहा ऋतुचे कोणते सहा सोहळे कवीला दिसतात ?

प्र.४ खालील पैकी कोणताही एक गट सोडवा

१६

गट अ

१) मुलाखत म्हणजे काय?

२) मुलाखतीची प्रश्नावली कशी तयार करावी ?

३) जाहीरात म्हणजे काय?

४) जाहीरातीचे मुख्य घटक थोडक्यात सांगा

गट ब

१) मुलाखतीसाठी संशोधन कसे करावे ?

२) मुलाखत लिहितांना कोणती काळजी घ्यावी ?

३) जाहीरातीचा हेतू स्पष्ट करा ?

४) घोषवाक्य म्हणजे काय?

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प्र.५ खालील प्रश्नांची थोडक्यात उत्तरे द्या.

१) ईश्वराचे समय स्वरूप समजण्यासाठी कोणते प्रतीक वापरले आहे.

२) वाचनाचे दोन प्रकार कोणते?

३) तरुण सर्पांला कोणते दृश्य दिसते?

४) संत तुकाराम साधु कोणाला म्हणतात?

५) श्रीरंगाची रंगपंचमी बहिणाबाईंना कुठे दिसते?

६) पाडगावकरांना विश्व कशावर तरावे असे वाटते?

७) प्रतिमा उभारणी म्हणजे काय ?

८) मुलाखतीसाठी प्रश्न कसे तयार करावे ?

गुण-८०

३ तास

प्र.१- सर्प या कथेतील प्रतिकात्मकता उलगडून दाखावा

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किंवा

कौशली

लेखकाला दिसलेलेली वानराची विविध रूपे दोबरी ?

प्र.२ पांडगावकरांना कवितेतून त्यांची आशावादी जीवननिष्ठा कशी दिसून येते ?

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किंवा

कवी श्रीधर शनवारे यांना कोणत्या अनामिक भयाने ग्रासले आहे ?

प्र.३ खालील पैकी कोणत्या ही एका गटातील प्रश्न सोडवा

१६

गट अ

- १) वाचन माणसाला रानटीपणात राहू देत नाही असे आगरकर का म्हणतात ?
- २) टोपलीतून बाहेर निघाल्यावर सर्पाला काय दिसले ?
- ३) संत तुकाराम धर्म कशाला म्हणतात ?
- ४) माझ्याजवळ फुले जमलेली नसतील असे हवी का म्हणतात?

गट ब

- १) ज्याला वाचनाची आवड नाही त्याचे कोणते नुकसान होते ?
- २) 'सत्ता आणि स्वप्ने' एकत्र नांदू शकत नाही असे वृद्ध साप का म्हणाला?
- ३) सुसंस्कृत होण्यात काय चुकल असे कवीला वाटत ?
- ४) देवाच्या पायाची चाहुल बहिणाबाईला कुठे लागते ?

प्र.४ खालील पैकी कोणत्या ही एका गटातील प्रश्न सोडवा

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गट अ

- १) मुलाखत का घेतली जाते ?
- २) मुलाखत घेतांना पेहेराव कसा असावा. ?
- ३) जमतिरात ही एक कला आणि शास्त्रही आहे.
- ४) जाहिरातीचे यश कशात आहे. ?

गट ब

- १) मुलाखत घेण्याचा गृहपाठ कोणता ?
- २) मुलाखत घेणाऱ्याशी आधी बोलणे का गरजेचे आहे. ?
- ३) माध्यमानुसार जाहिरातीचे स्वरूप कसे बदलते ?
- ४) जाहिरातीची भाषा कशानुसार ठरते. ?

प्र.५. खालील सर्व प्रश्नांची उत्तरे द्या

१६

- १) हत्तीचा दृष्टांत कोणी लिहिला?
- २) आगरकर कोणत्या वृत्तपत्राचे संपादक होते ?
- ३) सर्प की कथा कोणत्या प्रकारात मोडते ?
- ४) संत तुकारामाचे पूर्ण नाव सांगा
- ५) बहिणाबाईच्या कवितेतील भाषा कोणती ?
- ६) '_____ अवघे विश्व तरावे' ओळ पूर्ण करा
- ७) इरा भास्कर यांनी मुलाखत घेतांना कोणती चुक केली ?
- ८) जाहिरातीला भाषेचे बंधन का नसते ?

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३ तास

प्र.१ सिंधूताईच्या संघर्षाचे चित्रण करा ६

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किंवा

वाचन मानवाचे वर्तन सुधारते असे अगरकर का म्हणतात. ६

(अथवा)

प्र.२ "या जगव्यावर" या पाडगावकरांच्या कवितेचा आशय स्पष्ट करा.

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किंवा

बहिणाबाईंना निसर्गात कशाचे रूप दिसते ८

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प्र.३ खालील पैकी कोणत्याही एका गटातील प्रश्न सोडवा

गट अ

अपयवर्तनीय

- १) हत्तीच्या हव्दंतातील परमेश्वराचे स्वरूप उलगडून दाखवा
- २) महाताच्या सर्पाने तरुण सर्पांना कोणता उपदेश केला. ८
- ३) संत तुकाराम धर्म कशांना म्हणतात ८
- ४) उन्हउतरणीचा आशय थोडक्यात सांगा ८

गट ब

- १) कथेतील सर्प कशाचे प्रतीक आहे ८
- २) वानरांच्या बायांचे लेखक कसे वर्णन करतात ८
- ३) कृष्णाची रंगपंचमी बहिणाबाईंना कुठे दिसते ८
- ४) विविध ऋतु पाडगावकरांना कसे दिसतात. ८

प्र.४ खालील पैकी कोणत्याही एका गटातील प्रश्न सोडवा

गट अ

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- १) मुलाखती साठी संशोधन कसे करावे ?
- २) जाहीरातीचा हेतू स्पष्ट करा ?
- ३) घोषवाक्य म्हणजे काय ?
- ४) मुलाखतीची प्रश्नावली कशी तयार करावी लागते ?

गट ब

- १) जाहीरात ही एक कला आहे व शास्त्रही आहे.
- २) मुलाखत घेतांना पेहेराव कसा असावा ?
- ३) जाहीरातीची भाषा कशानुसार ठरते ?
- ४) मुलाखत घेण्याचा गृहपाठ कोणता ?

प्र.५ खालील सर्व प्रश्नांची उत्तरे द्या.

- १) संत तुकारामांचे पूर्ण नाव सांगा
- २) वाचनाचे दोन प्रकार कोणते ?
- ३) सर्प या कथेचा प्रकार कोणता ?
- ४) इरा भास्कर यांनी मुलाखत घेतांना कोणती चुक केली ?
- ५) बहिणाबाईची कविता कोणत्या भाषेत आहे ?
- ६) जाहीरातीला भाषेचे बंधन का नसते ?
- ७) प्रतिमा उभारणी म्हणजे काय ?
- ८) मुलाखतीचे प्रश्न कसे तयार करावे ?

Bachelor of Arts (B.A.) Second Semester (N.E.P.) Examination
COMPULSORY MARATHI
Compulsory Paper

वेळ : तीन तास]

[एकूण गुण : 80

सूचना :—(1) पात्रही प्रश्न सोडविणे अनिवार्य आहे.
 (2) सर्व प्रश्नांना समान गुण आहेत.

1. (अ) डॉ. बाबासाहेब आंबेडकरांचे जातिव्यवस्थे संबंधीचे विचार स्पष्ट करा.
 किंवा
 गाडगेबाबाविषयीची कृतज्ञता लेखिका कशी व्यक्त करतात. 8
 (ब) अटलबिहारी वाजपेयी यांच्या व्यक्तिमत्त्वाचे विविध पैलू उलगडून दाखवा.
 किंवा
 नरेंद्र दामोदरकर यांचा विवेकशील विचार 'विवेकवाद' या पाठाच्या आधारे स्पष्ट करा. 8
2. (अ) 'उषःकाल होता होता' या कवितेचे आशय सौंदर्य उलगडून दाखवा.
 किंवा
 कवी यशवंत मनोहर उपेक्षितांना कोणते आवाहन करतात ? ते स्पष्ट करा. 8
 (ब) 'मेंढर' या कवितेचे रसग्रहण करा.
 किंवा
 'आई ! मासू लकोस गर्भात' या कवितेतील मुलगी आईला कोणती विनवणी करते ते लिहा. 8
3. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे शंभर शब्दांत लिहा :—
 गट 'अ'
 (क) पत्र म्हणजे काय ते सांगून पत्राचे प्रकार स्पष्ट करा.
 (ख) पत्रलेखनाचे घटक कोणते ? ते लिहा.
 (ग) सारांशलेखन म्हणजे काय ते स्पष्ट करा.
 (घ) सारांशलेखन कसे करावे ते सांगा.
 किंवा
 गट 'ब'
 (ब) पत्रलेखनाची वैशिष्ट्ये स्पष्ट करा.
 (छ) पत्रलेखन विषयक संक्षेप कोणते ? ते लिहा.
 (ज) सारांशलेखनासाठी मार्गदर्शक सूचना कोणत्या ते सांगा.
 (झ) सारांशलेखनाचे नैपुण्य आत्मसात करण्याचे फायदे कोणते ? ते सांगा.

4. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे शीघ्र शब्दांत लिहा :-

गट 'क'

- (त) बस वेळेवर येत नसल्याचे तक्रारपत्र आगार प्रमुखांना लिहा.
- (थ) शिक्षक पदाकरिता नोकरीचा अर्ज लिहा.
- (द) परिचयपत्रात कोणकोणत्या मुद्यांचा समावेश असावा ? ते लिहा.
- (घ) सारांश-लेखनात आकलन प्रक्रियेचे महत्त्व सांगा.

किंवा

गट 'ड'

- (म) स्वतःचे नाव न लिहिता परिचयपत्र तयार करा.
- (फ) लिपिक पदाकरिता नोकरीचा अर्ज लिहा.
- (ब) मासिकाची वर्गगी भरूनही मासिक येत नसल्याचे तक्रारपत्र व्यवस्थापकाला करा.
- (भ) खालील उताऱ्याचा सारांश लिहा :

"सार्वजनिक जीवनात संभाषण ही माणसाची आवश्यक गरज आहे. आज उद्योग, व्यवसायाची क्षेत्रे विस्तारल्याने तर संभाषण कौशल्याची गरज वाढू लागली आहे. चांगले संभाषण कौशल्य ज्याच्याकडे असते, तो जीवनाच्या कोणत्याही क्षेत्रात यशस्वी होऊ शकतो. माणसे एकत्र आल्याशिवाय संभाषण होऊ शकत नाही, हे जितके खरे, तितकेच संभाषणाशिवाय माणसांची मने जुळू शकत नाहीत, हेही खरे म्हणून संभाषण ही माणसाची अटळ गरज आहे. फोनवर बोलण्यासाठी, कार्यालयातल्या सहकाऱ्यांशी चर्चा करण्यासाठी, बरिष्ठांशी विचारविनिमय करण्यासाठी, ग्राहकांशी व्यवहारकरण्यासाठी संभाषणकला आत्मसात करता आली पाहिजे. पाकरीता संभाषण आत्मविश्वासाने व मोकळ्या, खड्या आवाजात करता पायला हवे. संभाषणासाठी प्रसन्न चेहऱ्याने सामोरे जाणे, ही पहिली अट आहे. दुसऱ्याचे बोलणे नीट समजून घेणे आणि त्यानंतर आपले विचार, भाव, मते पटतीत अशा रीतीने समजावून सांगणे यांना संभाषणकलेत महत्त्व असते. समोरच्या व्यक्तीच्या आवडीच्या विषयाकडे बोलण्याचा ओघ वळविणे, यात संभाषणाचे कौशल्य आहे. त्यासाठी मनुष्यस्वभावाची पारख हवी. समोरच्या व्यक्तीचे मन कशाने प्रसन्न होईल, याचा अभ्यास हवा आणि बहुश्रुतता हवी."

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5. खालील सर्व प्रश्नांची थोडक्यात उत्तरे लिहा :-

- (1) डॉ. बाबासाहेब आंबेडकरांनी लिहिलेल्या कोणत्याही चार ग्रंथाची नावे लिहा.
- (2) लेखिका सीमा साखरे यांना कोणकोणत्या गोष्टी आवडायच्या ?
- (3) इंदिरा संत यांचे पूर्वाश्रमीचे नाव सांगा.
- (4) विठ्ठल वाघ यांनी गाडगेबाबांच्या जीवनावर लिहिलेल्या कादंबरीचे नाव सांगा.
- (5) पत्रव्यवहाराची व्याख्या लिहा.
- (6) अंतिम सारांश लेखन म्हणजे काय ते सांगा.
- (7) तक्रारपत्राचे घटक लिहा.
- (8) स्वपरिचयपत्र म्हणजे काय ? ते सांगा.

16

10

Bachelor of Arts (B.A) Second Semester (C.B.C.S.) Examination
MARATHI
(Other Compulsory Language)

वेळ : 3 तास]

[एकूण गुण : 80]

सूचना— (1) सर्व प्रश्न सोडविणे अनिवार्य आहे.
(2) सर्व प्रश्नांना समान गुण आहेत.

1. अदलबिहारी बाजपेयी यांच्या व्यक्तिमत्त्वाचे विविध पैलू शरद पवारांनी कसे उलगडून दाखविले आहेत ? सविस्तर स्पष्ट करा.

किंवा

डॉ. नरेन्द्र दाभोळकरांच्या विवेकातील विचारांचे सविस्तर वर्णन करा 16

2. 'पुन्हा एकदा' या कवितेचा आशय स्पष्ट करा.

किंवा

'आई मारु नकोस गर्भात' या कवितेतून कवयित्रीले समाजातील कोणत्या भयावह वास्तवाचे चित्रण केले आहे ? 16

3. कोणत्याही एकाच गटातील प्रश्नांनी उत्तरे सुमारे अंभर शब्दात लिहा.

गट-अ

- (क) दानधर्म सुद्धा जातीच्याच आधारावर करण्यात येतो असे डॉ. बाबासाहेब आंबेडकर का म्हणतात ?
(ख) 'कृष्णविवर' म्हणजे काय ?
(ग) 'अजुन रक्त मागत उठती वधस्तंभ सारे!' या ओळीतून कवी सुरेश भट काय सूचित करतात ?
(घ) घराणेशाहीच्या सत्तेचे वर्णन 'मेंढर' या कवितेतून कसे केले आहे ?

किंवा

गट-ब

- (च) 'गाडगेबाबांनी शाळा दिली' या पाठातील लेखिकेच्या वडिलांची माहिती लिहा.
(छ) अनुपमाच्या आईचे वरसंशोधन कृष्णविवराच्या कृपेने कसे सफल झाले ?
(ज) 'मृण्मयी' या कवितेतून कवयित्रीला कशाची ओढ असल्याचे दिसून येते ?
(झ) स्वातंत्र्यानंतरही चार किरणांची आस धरू नये ? असे सुरेश भट का म्हणतात ? 16

(Contd.)

4. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे पंधर प्रश्नात लिहा.

गट-क

- (ल) निबंध स्पर्धेत पुरस्कार प्राप्त मित्राला/मैत्रिणीला अभिनंदन करण्याचे पत्र लिहा.
- (म) नोकरीसाठी करावयाच्या अर्जाचे स्वरूप स्पष्ट करा.
- (न) सारांशलेखनाचे नैपुण्य प्राप्त केल्यामुळे कोणते फायदे मिळतात ?
- (घ) सारांशलेखनाची पद्धती सांगा.

किंवा

गट-ड

- (प) नवीन बसमार्ग सुरू करण्यासाठी आगार व्यवस्थापकांना अर्ज लिहा.
- (फ) पत्राचे विविध घटक स्पष्ट करा.
- (ब) अंतिम सारांशलेखन या मुद्द्याचे स्पष्टीकरण करा.
- (भ) सारांशलेखनासाठी आवश्यक मार्गदर्शक सूचना लिहा.

16

5. खालील सर्व प्रश्नांची संक्षिप्त उत्तरे लिहा :

- (1) डॉ. बाबासाहेब आंबेडकरांच्या मते जात आणि वर्ग यात कोणती भिन्नता असते ?
- (2) लेखिकेचे ह्यत्ता धवशीचे प्रवेशपत्र का आले नव्हते ?
- (3) कोणत्या लेखामुळे खगोलशास्त्रज्ञांत खळवळ उडाली होती ?
- (4) कवयित्री इंदिरा संतांनी पती विरहाची भावना कवितेतून कशी व्यक्त केली आहे ?
- (5) 'तिजोऱ्यात केले त्यांनी, बंद त्वर्ग साती' या काव्यपंक्तीचा अर्थ सांगा ?
- (6) 'पुनिवेच्या आशीवर आमी अवस काढतो' असे विद्धल वाघ का म्हणतात ?
- (7) पत्रलेखन विषयक कोणतेही दोन संक्षेप लिहा.
- (8) टीप लिहा : सारांशाचा कच्चा मसुदा.

16

गुण-८०

३ तास

प्र.१ सिंधूताईच्या संघर्षाचे चित्रण करा

१६

किंवा

वाचन मानवाचे वर्तन सुधारते असे आगरकर का म्हणतात. ?

प्र.२ 'या जगव्यावर' या पाडगावकरांच्या कवितेचा आशय स्पष्ट करा.

१६

किंवा

बहिणाबाईंना निसर्गात कशाचे रूप दिसते ?

प्र.३ खालील पैकी कोणत्याही एका गटातील प्रश्न सोडवा

१६

गट अ

- १) हत्तीच्या हवटांतातील परमेश्वराचे स्वरूप उलगडून दाखवा ?
- २) म्हाताऱ्या सर्पाने तरुण सर्पाला कोणता उपदेश केला ?
- ३) संत तुकाराम धर्म कशाला म्हणतात ?
- ४) उन्हउतरणीचा आशय थोडक्यात सांगा

गट ब

- १) कथेतील सर्प कशाचे प्रतीक आहे ?
- २) वानरांच्या बायांचे लेखक कसे वर्णन करतात ?
- ३) कृष्णाची रंगपंचमी बहिणाबाईला कुठे दिसते ?
- ४) विविध ऋतु पाडगावकरांना कसे दिसतात. ?

प्र.४ खालील पैकी कोणत्याही एका गटातील प्रश्न सोडवा

१६

गट अ

- १) मुलाखती साठी संशोधन कसे करावे ?
- २) जाहीरातीचा हेतू स्पष्ट करा ?
- ३) घोषवाक्य म्हणजे काय ?
- ४) मुलाखतीची प्रश्नावली कशी तयार करावी लागते ?

गट ब

- १) जाहीरात ही एक कला आहे व शास्त्रही आहे. ?
- २) मुलाखत घेतांना पेहेराव कसा असावा ?
- ३) जाहीरातीची भाषा कशानुसार ठरते ?
- ४) मुलाखत घेण्याचा गृहपाठ कोणता ?

प्र.५ खालील सर्व प्रश्नांची उत्तरे द्या.

- १) संत तुकारामांचे पूर्ण नाव सांगा
- २) वाचनाचे दोन प्रकार कोणते ?
- ३) सर्प या कथेचा प्रकार कोणता. ?
- ४) इरा भास्कर यांनी मुलाखत घेतांना कोणती चुक केली. ?
- ५) बहिणाबाईची कविता कोणत्या भाषेत आहे ?
- ६) जाहीरातीला भाषेचे बंधन का नसते ?
- ७) प्रतिमा उभारणी म्हणजे काय ?
- ८) मुलाखतीचे प्रश्न कसे तयार करावे ?

Bachelor of Arts (B.A.) Semester-III (CBCS) New Education Policy (NEP) Examination

MARATHI

(Other Language Compulsory)

[एकूण गुण : 80]

वेळ : तीन तास]

सूचना :— (1) पाचही प्रश्न सोडविणे अनिवार्य आहे.
(2) सर्व प्रश्नांना समान गुण आहेत.

1. (अ) 'आमही वानरांच्या फौजा' या श्रीनिवास विनायक कुलकर्णी यांच्या लेखित निबंधातून लेखकाच्या बालवयातील सोनेरी अनुभव कोसे व्यक्त झाले आहे ?

किंवा

'सर्प' या जी.ए. कुलकर्णी यांच्या कथेतून जीव, जगत आणि अदृश्य शक्ती यांच्या विषयीचे विचार कशाप्रकारे व्यक्त झाले आहे ?

- (ब) 'निपतीच्या विकाळ जखड्यात' या पाठातून त्यांच्या जीवनातील वेदनादायी प्रसंगाचे चित्रण कशाप्रकारे करण्यात आले ? स्पष्ट करा.

किंवा

गोपाळ गणेश आगरकर यांनी 'वाचन' या पाठातून वाचनाचे कोणकोणते फायदे सांगितले आहेत ?

2. (अ) संत तुकारामांच्या नेमलेल्या अभंगावणीचा आशय सविस्तरपणे स्पष्ट करा.

किंवा

'या जगण्यावर शतदा प्रेम करावे' या कवितेचे रसग्रहण करा.

- (ब) 'उन्हउतरणी'ची वेळ आली तर आपल्या हाती काहीही वैशिष्ट्यपूर्ण आले नाही, असे कवी श्रीधर शनवारे का म्हणतात ?

किंवा

'माझी माय सरसोती' या कवितेतील आशय सौंदर्य उलगडून दाखवा.

3. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे शंभर शब्दात लिहा :—

गट—अ

(क) मुलाखतीच्या लेखन प्रक्रियेचे विविध टप्पे सांगा.

(ख) सर्वेक्षणासाठी घेतल्या जाणाऱ्या व्यक्तीच्या मुलाखतीचे स्वरूप कोसे असावे लागते ?

(ग) जाहिरात कळत नकळत कोणकोणते कार्य करते ?

(घ) श्राव्य माध्यमाविषयी माहिती लिहा.

किंवा

मट—ब

- (थ) कोणकोणत्या निमित्ताने मुलाखती घेतल्या जातात ?
(छ) व्यक्तिमत्त्वाचे दर्शन घडविणे हा मुलाखतीचा मुख्य हेतू असतो, स्पष्ट करा.
(ज) जाहिरात म्हणजे काय ?
(झ) जुन्या काळी जाहिरात कशाप्रकारे केली जात असे ?
पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे शंभर शब्दात लिहा :—

मट—क

- (स) संगणकावर किंवा मोबाईलवर मराठी टंकलेखन कशाप्रकारे करता येईल ?
(ध) मुलाखत प्रश्नावली कशी असावी ?
(द) जाहिरातीचा प्रारंभ कधी झाला ?
(घ) आजच्या युगात संगणकाचा वापर सांगा ?

किंवा

मट—ड

- (प) मोबाईलवर मराठी टंकलेखन कोणकोणत्या प्रकारे करता येते ? ते लिहा.
(फ) कोणकोणत्या निमित्ताने मुलाखती घेतल्या जातात ?
(ब) जाहिरातीचा हेतू स्पष्ट करा.
(भ) विकिपिडियाचा उपयोग कशासाठी केला जातो ?

खालील सर्व प्रश्नांची थोडक्यात उत्तरे लिहा :—

- (1) 'हत्तीचा दृष्टांत' या पाठातून कोणता संदेश अभिव्यक्त झाला आहे ?
(2) ज्ञान संपादनाची कोणती साधने असतात ?
(3) खरे संत कोणाच्या उद्धारासाठी कार्य करीत असतात ?
(4) 'धूनोत पाणी' या कवितेचे कवी कोण आणि त्यांचा जन्म कधी झाला ?
(5) मुलाखत संशोधन म्हणजे काय ?
(6) 'नाममुद्रा' कशा स्वरूपाची असते ?
(7) जाहिरातीचे मुख्य घटक कोणते आहेत ?
(8) मराठी भाषेच्या कोणत्याही दोन संकेतस्थळांची नावे लिहा.

Bachelor of Arts (B.A.) (Fourth Semester) (CBCS) Examination

COMPULSORY MARATHI

Compulsory Paper

वेळ : तीन तास]

[एकूण गुण : 80

सूचना :— (1) सर्व प्रश्न सोडविणे अनिवार्य आहे.

(2) सर्व प्रश्नांना समान गुण आहेत.

1. 'माध्यान्ह' या पाठातून कुसुमावती देशपांडे यांनी तिन्ही ऋतुतील दुपारचे वर्णन कसे केलेले आहे, ते विवद करा.

किंवा

'आधार' या पाठाच्या आधारे भाऊकाका यांचे स्वभावविन व शोकांतिकांचे वर्णन करा.

16

2. 'जातीचा जयजयकार' या कवितेचे रसग्रहण करा.

किंवा

'रातझडीचा पाऊस' या कवितेतून शेतातल्या निसर्गाशी कवीच्या सागळ्या वृत्ती कशाप्रकारे तादात्म्य पावतात हे सविस्तर स्पष्ट करा.

16

3. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे शंभर शब्दात लिहा.

16

गट—अ

- (क) कलावंताच्या बाबतीत राजाने कोणते घोरण अवलंबवावे ?
 (ख) 'वाणी' आणि 'अर्थ' यातील संबंध लो. टिळकांनी कशाप्रकारे मांडलेला आहे ?
 (ग) 'पंढरीचे मुख नाही त्रिभुवनी' या अंभाचा आशय स्पष्ट करा.
 (घ) 'माझ्या कवितेला यावा शोना-मातीचा दर्दळ' असे कवी का म्हणतो ?

किंवा

गट—ब

- (च) कुसुमावती देशपांडे यांनी में महिन्यातील दुपारचे वर्णन कसे केले आहे ?
 (छ) अस्तकाने जनमेजयाची समजूत कशी घातली ?
 (ज) कवी इंद्रजित भातेराव यांनी आपल्या काव्यनिर्मितीचे कोणते प्रयोजन सांगितले आहे ?
 (झ) 'सत्याच्या बीजांना किरण-तुरे फुटणारच' असे कवी का म्हणतो ?

16

4. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे शंभर शब्दात लिहा.

गट—क

- (त) दूरदर्शन मालिका आणि सिनेमा यातील संवादाची भूमिका स्पष्ट करा.
 (थ) चित्रपटाचे माध्यम 'चित्रित चौकट आहे' असे का म्हटले जाते ?
 (द) गृहपत्रिकेचे स्वरूप स्पष्ट करा.

(Contd.)

(घ) संपादकाच्या अंगी 'सजगता' हा गुण असणे का आवश्यक आहे ?

किंवा

गट—इ

(प) नाटक, चित्रपट, दूरदर्शन ही तीनही कलामाध्यमे एकमेकांना मारक असू शकत नाही स्पष्ट करा.

(फ) घटकका म्हणजे काय ? ते थोडक्यात सांगा.

(ब) स्मरणिकेचे संपादन कार्य कसे करावे ते सांगा.

(भ) 'कथा-फाईबरी'चे संपादन करताना कोणते घटक लक्षात घेतले जातात ?

5. पुढीलपैकी सर्व प्रश्नांची संक्षिप्त उत्तरे लिहा :

16

(1) राजे लोकास विनोदाची प्रवृत्ती का नसावी ?

(2) सामान्य माणसाच्या मते स्वराज्य म्हणजे काय ?

(3) आर्य व अनार्य यांना जोडणारा पहिला महान पुरुष कोण ?

(4) पंढरपुरातून वाहणारी दक्षिण मुली नदी कोणती ?

(5) कुसुमाग्रजांच्या दोन कवितासंग्रहांची नावे सांगा.

(6) 'नसरडी' आणि 'कुलता काठ' हे शब्द कोणत्या शब्दाचे विशेषण म्हणून कवीने जोडलेले आहेत ?

(7) वार्षिक अहवालाचे मुख्य घटक कोणते ?

(8) दृक्श्राव्य माध्यमे कोणती ते सांगा.

Bachelor of Arts (B.A.) Sixth Semester Examination
 COMPULSORY MARATHI (New)
 Paper-I
 (Other Language)

वेळ : 3 तास]

[एकूण गुण : 80]

- सूचना:— (1) सर्व प्रश्न सोडविणे अनिवार्य आहे.
 (2) सर्व प्रश्नांना समान गुण आहेत.

1. महाराष्ट्रीय संस्कृतीच्या जडणघडणीतील भक्ती संप्रदायाचे व संत साहित्याचे स्थान निव्वड करा.

किंवा

'भुताचा जन्म' या कथेचा आशय तुमच्या शब्दात लिहा.

16

2. भारतीय स्त्रीची वेदना कवयित्री ज्योती लांजेवार यांनी कशी रेखाटली आहे ?

किंवा

दोन भारूडातून संत एकनाथांनी मानवी जीवनातील भक्तीचे आणि ईश्वरी तत्वाचे महत्त्व कसे पटवून दिले आहे ?

16

3. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे शंभर शब्दात लिहा :

गट-अ

(क) लेखक सुधीर रसाळ यांच्या मते 'भारतीयत्व' म्हणजे काय ?

(ख) हिराबाईंच्या स्वरसाधनेची जडणघडण कशी झाली ? थोडक्यात सांगा.

(ग) श्रावण महिन्याचे वर्णन करतांना बालकवींनी कोणत्या प्रतिमांचा वापर केला आहे ?

(घ) 'घन तमी शुक्र बध राज्य करी।' या कवितेतून व्यक्त होणारा आशावादी दृष्टिकोन स्पष्ट करा.

किंवा

गट-ब

(च) 'सांस्कृतिक सत्व हा प्रत्येक लेखकाच्या आणि वाचकाच्या संवेदनशीलतेचा नैसर्गिक गाभा आहे' हे विधान स्पष्ट करा.

(छ) 'सामना' या पाठातील दुसऱ्या क्रमांकाच्या महातान्याने आपल्या घराचे वर्णन कसे केले आहे ?

(ज) श्रावण महिन्यात सृष्टीत कोणते बदल घडून येतात ?

16

(झ) जीवनाची पायवाट आनंदाने चालायला हवी असे कवी अनिल का म्हणतात ?

(Contd.)

4. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे पंधरा शब्दात लिहा :

गट-क

- (त) 'अनुवाद' म्हणजे काय ? अनुवादाची वैशिष्ट्ये लिहा.
- (थ) भाषांतरकाराने कोणती कौशल्ये आत्मसात केली पाहिजे ?
- (द) शुद्धलेखनाचे महत्त्व सांगा.
- (ध) मुद्रितशोधकाकडे कोणती कौशल्ये असणे गरजेचे आहे ?

किंवा

गट-ड

- (प) भाषांतर व अनुवादाचे स्वरूप थोडक्यात सांगा.
- (फ) अनुवादाचा वैयक्तिक अनुभव लोकांना कशाप्रकारे देता येईल ?
- (ब) मराठी भाषेच्या अनुस्वारासंबंधीचे नियम लिहा.
- (भ) मुद्रितशोधनाची संकल्पना स्पष्ट करा.

16

5. खालील सर्व प्रश्नांची उत्तरे संक्षिप्त स्वरूपात लिहा :

- (1) राष्ट्राच्या उभारणीसाठी काय आवश्यक असल्याचे सुधीर रसाळ म्हणतात ?
- (2) भारतीय संगीत कलेच्या क्षेत्रात हिरावाईंनी कोणती क्रांती घडावली ते सांगा ?
- (3) दुसऱ्या म्हाताऱ्याला मॅच पाहयला येण्यासाठी उशीर का झाला होता ?
- (4) श्रावण महिन्यातील स्त्रिया व मुलींचे वर्णन कवीने कसे केले आहे ?
- (5) 'ये बाहेरी अंडे फोडुनि' या काव्यपंक्तीतून कवी काय सुचवितात ?
- (6) 'वाटेवर काटे वेचीत चालती' या कवितेतून कवी कोणती कृती करीत पुढे चालला आहे ?
- (7) अनुवाद या शब्दाचा अर्थ सांगा.
- (8) मुद्रितशोधनातील पुढील खुणांचे विवरण करा.

16

Bachelor of Arts (B.A.) Sixth Semester Examination
COMPULSORY MARATHI (New)
Paper-I
(Other Language)

वेळ : 3 तास]

[एकूण गुण : 80

सूचना:— (1) प्रश्न सोडविणे अनिवार्य आहे.
(2) सर्व प्रश्नांना समान गुण आहेत.

1. महाराष्ट्रीय संस्कृतीच्या जडणघडणीतील भक्ती संप्रदायाचे व संत साहित्याचे स्थान विशद करा.

किंवा

'भुताचा जन्म' या कथेचा आशय तुमच्या शब्दात लिहा.

16

2. भारतीय स्त्रीची वेदना कवयित्री ज्योती तांजेवार यांनी कशी रेखाटली आहे ?

किंवा

दोन भाऊडातून संत एकनाथांनी मानवी जीवनातील भक्तीचे आणि ईश्वरी तत्वाचे महत्त्व कसे पटवून दिले आहे ?

16

3. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे शंभर शब्दात लिहा :

गट-अ

(क) लेखक सुधीर रसाळ यांच्या मते 'भारतीयत्व' म्हणजे काय ?

(ख) हिराबाईंच्या स्वरसाधनेची जडणघडण कशी झाली ? थोडक्यात सांगा.

(ग) श्रावण महिन्याचे वर्णन करतांना बालकवींनी कोणत्या प्रतिमांचा वापर केला आहे ?

(घ) 'घन तमी शुक्र बघ राज्य करी।' या कवितेतून व्यक्त होणारा आशावादी दृष्टिकोन स्पष्ट करा.

किंवा

गट-ब

(च) 'सांस्कृतिक सत्व हा प्रत्येक लेखकाच्या आणि वाचकाच्या संवेदनशीलतेचा नैसर्गिक भाग आहे' हे विधान स्पष्ट करा.

(छ) 'सामना' या पाठातील दुसऱ्या क्रमांकाच्या म्हातान्याने आपल्या घराचे वर्णन कसे केले आहे ?

(ज) श्रावण महिन्यात सृष्टीत कोणते बदल घडून येतात ?

(झ) जीवनाची पायवाट आनंदाने चालायला हवी असे कवी अनिल का म्हणतात ?

16

(Contd.)

4. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे शंभर शब्दात लिहा.

गट-क

- (क) 'अनुवाद' म्हणजे काय ? अनुवादाची वैशिष्ट्ये लिहा.
- (ख) भाषांतरकाराने कोणती कौशल्ये आरंभसात केली पाहिजे ?
- (ग) शुद्धलेखनाचे महत्त्व सांगा.
- (घ) मुद्रितग्रंथकाकडे कोणती कौशल्ये असणे गरजेचे आहे ?

किंवा

गट-ड

- (प) भाषांतर व अनुवादाचे स्वरूप थोडक्यात सांगा.
- (फ) अनुवादाचा वैयक्तिक अनुभव लोकांना कशाप्रकारे देता येईल ?
- (ब) मराठी भाषेच्या अनुस्वारासंबंधीचे नियम लिहा.
- (भ) मुद्रितशोधनाची संकल्पना स्पष्ट करा.

5. खालील सर्व प्रश्नांची उत्तरे संक्षिप्त स्वरूपात लिहा :

- (1) राष्ट्राच्या उभारणीसाठी काय आवश्यक असल्याचे सुधीर रसाळ म्हणतात ?
- (2) भारतीय संगीत कलेच्या क्षेत्रात हिराबाईंनी कोणती क्रांती घडावली ते सांगा ?
- (3) दुसऱ्या म्हाताऱ्याला मॅच पाहयला येण्यासाठी उशीर का झाला होता ?
- (4) श्रावण महिन्यातील स्त्रिया व मुलींचे वर्णन कवीने कसे केले आहे ?
- (5) 'ये बाहेरी अंडे फोडुनि' या काव्यपंक्तीतून कवी काय सुचवितात ?
- (6) 'वाटेवर काटे वेचीत चालली' या कवितेतून कवी कोणती कृती करीत पुढे चालता आहे ?
- (7) अनुवाद या शब्दाचा अर्थ सांगा.
- (8) मुद्रितशोधनातील पुढील खुणांचे विवरण करा.

Bachelor of Arts (B.A.) Part-III Sixth Semester Examination
MARATHI (Old)
(Compulsory Other Language)

वेळ : तीन तास

[एकूण गुण : 80]

सूचना :— (1) पाचही प्रश्न सोडविणे अनिवार्य आहे.

(2) सर्व प्रश्नांना समान गुण आहेत.

1. 'अन्वरणा फकीर' या पाठाच्या आधारे 'अन्वरणा फकीर' यांचे व्यक्तिचित्र रेखाटा.

किंवा

'आपुताची वाद आपणासी' या पाठातून मेरीलेझ नावाचे नाव विदेशापर्यंत कसे पाहोवले ? 16

2. 'पाऊस' या कवितेचा आशय स्पष्ट करा.

किंवा

'टाहरा' या कवितेतून आदिवासी समाजा ला योग्य पुढाऱ्याची गरज आहे असे कवीला का वाटते ? 16

3. पुढीलपैकी कोणत्याही ही एकाच गटातील प्रश्नांनी थोडक्यात उत्तरे लिहा :-

गट- 'अ'

(अ) पक्षी आणि स्त्रियांचे सौंदर्य यांचा अनुबंध मारुती चितमपल्ली यांनी कसा विशद केला आहे ?

(ब) 'अंधश्रद्धा निर्मूलन चळवळ' यज्ञस्वी करण्यासाठी लेखकाने कोणते मार्ग सांगितले आहेत ?

(क) 'ही निळी पांढरी' या कवितेत शरदातील रम्य दुपारचे वर्णन कसे केले आहे ?

(ड) 'काळया ज्योती'चे वर्णन शरदचंद्र मुक्तिबोध कसे करतात ?

किंवा

गट- 'ब'

(इ) "आता अश्वत्थामाही भेटायची आशा नाही" असे द्रौपदी का म्हणते ?

(फ) कुर्माच्या घनदाट किर् जंगलाचे वर्णन मारुती चितमपल्ली यांनी कसे केले आहे ?

(ग) शरदचंद्र मुक्तिबोधांनी दुःखाच्या कोणकोणत्या जाती सांगितल्या आहेत ?

(ह) 'प्रेम' या कवितेतून कवीमनाची खंत कशी व्यक्त झाली आहे ?

4. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे थोडक्यात लिहा :-

गट- 'क'

(अ) वाचन करताना विचारात घ्यावयाच्या घटकांपैकी मलपृष्ठ या घटकाचे वर्णन करा.

(ब) ग्रंथ परीक्षणाची पहिली पायरी कोणती ?

(क) संगणकसंवादाची आजची उपयुक्तता सांगा ?

(ड) इंटरनेटवरील संवादाचे स्वरूप स्पष्ट करा.

किंवा

- (क) परीक्षणानंतरच्या नोंदी घाबर टिपण लिहा.
- (ख) दंड परीक्षणामध्ये 'अवयव लेखन' कसे करावे ?
- (ग) संयोजकसंवादाचे स्वयंसेवक स्पष्ट करा.
- (घ) 'मराठी विज्ञ' हे कशाचे संकेतस्थळ आहे ते स्पष्ट करा.

16

५. खालील प्रश्नांची उत्तरे संक्षिप्त लिहा :-

- (अ) डॉ. बभ्रूजीकरांनी अंधश्रद्धा निर्मूलनाची वाट्यात कोणत्या मार्गाचे करण्याचा प्रयत्न केला ?
- (ब) 'चक्र' या एकांकिकेचे लेखक कोण आहेत ? ते सांगून त्यांच्या कोणत्याही एका साहित्यकृतीचे नाव लिहा.
- (क) तळ्याच्या पाण्यात कशाचे प्रतिबिंब दिसत होते ?
- (ड) 'प्रेम' या कवितेच्या कवीचे नाव सांगून त्यांच्या कोणत्याही दोन काव्य संग्रहाची नावे लिहा.
- (इ) 'अंधपरीक्षण' म्हणजे काय ?
- (फ) अंधपरीक्षणात नोंदीचे महत्त्व सांगा.
- (ग) मराठीतील संकेतस्थळ कोणते ते सांगून ते कोणत्या साली सुरू झाले ?
- (घ) विकीपिडीया काय आहे ?

16

Bachelor of Arts (B.A.) Sixth Semester Examination
COMPULSORY MARATHI (New)
Paper-I
(Other Language)

वेळ : 3 तास]

[एकूण गुण : 80]

सूचना:— (1) प्रश्न सोडविणे अनिवार्य आहे.
 (2) सर्व प्रश्नांना समान गुण आहेत.

1. महाराष्ट्रीय संस्कृतीच्या जडणघडणीतील भक्ती संप्रदायाचे व संत साहित्याचे प्रामाणिक विषय करा.

किंवा

'भुताचा जन्म' या कथेचा आशय तुमच्या शब्दात लिहा.

16

2. भारतीय स्त्रीची वेदना कवयित्री ज्योती लाजेवार यांनी कशी रेखाटली आहे ?

किंवा

दोन भाऊडातून संत एकनाथांनी मानवी जीवनातील भक्तीचे आणि ईश्वरी तत्वाचे महत्त्व कसे पटवून दिले आहे ?

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3. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे शंभर शब्दात लिहा :

गट-अ

(क) लेखक सुधीर रसाळ यांच्या मते 'भारतीयत्व' म्हणजे काय ?

(ख) हिराबाईंच्या स्वरसाधनेची जडणघडण कशी झाली ? थोडक्यात सांगा.

(ग) श्रावण महिन्याचे वर्णन करतांना बालकवींनी कोणत्या प्रतिमांचा वापर केला आहे ?

(घ) 'घन तमी शुक्र बघ राज्य करी।' या कवितेतून व्यक्त होणारा आशावादी दृष्टिकोन स्पष्ट करा.

किंवा

गट-ब

(च) 'सांस्कृतिक सत्व हा प्रत्येक लेखकाच्या आणि वाचकाच्या संवेदनशीलतेचा नैसर्गिक गाभा आहे' हे विधान स्पष्ट करा.

(छ) 'सामना' या पाठातील दुसऱ्या क्रमांकाच्या म्हातान्याने आपल्या घराचे वर्णन कसे केले आहे ?

(ज) श्रावण महिन्यात सृष्टीत कोणते बदल घडून येतात ?

(झ) जीवनाची पायवाट आनंदाने चालायला हवी असे कवी अनिल का म्हणतात ?

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4. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे अंभर शब्दात लिहा :

गट-क

- (ल) 'अनुवाद' म्हणजे काय ? अनुवादाची वैशिष्ट्ये लिहा.
- (य) भाषांतरकाराने कोणती कौशल्ये आत्मसात केली पाहिजे ?
- (व) शुद्धलेखनाचे महत्व सांगा.
- (घ) मुद्रितशोधकाकडे कोणती कौशल्ये असणे गरजेचे आहे ?

किंवा

गट-ड

- (प) भाषांतर व अनुवादाचे स्वरूप थोडक्यात सांगा.
- (फ) अनुवादाचा वैयक्तिक अनुभव लोकांना कशाप्रकारे देता येईल ?
- (ब) मराठी भाषेच्या अनुस्वारासंबंधीचे नियम लिहा.
- (भ) मुद्रितशोधानाची संकल्पना स्पष्ट करा.

5. खालील सर्व प्रश्नांची उत्तरे संक्षिप्त स्वरूपात लिहा :

- (1) राष्ट्राच्या उभारणीसाठी काय आवश्यक असल्याचे सुधीर रसाळ म्हणतात ?
- (2) भारतीय संगीत कलेच्या क्षेत्रात हिराबाईंनी कोणती क्रांती घडावली ते सांगा ?
- (3) दुसऱ्या म्हाताऱ्याला मॅघ पाहयला येण्यासाठी उशीर का झाला होता ?
- (4) श्रावण महिन्यातील स्त्रिया व मुलींचे वर्णन कवीने कसे केले आहे ?
- (5) 'ये बाहेरी अंडे फोडुनि' या काव्यपंक्तीतून कवी काय सुचवितात ?
- (6) 'वाटेवर काटे वेचीत चालली' या कवितेतून कवी कोणती कृती करीत पुढे चालला आहे ?
- (7) अनुवाद या शब्दाचा अर्थ सांगा.
- (8) मुद्रितशोधानातील पुढील खुणांचे विवरण करा.

Question Paper

1) ba-1-sem-marathi-compulsory

<https://www.rtmnuonline.com/papers/ba-1-sem-marathi-compulsory-5715-summer-2019.html>

2) ba-2-sem-marathi-compulsory

<https://www.rtmnuonline.com/papers/ba-2-sem-marathi-compulsory-5763-summer-2019.html>

3) ba-3-sem-marathi compulsory

<https://www.rtmnuonline.com/papers/ba-3-sem-marathi-compulsory-5811-summer-2019.html>

4) ba-4-sem-marathi compulsory

<https://www.rtmnuonline.com/papers/ba-4-sem-marathi-compulsory-5860-summer-2019.html>

5) ba-5-sem-marathi-compulsory

<https://www.rtmnuonline.com/papers/ba-5-sem-marathi-compulsory-5909-summer-2019.html>

6) ba-6-sem-marathi-compulsory

<https://www.rtmnuonline.com/papers/ba-6-sem-marathi-compulsory-5951-summer-2019.html>

<https://youtube.com/playlist?list=PLt8mephJhrl3i1wRVsr1WZoLsWCtIXRuu>

- 1) बीए चौथे सत्र आवश्यक मराठी विषयाच्या प्रश्नपत्रिका

<https://youtube.com/playlist?list=PLt8mephJhrl2E5j6HTV9musRfxMcib0zH>

- 2) बीए चौथे सत्र मराठी वांगमय विषयाच्या प्रश्नपत्रिका

<https://youtube.com/playlist?list=PLt8mephJhrl3i1wRVsr1WZoLsWCtIXRuu>

- 3) बीए चौथे सत्र आवश्यक मराठी विषयाच्या प्रश्नपत्रिका

<https://youtube.com/playlist?list=PLt8mephJhrl0-i0Atb6Dz0CZtKjM1jb3z>

- 4) B.A.2nd sem मराठी विषयाच्या प्रश्नपत्रिका

<https://youtube.com/playlist?list=PLt8mephJhrl3i1wRVsr1WZoLsWCtIXRuu>

- 5) बीए चौथे सत्र आवश्यक मराठी विषयाच्या प्रश्नपत्रिका

<https://youtube.com/playlist?list=PLt8mephJhrl0-i0Atb6Dz0CZtKjM1jb3z>

- 6) B.A.2nd sem मराठी विषयाच्या प्रश्नपत्रिका

अ) १९व्या शतकात ✓

क) २०व्या शतकात

ब) १८व्या शतकात

ड) १५व्या शतकात

१६. "काही चिंता नाही, दयाळू सरकार तुम्हाला १९६० साली सोडीलच सोडील" असे कोणी म्हणाले.

अ) शिपाई सावरकरांना ✓

ब) बारी सावरकरांना

क) बाबाराव सावरकरांना

ड) यापैकी नाही

१७. "आयुष्य ही स्वतःच एक काथाकूट आहे" असे सावरकरांना केव्हा वाटले?

अ) काथा कूटताना ✓

ब) कोलू फिरवताना

क) कविता लिहिताना

ड) यापैकी नाही

१८. ----- तेच घडणार आणि मी त्यास तोंडही देणार असा निर्धार सावरकरांनी केला होता.

अ) अनुकूल

ब) प्रतिकूल ✓

क) योग्य

ड) अयोग्य

१९. व्यायामासाठी फिरताना सावरकर म्हणत -----

अ.) रामरक्षा

ब) भजन

क) कीर्तन

ड) योगसूत्र ✓

२०. "आपली चार चूल-बोळकी आपण फोडून टाकली, त्यायोगे पुढेमागे हजारोजनांच्या घरी क्वचित सोन्याचा धूर निघेल" असे सावरकर कोणाला म्हणाले.

अ) भावाला

ब) पत्नीला ✓

क) बारीला

ड) शिपायाला

२१. "चलानका नाम राखो भाई" असे कोण ओरडत होते.

अ) सावरकर

ब) बंदिवान ✓

क) शिपाई

ड) यापैकी नाही

२२. अंदमानातील तुरुंगाचे नाव काय?

अ) सिल्वर जेल ✓

ब) पोर्ट ब्लेअर

क) भायखळा तुरुंग

ड) मंडालीच्या तुरुंग

२३. अंदमानात आंधोळ करताना सावरकरांना किती पाणी मिळत होते.

अ) भरपूर

ब) तीन कटोरे ✓

क) पाच कटोरे

ड) एक बादली

२४. अंदमानमध्ये राजबंदीवानाचा कोणत्या नावाने उल्लेख करीत

अ) क्रांतिकारक

ब) बॉम्बगोळेवाले ✓

क) देशभक्त

ड) यापैकी नाही

२५. अंदमानात असताना सावरकरांनी आपले काव्य कसे लिहिले.

अ) कागदावर पेनने

ब) डायरीत

क) भिंतीवर घायपाताच्या काट्याने ✓

ड) यापैकी नाही

२६. अंदमानातील जेवणात भाजीत काय काय निघत असे.

अ) किडे व मुंग्या

ब) गोम व साप ✓

क) कचरा

ड) माती

२७. अंदमानात रोग देखील ----- वाटत असे सावरकर म्हणतात.

अ) छान

ब) भोग ✓

क) नको

ड) आवडत

२८. अंदमानच्या यातनांना कंटाळून कोणत्या तरुणाने आत्महत्या केली.

अ) इंदुभूषण रॉय ✓

ब) बाबू गेनू ✓

क) उत्साहकर दत्त

ड) यापैकी नाही

२९. १९११च्या वर्षी बंद झालेले त्या कारागृहाचे द्वार आज ----- वर्षी उघडले.

अ) १९२१ ✓

ब) १९२२

क) १९२५

ड) १९३०

३०. भारताचा किनारा दिसल्यावर सावरकरांच्या तोंडून कोणते उदगार निघाले

अ) भारतमाता कि जय

क) हिंदुस्थान कि जय

ब) स्वातंत्र्यलढ्या कि जय, वंदे मातरम ✓

ड) सावरकर कि जय

३१. प्रतिभा ही जन्मतः लाभणारी शक्ती असली तरी तिचे करावे लागते

अ) सौंदर्यीकरण

क) उदात्तीकरण

ब) संस्करण ✓

ड) या पैकी नाही

३२. ही दहा टक्के निसर्गदत्त देणगी आहे तर नव्वद टक्के मेहनतीने मिळणारी आहे

अ) प्रतिभा

क) कल्पना

ब) स्फूर्ती ✓

ड) साधना

३३. सरस्वतीच्या मस्तकावर दिव्या गंधांची फुले वाहण्याचा मान प्रतिभासंपन्न राखून ठेवला आहे

अ. प्रतिभावंताकरिता

क. कवीकरिता

ब. सारस्वतांकरिता ✓

ड. लेखकांकरिता

३४. प्रतिभेचे कोणते लक्षण आहे?

अ) नवनवोन्मेषशालिनी ✓

क) सौंदर्यवती

ब) हर्षदायीनी

ड) प्रतिभावंत

३५. एक लटका संतार करण्यासाठी आपण वाचतो

अ) काव्य

क) कथा

ब) ललितवाङ्मय ✓

ड) कादंबरी

३६. ललित वाङ्मय हा एक आहे

अ) कलाप्रकार

क) कथाप्रकार

ब) साहित्यप्रकार ✓

ड) या पैकी नाही

33. ललितवाङ्मय ही मनुष्याच्या अशी आवश्यक गोष्ट आहे

अ) अर्थसाफल्य

क) महत्वाची ✓

ब) जीवितसाफल्य ✓

ड) या पैकी नाही

34. जीवन पूर्ण करणारी ललित वाङ्मय ही एक संस्था आहे

अ) राष्ट्रचे ✓

क) मानवाचे

ब) समाजाचे

ड) जगाचे

35. ललित वाङ्मयाच्या वाचनात माणूस होतो

अ) गुंग ✓

क) दंगा

ब) मग्न

ड) विसरावू

36. प्रत्यक्षाच्या पलीकडे जे अंतिम सत्य आहे त्या कडे मनुष्याला नेण्याचे कार्य कोण करतो?

अ) कथा

क) कविता

ब) शास्त्र आणि कला ✓

ड) साहित्य

Bachelor of Arts (B.A.) Sixth Semester Examination
MARATHI (New)
Other Language
Compulsory Paper—1

[एकूण गुण : 80]

वेळ : तीन तास]

सूचना :— (1) सर्व प्रश्न सोडविणे अनिवार्य आहे.

(2) सर्व प्रश्नांना समान गुण आहेत.

- ✓ 1. 'भारतीयत्व', 'भारतीय साहित्य' ह्या संकल्पनांच्या प्रकाशात मराठी साहित्याशी असलेला त्याचा अनुबंध लेखक सुधीर रसाळ यांनी कसा स्पष्ट केला आहे ? 16

किंवा

हिराबाई बडोदेकर या महान शास्त्रीय गायिकेच्या गायनाची व व्यक्तिमत्त्वाची महात्मता पु. ल. देशपांडे यांनी कशी रेखाटली आहे ?

- ✓ 2. बालकवींनी श्रावण महिन्यातील निसर्गसौंदर्याचे चित्रण 'श्रावणमासाचे गाणे' या कवितेतून कसे केले आहे ? 16

किंवा

'वाटेवर काटे वेचीत चालतो' या कवितेचे आशयसौंदर्य उलगडून दाखवा.

3. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे शंभर शब्दात लिहा : 16

गट 'अ'

- ✓ (अ) महाराष्ट्रात वारकरी संप्रदाय लोकप्रिय का झाला ?
 (ब) तुकाराम पिंगरीच्या झाडाखालून पळत का सुटला ?
 (ग) 'विचू' या भाऊडातून एकनाथानी कोणता उपदेश केला आहे ?
 (घ) 'अजून वादळ उठले नाही' असे कवयित्री ज्योती लांजेवार का म्हणतात ?

किंवा

गट 'ब'

- (च) 'महाराष्ट्रीय संतांच्यापुढे मानवी जीवनाचे समग्र रूप उभे होते' असे गं. बा. सरदार का म्हणतात ?
 (छ) कथकली व च्युईगम विषयी म्हाताऱ्यांनी एकमेकांना काय सांगितले ?
 (ज) 'एडका' या भाऊडातून मानवी जीवनातील भक्तीचे व ईश्वरी तत्त्वाचे महत्त्व कसे सांगितले आहे ?
 ✓ (झ) 'घन तमी शुक्र बघ राज्य करी' या कवितेतील सृष्टीतील कोणती आशावादी उदाहरणे कवीने सांगितली आहेत ?

4. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे प्रत्येकी शंभर शब्दात लिहा : 16

गट 'क'

- ✓ (अ) व्यावहारिक मराठीचे अंग म्हणून भाषांतर व अनुवादाचे महत्त्व स्पष्ट करा.
 (ब) अनुवादकाला अनुवादाच्या प्रशिक्षणाची गरज का असते ?
 (ग) औपचारिक आणि अनौपचारिक लेखन पद्धतीतील फरक स्पष्ट करा.
 (घ) मुद्रितशोधकाची भूमिका स्पष्ट करा.

किंवा

गट 'ख'

(घ) भाषांतर करताना कोणत्या महत्त्वपूर्ण वाबी लक्षात घ्याव्या लागतात ?

(फ) तंत्राधिष्ठित संकेतांतरण म्हणजे काय ?

(ब) मराठी भाषेतील ऋत्व-दीर्घ विषयीचे नियम थोडक्यात लिहा.

(भ) मुद्रितशोधनाच्या प्रक्रियेचे स्वरूप स्पष्ट करा.

5. खालील सर्व प्रश्नांची उत्तरे संक्षिप्त स्वरूपात लिहा :

16

(1) यादवकाळाच्या अखेरीस महाराष्ट्रात कोणते पंथ होते ? यातून कोणता पंथ लोकप्रिय झाला ?

(2) गुंडगुळ्याचा माळ भुतासाठी गैरसोयीचा का होता ?

(3) च्युईगम कसे खायचे हे पहिल्या म्हातायाने दुसऱ्यास कसे सांगितले ?

(4) 'विंचू' किंवा 'इंगळी' चावली म्हणजे काय होते ?

(5) मृत्यूबद्दलचे कवी भा.रा. तांबे यांचे मत स्पष्ट करा.

(6) 'आयुष्य रोज विंध्या साले' असे कवयित्री ज्योती लांजेवार का म्हणतात ?

(7) भाषांतर व अनुवादाचे क्षेत्र स्वीकारणाऱ्याला कोणते समाधान प्राप्त होते ?

(8) ऋत्व-दीर्घांचे दोन नियम लिहा.

RTM NAGPUR UNIVERSITY, NAGPUR
Nabira Mahavidyalaya, katol
Bachelor of Arts. First Semester.
Winter 2022
Subject - History
History of India from Earliest time to 1526

Time - Three hours.

Maximum Marks 80

Note – 1. All Question are compulsory.
2. All question carry equal marks.

- प्र. 1 – हडप्पा संस्कृतीमधील सामाजिक जिवनाबाबत माहिती लिहा. ?
किंवा
गौतम बुद्धाचे चरित्र व तत्वे लिहा. ? 16
- प्र. 2 – चंद्रगुप्त विक्रमादित्याची योग्यता स्पष्ट करा. 16
किंवा
अशोकाच्या काळातील कलिंग युद्धाबद्दल माहिती द्या.?
- प्र. 3 – खालील प्रश्नांची थोडक्यात उत्तरे लिहा.
अ. अल्लमशाला मुस्लीम सत्तेचा वास्तविक संस्थापक का म्हणतात. 08
ब. अल्लाउद्दीन खिलजीच्या मेवाड विजयाची माहिती द्या. ? 08
किंवा
1. बलबनच्या राजपदाचा सिध्दांत स्पष्ट करा. ? 08
2. फिरोज तुघलकाची प्रशासन व्यवस्था थोडक्यात लिहा. ? 08
- प्र. 4 – खालील प्रश्नांची थोडक्यात उत्तरे लिहा.
अ. संत कबीरावर टिपण लिहा. ? 08
ब. सुलतान काळातील स्थापत्य कलेविषयी माहिती लिहा. ? 08
किंवा
1. गुरुनानक यांच्यावर टिपण लिहा. 08
2. मोईनुद्दीन चिस्ती वर टिपण लिहा. ? 08
- प्र. 5 – योग्य पर्याय निवडून रिकाम्या जागा भरा. 16
1. हडप्पा संस्कृतीत कोणती लिपी प्रचलित होती.
अ) सुमेर लिपी ब) द्रविड लिपी क) चित्र लिपी ड) इजिप्त लिपी
2. हे हडप्पा संस्कृतीमधील महत्वाचे बंदर होते.
अ) लोथल ब) हडप्पा क) मोहेंजोदारो ड) कालीबंगन
3. हा सर्वात प्राचीन वेद होय.
अ) ऋगवेद ब) सामवेद क) अथर्ववेद ड) यजुर्वेद

4. ऋग्वेद काळात राजपदावर नियंत्रण ठेवणारी संस्था कोणती.
 अ) पुरोहित ब) सेनानी क) सभा व समिती ड) ग्रामणी
5. जैन धर्मात किती तिर्थकार होवून गेले.
 अ) 20 ब) 22 क) 24 ड) 26
6. गौतम बुध्दाला कोणत्या वृक्षाखाली ज्ञान प्राप्ती झाली.
 अ) वड ब) पिंपळ क) औदुंबर ड) यापैकी नाही
7. हा मौर्य साम्राज्याचा संस्थापक होय.
 अ) बिंदुसार ब) सम्राट अशोक क) महेंद्र गिरी ड) चंद्रगुप्त मौर्य
8. 'इंडिका' या ग्रंथाचा लेखक हा होय.
 अ) मेगॅस्थेनीस ब) कौटिल्य क) महेंद्र ड) लयगुप्त
9. ला भारतीय नेपोलीयन अशी उपमा दिली जाते.
 अ) समुद्रगुप्त ब) श्रीगुप्त क) कुमारगुप्त ड) चंद्रगुप्त द्वितीय
10. याने मेघदूत महाकाव्य रचले.
 अ) चंद्रभान ब) कालीदास क) विश्वशर्मा ड) भुद्रक
11. अल्लतमशाला गुलामगिरीतुन कोणी मुक्त केले.
 अ) म. गझनी ब) म. घोरी क) कुतुबुद्दिन ऐबक ड) यापैकी नाही.
12. बाजार नियंत्रण व्यवस्था कोणी लागू केली.
 अ) अल्लतमश ब) बल्बन क) कु. ऐबक ड) अल्लाउद्दिन खिलजी
13. चलन पध्दतीत खालील शासकापैकी कोणी बदल केलेला होता.
 अ) अल्लतमश ब) बल्बन क) कु. ऐबक ड) म. तुघलक
14. संत कबीराचे प्रसिध्द आहे.
 अ) कविता ब) भजन क) भारूड ड) दोहे
15. येथे मोईनुद्दिनचा चिस्तीचा दर्गा आहे
 अ) अजमेर ब) दिल्ली क) भोपाल ड) पटना
16. कुतुबमिनारचे बांधकाम कोणत्या सुलतानाने पूर्ण केले.
 अ) अल्लतमश ब) बल्बन क) कु. ऐबक ड) म. तुघलक

RTMNU NAGPUR UNIVERSITY EXAMINATION W-2022

Kamla Nehru Mahavidyalaya, Nagpur

BA. SEM - I Examination

Marathi Literature

Time : Three Hour

N. B : (1) All questions are compulsory.

Maximum Marks : 80

प्र. 1. आत्मचरित्र या वाङ्मय प्रकाराची घटकतत्त्वे व वैशिष्ट्ये स्पष्ट करा.
16

किंवा

स्वा. सावरकरांनी अंदमानाचे वर्णन कसे केले आहे ते सविस्तर सांगा.

प्र. 2 आत्मचरित्र या वाङ्मय प्रकाराची आजवरची ऐतिहासिक वाटचार स्पष्ट करा.
16

किंवा

माझी जन्मठेप या आत्मचरित्रात आलेल्या प्रमुख व्यक्तिरेखा रेखाटा.

प्र. 3 खालीलपैकी कोणत्याही एकाच गटातील संदर्भासह स्पष्टीकरण सोडवा.
16

गट - अ

क) "बरं आहे तर! केवळ जमादार! काल साऱ्या रात्रभर झोप नाही. थोडे आंत तर या! बघा ही तुमची पाळलेली जनावरे!"

ख) "ओरडा, ओरडा, नाचा षिव्या द्या! चलनाचे नाव राखले पाहिजेना भायी!"

ग) "राम राम, चले भयया कालापाणी को."

घ) "मला वाटते, श्रीश्वराच्या कृपेने ह्या डिसेंबरातील राज्यरोहणाचे वेळी आपण सुटाल."

गट - ब

च) "अभी काळापाणी लग गया! भयया रो मत काळापाणीमें रोनेसे कुछ नहीं होता."

छ) "अरे थांब तू, तुला मोठी अँट आली आहे की तूच काय तो बदमाश! पण अकदा 'बारीबाबा'ला पाहिलेस की धोतरांत होअील धोतरांत."

ज) "बाबुजी हमारे साथ आप आये यह हमारा भाग्य है! क्या अच्छा हुवा!"

झ) "आणखी अक सावधानतेची सूचना तुम्हास करणे मी माझे कर्तव्य समजतो की, तुम्ही येथून पळून जाण्याचा प्रयत्न करण्याच्या भरीस पडला तर भयंकर संकटात पडाल."

प्र. 4. खालीलपैकी कोणत्याही एकाच गटातील सर्व प्रश्न सोडवा

गट - क

16

- ट) प्रतिभा म्हणजे एक दिव्यशक्ति असे लेखक का म्हणतात?
- ठ) ललित लेखकाच्या अंगी प्रतिभा असल्याशिवाय चालणार नाही असे लेखक का म्हणतात?
- ड) ललित वाङ्मयाचे व्यसन मनुष्याला का लागते?
- ढ) ललित वाङ्मयामुळे मनुष्याला समाधान कसे लाभते?

गट - ड

- प) प्रतिभाशक्ती आणि कल्पनाशक्ती यात काय फरक आहे?
- फ) प्रतिभेवर संस्करण करण्याची गरज का असते.
- ब) ललित वाङ्मयाचे कार्य स्पष्ट करा.
- भ) ललित वाङ्मयाचे स्वरूप स्पष्ट करा.

प्र. 5. अ) खालील प्रश्नांची थोडक्यात उत्तरे सोडवा. सर्व प्रश्न अनिवार्य

16

- 1) सर्व कॅद्यांना कोणत्या बोटीतून अंदमानला नेण्यात आले होते? महाराज्य
- 2) स्वा. सावरकरांना अगदी लहानपणी कोणती ओच्छा होती? - महाकाव्य
- 3) स्वा. सावरकरांना भेटायला त्यांच्या पत्नीसोबत आणखी कोण आले होते. पत्नी आणि वरिष्ठ
- 4) अंदमानच्या तुरुंगाच्या जेलरचे नाव काय होते? वारी साहेब
- 5) अनिर्वचनीय आनंद कषातून मिळतो? साहित्य वाचना
- 6) कलावस्तूत कषामुळे जिवंतपणा येतो?
- 7) ललित वाङ्मयामुळे माणसाला काय प्राप्त होते? आनंद
- 8) राष्ट्रीय जीवन कषामुळे अपूरे वाटेल?

Bachelor of Arts (B.A.) Semester—I (CBCS) (New) Examination
MARATHI (Literature)

वेळ : तीन तास]

[गुण : 80

- सूचना :— (1) सर्व प्रश्न सोडविणे आवश्यक आहे.
(2) सर्व प्रश्नांना समान गुण आहेत.

1. खालीलपैकी एकाच गटातील दोन प्रश्न सोडवा.

गट-अ

- (1) एक वाङ्मय प्रकार म्हणून आत्मचरित्राची व्याख्या सांगून स्वरूप व संकल्पना स्पष्ट करा.
(2) 'आत्मचरित्र' या वाङ्मय प्रकाराच्या ऐतिहासिक वाटचालीचा सविस्तर आढावा घ्या.

किंवा

गट-ब

- (1) आत्मचरित्र या वाङ्मय प्रकाराची वैशिष्ट्ये लिहा.
(2) 'आत्मचरित्र' या वाङ्मय प्रकाराच्या उगम व विकास सविस्तर स्पष्ट करा.

16

2. खालीलपैकी एकाच गटातील दोन प्रश्न सोडवा.

गट-अ

- (1) 'माझी जन्मठेप' या आत्मचरित्राच्या आधारे स्वा. सावरकराचे व्यक्तिचित्र रेखाटा.
(2) डोंगरीच्या कारागृहातील स्वा. सावरकरांच्या वास्तवाचे सविस्तर वर्णन करा.

किंवा

गट-ब

- (1) 'माझी जन्मठेप' या आत्मचरित्राच्या आधारे 'अंदमान' या बेटाचे सविस्तर वर्णन करा.
(2) 'माझी जन्मठेप' या आत्मचरित्राच्या आधारे बारीचे व्यक्तिचित्र रेखाटा.

16

3. पुढीलपैकी कोणत्याही एका गटातील प्रश्नांची शंभर शब्दांत उत्तरे लिहा :

गट-अ

- (क) कलेचा आस्वाद घेणारा रसिक-वाचक कसा असावा, असे ना. सी. फडके यांना वाटते ?
(ख) प्रतिभेतील दिव्यत्वाचे स्वरूप विशद करा.
(ग) मानवी जीवनास ललित वाङ्मयाचे कार्य वरदान ठरू शकते काय ? साधक-बाधक चर्चा करा.
(घ) रसिक-वाचक ललित वाङ्मयाचा आस्वाद का घेतात ? 'प्रतिभा साधन' या ग्रंथाच्या आधारे विशद करा.

किंवा

(Contd.)

गट-ब

- (च) प्रतिभा-शक्तीत असलेल्या संस्करणाचे मातलें सविस्तर विशद करा.
- (छ) प्रतिभा कशांत म्हणजे ? या संदर्भात नाहीं. फडके यांच्या मताचा परामर्श घ्या.
- (ज) कलेपासून मिळणाऱ्या अर्थाचे स्वरूप शुद्ध आणि सात्विक असावे असे नाहीं. फडके यांना काय म्हणजे ?
- (झ) प्रतिभा आणि प्रज्ञा यांमुळे साहित्य निर्मिती होते. प्रज्ञेचा पांडित्याशी संबंध नाही. या किंवा चर्चा करा.

4. पुढीलपैकी कोणत्याही एका गटातील प्रश्नांची संभर शब्दांत उत्तरे लिहा :

गट-क

- (त) मराठी वर्णमालेच्या व्यंजने आणि स्वरांची सविस्तर माहिती द्या.
- (थ) मराठी स्वरांच्या उच्चारपद्धतीचा सविस्तर परामर्श घ्या.
- (द) उच्चारानुसारी लेखनपद्धतीचे सोदाहरण परामर्श घ्या.
- (ध) प्रमाणलेखन म्हणजे काय ? ते सांगून प्रमाणलेखनाची व्याप्ती विशद करा.

किंवा

गट-ड

- (प) मराठी भाषेचे उच्चारण व लेखन याविषयी टिपण लिहा.
- (फ) उच्चारस्थानावरून पडणाऱ्या स्वरांच्या प्रकारांचा सविस्तर परामर्श घ्या.
- (ब) मराठी वर्णमाला सांगून तिच्या प्रकारांची सविस्तर चर्चा करा.
- (भ) मराठी लेखनपद्धती शब्दांच्या उच्चारांना महत्वाचे स्थान असते काय ? विशद करा.

5. पुढीलपैकी सर्व प्रश्नांची उत्तरे थोडक्यात लिहा :

- (1) तुम्हाला माहित असलेल्या मराठीतील दोन स्त्री आत्मचरित्रकारांची नावे सांगा.
- (2) आत्मचरित्र व आत्मकथन यांचा साम्यभेद थोडक्यात विशद करा.
- (3) स्वा. सावरकांना किती वर्षांची शिक्षा आलेली होती आणि कोणत्या न्यायालयाने दिलेली ?
- (4) स्वा. सावरकांना नेण्यात आलेल्या जहाजाचे नाव सांगा.
- (5) 'प्रतिभा साधन' या ग्रंथाच्या लेखकाचे नाव सांगा.
- (6) कल्पना संचाराला प्रतिभाविलास म्हणता येईल काय ?
- (7) अनुस्वार व विसर्ग यांना 'स्वरादी' असे का म्हणतात ?
- (8) मराठी वर्णमालेतील पाच अनुनासिके कोणती आहेत ती लिहा ?

सूचना :— (1)

1. आत्मचरित्र

2. आत्मचरित्र

3. स्वालील

(क) " "

(ख) " "

(ग) " "

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Bachelor of Arts (B.A.) First Semester (C.B.C.S.) Examination
MARATHI (Literature)
(Optional Paper)

वेळ : तीन तास]

[एकूण गुण : 80

सूचना :— (1) सर्व प्रश्न सोडविणे अनिवार्य आहे.
(2) सर्व प्रश्नांना समान गुण आहेत.

1. आत्मचरित्र या वाङ्मयप्रकाराची संकल्पना सविस्तर स्पष्ट करा.

किंवा

वारीबाबाविषयी सविस्तर माहिती लिहा.

2. आत्मचरित्राची कोणकोणती घटक वैशिष्ट्ये आहेत ? ते सविस्तर सांगा.

किंवा

वि.दा. सावरकरांना तुसंगात झालेल्या मानसिक व शारीरिक छळाचे वर्णन करा.

3. खालीलपैकी एकाच गटातील वाक्यांचे संदर्भासहित अर्थ स्पष्ट करा :

गट—अ

(क) "तुम्ही काम अठराशे सत्तावनच्या त्या दुष्ट बंडाचा इतिहास लिहिला आहांत नाही."

(ख) "मला वाटते, मला एकव्यालाच शिक्षा भोगावी लागली असती तव माझ्या भनास भोगाव्या लागलेल्या वेदनांचा पन्नासावा भागही मला भोगावा लागला ना."

(ग) "भैया धोडे दिन बाकी है, अभी ज्युबिली आती है, तुमारा नाम हम सरकार को ऊपर भेजनेवाला है।"

(घ) "अहो सावरकर अखेर सरकारने असेच ठरविले की तुमही एक ह्या जन्माची जन्मठेप भरल्यानंतरच पुढच्या जन्माची दुसरी जन्मठेप भरावयाची।"

किंवा

गट—ब

(च) "आता तू आमच्या दोघांच्या जीवनातील शेवटची बातमी ऐकव्यास सिद्ध होऊन रहा."

(छ) "काय बॅरिस्टर, कसे काय, बरे आहे, ना ? हो आपल्या आशीवादाने बरे आहे' मी म्हणालो."

(ज) "अंग सगळे चिंगचिंगीत झाले, केंस राठ झाले, स्नान केले नसले तरी बरे असे वाटू लागले, पण पुनः वाटले आता ही संवय झालीच पाहिजे."

(झ) "मला आपल्या हिंदुस्थान देशांत तेलालाचा जो धाणा असतो तशा एका धाण्यास जुंपण्यांत आले. देशातील धाणा बेल ओठतात. ते बेल दिवसभर धाण्याभीवती फिरून फिरून जास्तीत जास्त 16 पींड तेल 'सरसू'ने काढतात".

4. कोणत्याही एकाच गटातील प्रश्नांची उत्तरे थोडक्यात लिहा :—

गट—क

(त) कलाचतुराच्या खालोखाल रसिकाचे महत्त्व कसे आहे ?

(थ) 'दिव्यत्व हे प्रतिभेचे वैशिष्ट्ये होय.' हे स्पष्ट करा.

(द) ललित वाङ्मयाचे स्वरूप स्पष्ट करा.

(घ) ललित वाङ्मयामुळे दुःख हलके कशा प्रकारे होते असे प्रा. ना. सी. फडके म्हणतात ?

किंवा

(Contd.)

- (प) प्रतिभाशक्तीत आणि कल्पनाशक्तीत काय फरक असतो, ते स्पष्ट करा.
- (फ) प्रतिभा ही निसर्गति: लाभणारी शक्ती आहे, ते स्पष्ट करा.
- (ब) ललित वाङ्मय म्हणजे काय, ते स्पष्ट करा.
- (भ) ललित वाङ्मयात जादू आहे, असे प्रा. ना. सी. फडके का म्हणतात ?

5. सर्व प्रश्नांची थोडक्यात उत्तरे लिहा :—

- (1) महाराजा बोरीने सावरकरांना कोठे नेण्यात आले ?
- (2) मुंबईच्या डोंगरीच्या तुडुंगातून सावरकरांना कोणत्या तुडुंगांत नेण्यात आले ?
- (3) अंदमान या नावाची व्युत्पत्ती सांगा.
- (4) वि.दा. सावरकर यांच्या सुटकेचे वर्ष कोणले ?
- (5) प्रतिभाशक्ती म्हणजे काय ?
- (6) प्रतिभा ही वेडाची बहिण आहे, ते स्पष्ट करा.
- (7) ललित लेखनाची तंत्रे कोणती ते स्पष्ट करा.
- (8) ललित वाङ्मयाचे वैशिष्ट्ये स्पष्ट करा.

Bachelor of Arts (B.A.) First Semester (CBCS) Examination
MARATHI
Literature

[एकूण गुण : 80]

वेळ : तीन तास]

सूचना :— (1) सर्व प्रश्न सोडविणे अनिवार्य आहे.

(2) सर्व प्रश्नांना समान गुण आहेत.

1. आत्मचरित्र या वाङ्मयप्रकाराची वैशिष्ट्ये स्पष्ट करा.
किंवा

16

विदा सावरकरांचे व्यक्तिचित्रण करा.

16

2. आत्मचरित्राची संकल्पना व स्वरूप स्पष्ट करा.
किंवा

किंवा

अदमानच्या परिसराचे वर्णन विदा सावरकरांनी कसे केले आहे से सविस्तर लिहा.

16

3. खालीलपैकी एकाच गटातील वाक्याचे संदर्भातहित अर्थ स्पष्ट करा :
गट-अ

गट-अ

(क) "विटाळलेल्या भाकरीच्या तुकड्यांत किंवा मुसलमानांच्या जेवताना लागलेल्या बोटाच्या स्पर्शात तुझा सारा हिंदूधर्म राखण्याचे सामर्थ्य आहे."

(ख) "महाराज, तुमच्या शूरपणाची ख्याती आम्ही ऐकली आहे, अशा गूर पुरुषाच्या चरणाचा मी दास आहे."

(ग) "मी तुमचा बंदीपाल आहे, म्हणून लोक तुम्हास सांगत असतील नाही, मी तुमचा एक मित्रही आहे."

(घ) "ते येथे या कारागारांत अलित की नाहीत हे देखील आम्हास तुम्हाला सांगता येत नाही."

किंवा

गट-ब

(च) "लौकिक व भाग्योदयाच्या आशांची राख अंगास फासून झुंजत राहू शकणे हेच अलौकिक भाग्य नाही का ? मग दुःख का ?"

(छ) "आत्यंतिक संकटात सुटका होणे हे असंभवनीय आहे असे स्वतःला वाटत असताही तीच निराशेची गोष्ट कोणी दुसऱ्याने सांगितली आहे."

(ज) "तुम्हास शिळेच्या वर्षामागे प्रत्येकी एक महिना सुट मिळाली आहे."

(झ) "तुम्ही त्या राजद्रोही वर्गातील बंदिवान नाही तुम्ही केवळ साधारण बंदिवान आहा."

4. कोणत्याही एकाच गटातील प्रश्नांची उत्तरे थोडक्यात लिहा :
गट-क

गट-क

(ल) प्रतिभेची कोणती वैशिष्ट्ये प्र. ना. सी. फडके यांनी सांगितलेली आहेत ?

(थ) प्रतिभा ही निसर्गदत्त शक्ती आहे, " असे, ना. सी. फडके का म्हणतात ?

(द) ललित वाङ्मयाचे स्वरूप व कार्य स्पष्ट करा.

(ध) ललित वाङ्मयाचे वैशिष्ट्ये स्पष्ट करा.

किंवा

(Contd.)

- (प) "नवनवोन्मेषशालिनी हे प्रतिभेचे लक्षण असले तरी समिकेची त्यासाठी आवश्यकता आहे." ते स्पष्ट करा.
- (फ) दिव्यात्व हे प्रतिभेचे वैशिष्ट्ये होय स्पष्ट करा.
- (ब) "ललित वाङ्मय हे विराम्य आणि वेणारे वाङ्मय आहे" ते स्पष्ट करा.
- (भ) ललित वाङ्मयाचे वाचन कशासाठी करतात ?

5. सर्व प्रश्नांची सोडवणूक उत्तर लिखा :

- (1) झेबरीच्या तुलनात सावरकरांना कोण-कोण भेटायला आले होते ?
- (2) सावरकरांना पहिली व दुसरी शिक्षा कधी देण्यात आली ?
- (3) 'माशी जन्मठेप' हे आत्मचरित्र कशाप्रकारे प्रसिद्धीस आले ?
- (4) सावरकरांना अंदमानात कोणत्या बोटीने नेण्यात आले ?
- (5) कल्पनाशक्ती म्हणजे काय, ते स्पष्ट करा.
- (6) प्रतिभेचे वैशिष्ट्ये सांगा.
- (7) ललित वाङ्मयाचे वैशिष्ट्ये स्पष्ट करा.
- (8) यशस्वी जीवनासाठी ललित वाङ्मयाची आवश्यकता का आहे ?

MSP/KS/23/7644-A

Bachelor of Arts (B.A.) Second Semester (N.E.P.) Examination
MARATHI LITERATURE
(Optional)

वेळ : तीन तास]

[एकूण गुण : 80]

सूचना:— (1) सर्व प्रश्न सोडविणे आवश्यक आहे

(2) सर्व प्रश्नांना समान गुण आहेत

1. (अ) नाटक या वाङ्मयप्रकाराची माहिती सांगून नाटकाच्या व्याख्या लिहा.

किंवा

नाटकाच्या विविध घटकांची चर्चा करा.

8

(ब) साहित्याच्या इतर प्रकारापेक्षा नाट्यवाङ्मयाचे वेगळेपण वैशिष्ट्यपूर्ण आहे ? स्पष्ट करा.

किंवा

मराठी रंगभूमीची सुरुवात कशी झाली ते सांगून प्रारंभीच्या नाटककारांचे योगदान लिहा.

8

2. (अ) नटसम्राट नाटकातील अप्पासाहेब बेलवलकराचे स्थान स्पष्ट करा.

किंवा

ठगी व विठोबा या पात्रांचे नटसम्राट या नाटकात कोणते स्थान आहे, ते स्पष्ट करा.

8

(ब) शोकांतिका म्हणून नटसम्राट नाटकाचे स्थान स्पष्ट करा.

किंवा

'नटसम्राट' या नाटकाची शैलीवैशिष्ट्ये विशद करा.

8

3. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे थोडक्यात लिहा.

गट—अ

(क) ना.सी. फडके यांच्यामते ललितकथेचा गाभा कोणता आहे ?

(ख) संग्रामाच्या अभूर्त व सूक्ष्म प्रकाराची कोणती उदाहरणे ना.सी. फडके यांनी दिली आहेत.

(ग) व्यक्तिदर्शनाचे सौंदर्य कशावर अवलंबून असते ?

(घ) 'नमुनेदार व्यक्ती दृष्टीपुढे आल्या की त्यातून कथानक निर्माण होते' असे ना.सी. फडके म्हणतात ?

किंवा

(Contd.)

- (घ) संग्रामाच्या कोणत्या मोठ्ठी ऐकव्यात मनुष्याला विलक्षण आनंद वाटतो ?
- (छ) कोणताही वाचक पुस्तक कोणत्या कारणासाठी वाचायला येतो ?
- (ज) व्यक्तिदर्शन चातुर्माचे खरे सार काय आहे ?
- (झ) लेखकाने व्यक्तिदर्शनात कशाचा तोंड सांभाकला पाहिजे ?

16

4. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे थोडक्यात लिहा.

गट—क

- (त) ललित वाङ्मय हे इतर ललित कलापेक्ष वेगळे कसे आहे ?
- (थ) प्राचीन मराठी साहित्याच्या सामाजिक पार्श्वभूमीचे वर्णन करा.
- (द) कवितेच्या व्याख्या सांगून कवितेचे ठळक वैशिष्ट्ये लिहा.
- (ध) दुसऱ्या महायुद्धानंतर मराठी साहित्यावर झालेले परिणाम रेखाटा.

किंवा

गट—ख

- (प) साहित्यातील अनुभवाची निर्मिती साहित्यिकाच्या मनोविषयी संबंधित असते असे का म्हटले जाते ?
- (फ) मध्ययुगीन काळातील सामाजिक व राजकीय प्रभाव कोणत्या संत, पंत साहित्यातून दिसून येतो ?
- (ब) 'कादंबरी' या वाङ्मय प्रकाराची संकल्पना स्पष्ट करा.
- (भ) इंग्रजी कालखंडाचा मराठी साहित्यावर कोणता परिणाम झाल्याचे दिसून येते.

16

5. खालील सर्व प्रश्नांची उत्तरे संक्षिप्त स्वरूपात लिहा :

- (1) 'नटसम्राट' नाटकातील नंदू या पात्राची माहिती लिहा.
- (2) सत्कारात मिळालेल्या पैशातून अप्पा कावेरीसाठी काय विकत आणतात ?
- (3) युद्धाच्या सर्वात स्थूल प्रकाराबद्दल नासी फडके यांनी कोणती उदाहरणे दिली आहेत ?
- (4) लोकांचे चित्त वेधण्याची शक्ती ललित कथेत केव्हा निर्माण होते ?
- (5) नाटक या शब्दाची व्युत्पत्ती लिहा.
- (6) नाटकातील संवादाचे महत्त्व थोडक्यात लिहा.
- (7) 'साहित्यातील सूचकता' या घटकांची माहिती लिहा.
- (8) मराठी नाटयसृष्टीत गाजलेल्या चार नाटकांची नावे लिहा.

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Bachelor of Arts (B.A) Second Semester (C.B.C.S.) Examination
MARATHI
(Optional Literature)

वेळ : 3 तास]

एकूण गुण : 80

- सूचना— (1) धोबाली प्रश्न सोडविणे अनिवार्य आहे.
 (2) सर्व प्रश्नांना समान गुण आहेत.

1. नाटक कलाप्रकाशसोबत एक वाङ्मयप्रकारही आहे. हे स्पष्ट करा

किंवा

शोकांतिका म्हणून 'नटसम्राट' या नाटकाचे मूल्यमापन करा

16

2. मराठी रंगभूमीच्या वाटचालीचा इतिहास रेखाटा

किंवा

'नटसम्राट' नाटकातील अप्पा बेलवलकर यांच्या स्वभावाचे चित्रण करा

16

3. खातीलपैकी कोणत्याही एकाच गटातील अवतरणाचे संदर्भासह स्पष्टीकरण करा

गट-अ

(क) "नटाता जे हवं असत ते सारं या गणपतराव बेलवलकरांना मिळवलं आहे."

(ख) "मागे जाऊन आपल्याला तरुण होता येत नाही आणि पुढे जाऊन मरता येत नाही."

(ग) "अप्पासाहेब, मी आयुष्यात कराली चोरी केली असेल तर ती फक्त नाटककारांच्या शब्दाची."

(घ) "बाबा, मागचा रस्ता तुटला आहे ध्यानात ठेव, तू पुन्हा त्या तळधरात शिरायला लागलास."

किंवा

गट-ब

(च) "..... सफल आणि समाधानी म्हातारपण म्हणजे गुलबकावलीच फूल मला मिळालं आहे ते."

(छ) "आणि हा एक मधुर उशाप। माझी लाडकी ठमी - माझ अडगुल, मडगुल, माझ सोन्याचं कणगुल."

(ज) "नाटक नाटकीपणाच्या साखळदंडातून मुक्त व्हायला पाहिजे अप्पासाहेब."

(झ) "अग, माणसाच्या प्रेमासारखं दुसरं टॉनिक नाही उगात."

16

4. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे शंभर शब्दात लिहा.

गट-क

- (ल) 'समरप्रसंगावाचून ललितकथेची उभारणी करू पाहणे व्यर्थ होय' या विधानाची सार्थकता पटवून द्या.
- (व) जगात पहिली कोणती ललितकथा नासी फडके यांनी समरप्रसंग या लेखात सांगितली आहे ?
- (न) 'कथारचनाचातुर्थपेक्षा व्यक्तिदर्शनचातुर्थ्य' दसपटीने अधिक महत्वाचे का समजले जाते ?
- (प्र) 'कथानकातून व्यक्ती निर्माण होत नाहीत तर व्यक्तीतून कथानक निर्माण होत जाते' असे का म्हटले जाते ?

किंवा

गट-ड

- (म) रामायण - महाभारतातील संग्रामाचे स्वरूप स्पष्ट करा.
- (फ) कोणत्या ललितकथा अक्षय टिकतात ?
- (ब) 'कथारचनेपेक्षा व्यक्तिदर्शन हेच ललितकथेचे अधिक महत्वाचे अंग आहे' स्पष्ट करा.
- (भ) व्यक्तिदर्शनाचे कौशल्य आत्मसात करण्यासाठी लेखकाने काय केले पाहिजे ?

16

5. सर्व प्रश्नांची उत्तरे संक्षिप्त स्वरूपात लिहा :

- (1) 'नटसम्राट' या नाटकातील पात्रांची नावे लिहा.
- (2) 'ठमी' या व्यक्तिरेखेचे दुसरे नाव लिहा.
- (3) नलू अप्पासाहेबावर कोणता आळ घेते ?
- (4) 'राजा' या पात्राची माहिती सांगा.
- (5) 'हॅम्लेट' नाटकातील युद्धकथेचे स्वरूप कसे आहे ?
- (6) माणसाला आपल्या जखमांचा व श्रमाचा विसर केव्हा पडतो ?
- (7) ललितकथेला कशामुळे जिवंतपणा येतो ?
- (8) ललितकथेची प्रमुख दोन अंगे कोणती आहेत ?

16

Bachelor of Arts (B.A.) Semester-III (CBCS New - 22-23) Examination
LITERATURE : MARATHI

वेळ : 3 तास]

एकूण गुण : 80

सूचना :- (1) सर्व प्रश्न सोडविणे अनिवार्य.
(2) सर्व प्रश्नांना समान गुण आहेत.

1. खालीलपैकी एकाच गटातील दोन प्रश्न सोडवा :

गट- 'अ'

- (1) कविता या वाङ्मयप्रकाराची वैशिष्ट्ये सांगा.
- (2) साठोत्तरी मराठी कवितेचा इतिहास लिहा.

किंवा

गट- 'ब'

- (1) कविता म्हणजे काय ? ते सांगून काव्याचे स्वरूप स्पष्ट करा.
- (2) काव्याचे विविध घटक सांगून काव्याचे प्रकार सांगा.

16

2. खालीलपैकी कोणत्याही एकाच गटातील दोन प्रश्न सोडवा :

गट- 'अ'

- (1) कवी वसंत आबाजी इवाके यांच्या कवितेची काव्यवृद्धी सांगा.
- (2) स्त्रीवादाची संकल्पना स्पष्ट करून कवयित्री प्रधा गणोरकर यांच्या काव्याचा आढावा घ्या.

किंवा

गट- 'ब'

- (1) कवी ग्रेस यांच्या कवितेतील दुःखजाणीव स्पष्ट करा.
- (2) अरूणा ठेरे यांच्या कवितेतील स्त्रीजाणीव स्पष्ट करा.

16

3. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे थोडक्यात लिहा :

गट- 'अ'

- (क) जगन्नाथ पंडिताची काव्याची व्याख्या सांगा.
- (ख) काव्याचे प्रयोजन सांगा.
- (ग) काव्यसौंदर्य म्हणजे काय ?
- (घ) 'पापक्षालन' हे काव्याचे प्रयोजन कोसे ठरते ?

किंवा

(Contd.)

गट- 'ब'

- (घ) काव्यनिर्मितीची प्रयोजने कोणती ?
(ख) 'अर्थ' हे काव्याचे प्रयोजन कुणे ?
(ग) आनंदवर्धनाची काव्यप्रयोगाची व्याख्या लिहा.
(घ) प्रतिमांकनात कवितेत स्त्रीरोपण कसे केले जाते ?
4. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची चौडक्यात उत्तरे लिहा :

गट- 'क'

- (ल) कलाकृतीतील वास्तव आणि कल्पित यांचा सहसंबंध सांगा.
(थ) आकलन म्हणजे काय ?
(द) ललित साहित्याची संकल्पना सांगा.
(ध) ललितेतर साहित्य म्हणजे काय ?

किंवा

गट- 'ड'

- (प) 'वाचन ही एक कला आहे' स्पष्ट करा.
(फ) नाट्यकलेचे महत्व पटवून द्या.
(ब) ललित साहित्याची व्याप्ती सांगा.
(भ) चित्रपट कलेचा समाजावरील प्रभाव.
5. खालील सर्व प्रश्न सोडवा :
- (1) शैलीला काव्य कुणी म्हटले ?
(2) खंडकाव्य म्हणजे काय ?
(3) 'अंतरिक्ष फिरलो पण मी' ही कविता कोणत्या कवीची आहे ?
(4) सुरेश भट यांच्या गझलसंग्रहाचे नाव सांगा.
(5) 'जीवनासाठी कला' हे विधान कुणाचे ?
(6) काव्यशरीर कशाला म्हटले आहे ?
(7) प्रतिमा म्हणजे काय ?
(8) 'यश' हे कशाचे लक्षण आहे.

Bachelor of Arts (B.A.) (Fourth Semester) (CBCS) Examination
MARATHI LITERATURE
Optional Paper

वेळ : तीन तास]

सूचना :— (1) सर्व प्रश्न अनिवार्य आहेत

[एकूण गुण : 80]

(2) सर्व प्रश्नांना समान गुण आहेत

1. 'कथा' या वाङ्मयप्रकाराचे विविध घटक व वैशिष्ट्ये स्पष्ट करा

किंवा

'सत्य' या कथेतून माणूस परिस्थितीला कसा शरण जातो, हतबल होतो, हे कथेच्या आधारे रेखाटा

16

2. कथा या वाङ्मयप्रकाराची व्याख्या सांगून कथेची संकल्पना व स्वरूप स्पष्ट करा.

किंवा

'मोर्चा' या केशव मेश्राम यांच्या कथेची वैशिष्ट्ये स्पष्ट करा.

16

3. खालीलपैकी कोणत्याही एकाच गटातील अवतरणांचे संदर्भासह अर्थ स्पष्ट करा.

16

गट—अ

(क) "तसें नको मनु माहया बापां मी तुई मायनार्ई"

(ख) "मले नाई भाईत ? मले नोको सांगू ! आमाली भजे करून दे बाई होऽ सांगून होवतो."

(ग) "कशाला या फंदात पडून स्वतःच्या पायावर दगड मारून घेता काकडे"

(घ) "पुरे पुरे अशाने लाडावून ठेवाल कारटीला पुढे भिरे वाटेल डोक्यावर"

किंवा

गट—ब

(च) "अगा गंगाराम साटेवर बोधरी-बितरी टाक ना. या पाव्हन्याले दोरीवरच बसवशीन ?"

(छ) "नाही व्हत दावणीचा बैल इकून कुणबीक बुडवना काय ?"

(ज) "बरोबर आहे यार, आम्ही बुद्ध आम्ही शिकलो नाही ना, म्हणुन तुम्ही बी. कॉम वाले बॅकवाले."

(झ) "आपल्याला पळून आरून लग्न करावे लागले तर सही करायला नाहीतर अंगाळा मारायला एक साक्षीदार तयार शाला."

16

4. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे लिहा :

गट—क

(त) 'अभिधा' या शब्दशक्तीचे वर्णन करा.

(थ) 'व्यंजना' शक्तीचे स्वरूप स्पष्ट करा.

(द) अलंकार म्हणजे काय ? अलंकारांच्या मुखणी कोणते तत्व असते

(Contd.)

Bachelor of Arts (B.A.) Semester V (CBCS New-22-23) Examination
LITERATURE MARATHI

— तीन तास]

एकूण गुं 80

सूचना :—(1) पाचही प्रश्न सोडविणे अनिवार्य आहे

(2) सर्व प्रश्नांना समान गुण आहेत.

1. खालीलपैकी एकाच गटातील दोन प्रश्न सोडवा :

गट 'अ'

- A (1) कादंबरी या वाङ्मय प्रकाराचे घटक विशद करा.
B (2) कादंबरी या वाङ्मय प्रकाराच्या व्याख्या सांगून कादंबरीची संकल्पना स्पष्ट करा.

किंवा

गट 'ब'

- C (1) मराठी कादंबरीच्या ऐतिहासिक वाटचालीचे वर्णन करा.
D (2) प्रादेशिक कादंबरी म्हणून 'पूर्णाभायची लेकर' या कादंबरीचा आढावा घ्या.

16

2. खालीलपैकी एकाच गटातील दोन प्रश्न सोडवा :

गट 'क'

- A (1) 'पूर्णाभायची लेकर' या कादंबरीतील निसर्गचित्राचे वर्णन करा.
B (2) आलोकबुद्धीचे व्यक्तिमत्व कादंबरीच्या आधारे रेखाटा.

किंवा

गट 'ख'

- C (1) बपिराम होमणे यांच्या व्यक्तिमत्वाचे पैलू लिहा.
D (2) 'पूर्णाभायची लेकर' या कादंबरीत वन्हाडी बोलीचा वैशिष्ट्यपूर्ण वापर कसा करण्यात आला आहे ?

16

3. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे धोडक्यात लिहा :

गट 'अ'

- A (क) दलित साहित्याचे प्रेरणास्थान कोण व का आहेत ?
B (ख) बाबूराव बागुल यांच्या कथेची वैशिष्ट्ये कोणती आहेत ?
C (ग) अर्जुन डांगळे यांच्या कथा दलितांच्या जीवनातील समस्यांच्या वेध घेतात असे का म्हटले जाते ?
D (घ) दलित आत्मकथनांची वैशिष्ट्ये सांगा.

किंवा

(Cont)

गट 'ब'

- E (च) आबेडकरांचे विचार हेच दलित साहित्याचे प्रेरणास्थान आहेत असे का म्हाटले जाते ?
F (छ) योगिराज वाघमारे यांच्या कथांचे वेगळेपण लिहा.
G (ज) माधव कोंडविलकर यांच्या आत्मकथेचे विशेष लिहा.
H (झ) 'बलुत', 'आठवणीचे पक्षी', 'मुक्काम पोस्ट: देवाचे गोठणे' या आत्मकथनातील समानता लिहा.
4. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे थोडक्यात लिहा :

गट 'क'

- A (त) भाषेचे सौंदर्य फुलवणाऱ्या अलंकाराचे महत्व सांगा.
B (थ) 'यमक' अलंकाराचे वर्णन करा.
C (द) अर्थालंकाराचे वर्णन करून प्रमुख अर्थालंकार लिहा.
D (घ) शब्दालंकाराचे प्रमुख प्रकार लिहा.

किंवा

गट 'ख'

- E (प) अलंकाराचे भाषेतील स्थान स्पष्ट करा.
F (फ) 'अनुप्रास' अलंकाराचे वेगळेपण लिहा.
G (ब) 'दृष्टांत' अलंकाराचे उदाहरणासह वर्णन करा.
H (भ) 'उपमा' या अलंकाराचे वर्णन करा.

5. खालील सर्व प्रश्नांची उत्तरे संक्षिप्त स्वरूपात लिहा :

- A (1) 'पूर्णमायची लेकरं' कादंबरीतील प्रमुख पात्रांची नावे लिहा.
B (2) बयिरामच्या वावराला 'ठोकापिटी' हे नाव कसे पडले ?
C (3) दलित साहित्याचे प्रेरणास्थान लिहा.
D (4) चार दलित कथाकारांची नावे लिहा.
E (5) 'श्लेष' अलंकाराची व्याख्या लिहा.
F (6) 'उत्प्रेक्षा' अलंकाराचे उदाहरण लिहा.
G (7) कादंबरीची व्याख्या लिहा.
H (8) कोणत्याही दोन कादंबऱ्यांची नावे लिहा.

SKR/KW/24/20878
Bachelor of Arts (B.A.) Semester V (CBCS Old - 20-21) Examination
LITERATURE : MARATHI

वेळ : 3 तास]

सूचना :—(1) पाचही प्रश्न सोडविणे अनिवार्य आहे.
(2) सर्व प्रश्नांना समान गुण आहेत.

एकूण गुण 80

1. 'कादंबरी' या वाङ्मयप्रकाराचे घटक विशद करा.

किंवा

'पूर्णमायची लेकर' या कादंबरीत आलेले समाजचित्रण तुमच्या शब्दांत लिहा.

16

2. कादंबरीचे स्वरूप व संकल्पना स्पष्ट करा.

किंवा

'पूर्णमायची लेकर' या कादंबरीचा धोडक्यात आढावा घ्या.

16

3. खालीलपैकी कोणत्याही एकाच गटातील अवतरणांचे संदर्भासह स्पष्टीकरण करा :

गट 'अ'

(क) "काहून वो बयिरामबोवा! तुम्हाला काय पालखी घाडावी लगते काय म्हणावं?"

(ख) "बुडगीले खुशालयानगच्चावर नजर ठेव्याले धाडलडा असा कोणता मालदार गहू होय? काय कोणी रोकनार नाहीच काय म्हणाव्?"

(ग) "कसं जी मारूनस्चं बोलनं! न होनी गोष्टच बोलतात बाप्पा मारूनर!"

(घ) "बयिरामभौ, असं कसं लेक तुमच्या वावरांच नाव? ठोकापिटी?"

किंवा

गट 'ब'

(च) "असं काहून करता गोमाजी जोवां, पायी जान्यान आपण काय मरतों काय म्हणावं? देवाची यात्रा त पायीच करावी लगते!"

(छ) "मंग? इतल तालेवार झाल तू वान्नेरमान्या!"

(ज) "त्या आव्या दोन आन्याचं चंदन उगायून कपायावर लवजा! पर आम्ही आता बैलहिचा जीव घेणार नाही!"

(झ) "जातो मी कुकडे निंगुन काशी वनारशीले। हया कुजाय बस झाल आता!"

16

(Contd.)

4. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे शंभर शब्दांत लिहा :

गट 'क'

- (त) 'दलित साहित्य हे जीवन निष्ठ आहे' या विधानाची चर्चा करा.
- (थ) 'मुल्काम पोष्ट देवाचे गोठणे' या माधव कोंडविलकरांच्या आत्मकथनात चांभार समाजातील अशिक्षित सुसंस्कृत तरुणाचे चित्रण कशाप्रकारे आलेले आहे ? थोडक्यात स्पष्ट करा.
- (द) प्र. ई. सोनकरांचे यांच्या आत्मचरित्राची वैशिष्ट्ये लिहा.
- (ध) दत्ता भगत यांच्या एकांकिकांचा थोडक्यात परिचय करून घ्या.

किंवा

गट 'ख'

- (प) दलित साहित्य एक आकलन यामधून दलित साहित्याचे स्वरूप व दिशा कशाप्रकारे स्पष्ट झाले आहे ?
- (फ) दलित आत्मकथनाची वैशिष्ट्ये सांगा.
- (ब) माधव कोंडविलकरांच्या आत्मकथेतील व्यक्ति दर्शन लिहा.
- (भ) 'बलुत' या आत्मकथनाचे स्वरूप स्पष्ट करा.

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5. सर्व प्रश्नांची उत्तरे संक्षिप्त स्वरूपात लिहा :

- (1) 'पूर्णमायची लेकर' या कादंबरीत कोणकोणते व्यक्तिचित्र आले त्यांची नावे सांगा.
- (2) बयिरामच्या वावराचे नाव काय होते ?
- (3) 'पूर्णमायची लेकर' या गो. नी. दांडेकरांच्या कादंबरीतील भाषा कोणत्या भागातील आहे ?
- (4) 'पूर्णमायची लेकर' या कादंबरीचे लेखक कोण आहेत ?
- (5) अण्णाभाऊ साठे यांच्या कथासंग्रहांची नावे सांगा.
- (6) दलित आत्मकथांचा स्थायीभाव कोणता आहे ते लिहा.
- (7) केशव मेश्राम यांच्या कथासंग्रहांची नावे सांगा.
- (8) दलित साहित्याची त्रिसूत्री काय आहे ?

16

वेळ : तीन तास]

सूचना :— (1) पाचही प्रश्न सोडविणे अनिवार्य आहे.

(2) सर्व प्रश्नांना समान गूण आहेत.

[एकूण गूण 80]

1. कादंबरी या वाङ्मय प्रकाराची संकल्पना स्पष्ट करून कादंबरीचे स्वरूप स्पष्ट करा किंवा 16

2. 'पूर्णमायची लेकर' या गो. नी. दांडेकरांच्या कादंबरीतील व्यक्ति दर्शन रेखाटी. 'कादंबरी' या वाङ्मयप्रकाराचे घटक आणि वैशिष्ट्ये स्पष्ट करा. 16

3. 'पूर्णमायची लेकर' या गो. नी. दांडेकरांच्या कादंबरीतील भाषाशैलीची वैशिष्ट्ये सांगा. स्तलीलपैकी कोणत्याही एकाच गटातील अवतरणांचे संदर्भांसह स्पष्टीकरण करा : 16

गट 'अ'

(अ) "माहडि नांव बदलजो । आलोकीच्या जागी फुटकी डोबडी अंसड काही तरी ठेवजो."

(ब) "तरी पन्नास सण्डी झालीच आसन्."

(क) "किती रूपयाहिले घेतली छकड-जोडी"

(ड) "मोकिंदाच्या मामाच्या घरी आहेत काय अशे बैस" ?

गट 'ब'

(ब) "बपिराम भी असं कसं लेक तुमच्या वापराचं नाव ? ठोकापिटी ?"

(छ) "अवो रानीच्या लेकी, आतां सांगतड का खातड माडया काडीचा एक रड्डा."

(ज) "बुडे जोपर्यंत मोकिंदाले बरं वाटत नाही, तोपर्यंत माहा मुक्काम तुहयाच घरी! खानपेन, चहापानी सगळं अयीसाच!"

(झ) "येका परीनं ज्वारीचे ताट 5" अन् पराठी कमी इतल्या नाभुपी आहेत ना जी त्याच्या वावशंत!"

4. पुढीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे सुमारे शंभरशब्दांत लिहा : 16

गट 'क'

(त) दलित कथेची वैशिष्ट्ये थोडक्यात सांगा.

(थ) अर्जुन डांगळे यांच्या कथेची वैशिष्ट्ये सांगा.

(द) 'बळुत' या दया पवार यांच्या आत्मकथनांची प्रेरणा व स्वरूप स्पष्ट करा.

(ध) "दलित आत्मकथनामुळे मराठी साहित्यातील आत्मचरित्राचे दालन समृद्ध झाले आहे" हे विधान स्पष्ट करा.

(Contd.)

- (प) 'आठवणीचे पक्षी' या प्र.ई. सोनकांबळे यांच्या आत्मकथेचे स्वरूप थोडक्यात स्पष्ट करा.
- (फ) दलित साहित्याचे स्वरूप व दिशा स्पष्ट करा.
- (ब) दलित कथेचे स्वरूप थोडक्यात सांगा.
- (भ) माधव कोंडविलकरांच्या आत्मकथनाची वैशिष्ट्ये थोडक्यात सांगा.

5. सर्व प्रश्नांची उत्तरे संक्षिप्त स्वरूपात लिहा :

- (1) 'पूर्णमायची लेकरं' या. गो. नी. दांडेकरांच्या कादंबरीतील भाषा कोणत्या प्रांतातील आहे ?
- (2) 'पूर्णमायची लेकरं' या कादंबरीतील बयिराम च्या मुलांची नावे काय होती ?
- (3) बयिरामच्या वावराला 'ठोकापिटी' हे नाव कसे पडले होते ?
- (4) मनकणाविषयी माहिती द्या.
- (5) मुक्काम पोस्ट: देवाचे गोठणे' हे आत्मकथन कोणत्या लेखकाचे आहे ?
- (6) अण्णाभाऊ साठे यांच्या कथासंग्रहाची नावे सांगा ?
- (7) आत्मकथा म्हणजे काय ?
- (8) दलित साहित्यातील मानवता संकल्पना स्पष्ट करा.

Com. M.
2018-2019
M. P.
2019

Bachelor of Arts (B.A.) Part—III Sixth Semester Examination
MARATHI (Literature) (Old)
Optional Paper—1

वेळ : तीन तास]

[एकूण गुण : 80]

1. 'मरुडशेष' या आत्मकथनातून स्पर्धा परीक्षेदरम्यान लेखकाच्या वाट्याला आलेल्या संघर्षाचा परामर्श घ्या किंवा
भरत आंधळे यांना स्पर्धा परीक्षेचा अभ्यास करीत असताना पुणे विद्यापीठात कोणते अनुभव आले ते सांगा.
2. संत ज्ञानेश्वरांचे लौकिक व वाङ्मयीन कर्तृत्व विषाद करा. 16

किंवा

3. शाहिरी काव्याचे प्रकार सांगून शाहीर अनंत फंदी व राम जोशी यांच्या रचनांचा परिचय करून द्या. 16
3. खालीलपैकी कोणत्याही एकाच गटातील अवतरणांचे संदर्भासह अर्थ स्पष्ट करा :

गट 'अ'

- (क) "भाऊ, धरातला पहिलाच शिकणारा मुलगा आहे, कसतरी सातवी-आठवी पर्यंत ओढून ह्या कुठतरी कंपनीत कामाला लागेल."
- (ख) "सर, माफ करा, मला वाटले होते, तुम्ही कसली तरी जाहिरातच करायला आलात की काय !"
- (ग) "माझ्या नातवापेक्षा लहान असूनही ह्या मोरांना शाळेत घेतलंय. मग माला का नाही घेतलं ?"
- (घ) "चित्रकलेच्या शिक्षकांनी मजबूत चोप दिला. त्यातून 'माता पुढे चोरी करायची नाही' असा घडा घेतला."

किंवा

गट 'ब'

- (च) यू.पी.एस.सी. मुख्य परीक्षा झाल्यावर गावाला जाऊन नॉन किमीलेयर प्रमाणपत्र काढावे लागायचे. हे प्रमाणपत्र काढणे म्हणजे मान्यासाठी मोठे संकट असायचे."
- (छ) "सरांचा इंग्रजी माध्यमाचा सल्ला मला अधिक जीवघेणा वाटला."
- (ज) "अजून उशीर झालेला नाही, यावर्षी भरपूर जागा आहेत, भरतीला उभा राहा."
- (झ) "भरत, आता तू पाली साहित्य हा विषय घे, राज्यशास्त्र सोड."
4. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची थोडक्यात उत्तरे लिहा : 16

गट 'क'

- (त) रुपिकांचे प्रकार किती व कोणते ते सांगा.
- (थ) ध्वनीशिवाय भाषेला अस्तित्वच नाही असे का म्हणतात ?
- (द) प्रमाणभाषा व बोली यातील फरक स्पष्ट करा.
- (ध) बालकबोली म्हणजे काय ?

किंवा

(Contd.)

- (प) रूपिमाचे प्रकार थोडक्यात स्पष्ट करा.
- (फ) शब्दसिद्धी म्हणजे काय ते स्पष्ट करा.
- (ब) मराठीचे कालिक भेद सांगा.
- (भ) बोली अभ्यासाचे महत्त्व विशद करा.

5. खालील सर्व प्रश्नांची संक्षिप्त स्वरूपात उत्तरे लिहा :

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- (1) भरत ओघळे यांची यू. पी. एस. सी. परीक्षेत निवड कशी झाली ?
- (2) स्पर्धा परीक्षेच्या अभ्यासाची सुरुवात लेखकाने कशी केली ?
- (3) संत नरहरी सोनार यांनी आपल्या व्यवसाय विट्ठलरूप कसा केला ?
- (4) संत जनाबाईंच्या अभंगातून स्त्रीमनाचा हळूवारपणा कसा प्रत्यक्षात येतो ?
- (5) 'बरवर' म्हणजे काय विशद करा.
- (6) 'आज्ञापत्र' आणि 'भाऊसाहेबांची बरवर' या ग्रंथांच्या लेखकांची नावे लिहा.
- (7) व्यवसायबोली म्हणजे काय ?
- (8) बोली-भूगोल म्हणजे काय ?

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Bachelor of Arts (B.A.) Sixth Semester Examination

MARATHI LITERATURE (New)

Optional Paper—1

वेळ : तीन तास]

[एकूण गुण : 80]

1. 'चरित्र' या वाङ्मयप्रकाराचे स्वरूप समजावून 'चरित्र' ही संकल्पना स्पष्ट करा.

किंवा

'एक होता कार्कीर' या चरित्रग्रंथाचे कथासूत्र तुमच्या शब्दांत लिहा.

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2. मराठी साहित्याच्या चरित्र वाङ्मयाची प्राचीन ते अर्वाचीन वाटचाल रेखाटा.

किंवा

'एक होता कार्कीर' या चरित्रातून अमेरिकेतील त्या काळाच्या समाजाचे चित्रण कसे केले आहे ? सविस्तर स्पष्ट करा.

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3. खालीलपैकी कोणत्याही एकाच गटातील अवतरणांचा संदर्भासह अर्थ स्पष्ट करा :—

गट—अ

(क) 'हे आहेत एका जातिवंत माळ्याचे हात. नुसत्या स्पर्शाने संजीवनी देणारे!'

(ख) 'तुम्ही आणतलं त्यातलं काहीच टाकाऊ नाही. काही आता उपयोगी पडणार आहे, तर काही नंतर!'

(ग) 'तुम्ही जियून आलात तिथेच परत जा. पैसे मिळवण्यासाठी नोकरीचा शोध घेण्यात वेळ दवडू नका. पैसा न मिळाला तरी विनावेतन काम करा, पण कामाची संधी सोडू नका!'

(घ) 'शाश्वत मूल्य पैशाच्या मोबदल्यात मिळत नसतात, किंबहुना पैशाच्या मोबदल्यात जे विकत घेता तेत त्याला 'शाश्वत मूल्य' म्हणत नाहीत!'

किंवा

गट—ब

(घ) 'तुम्ही देशासाठी लढायला गेला होतात. तेव्हा इतर कमी महत्वाच्या गोष्टीकडे दुर्लक्ष करा!'

(छ) 'दक्षिण अमेरिकेवर जादूची कांडी फिरवणाऱ्या या जादूगाराच्या नजरेतून 'जडीबुटी' सुटली नाही बर का!'

(ज) 'तुम्ही एक घोर 'अमेरिकन' आहात. तुम्ही तुमच्या प्रयोगशाळेत जे घडवले त्याने अवघ्या राष्ट्राला बळकटी मिळाली, शक्ती मिळाली!'

(झ) 'तुम्ही विज्ञान अभ्यासा. तेच तुम्हाला स्वतंत्र बनवील!'

16

(Contd.)

4. खालीलपैकी कोणत्याही एकाच गटातील प्रश्नांची उत्तरे थोडक्यात लिहा :-

गट—क

- (त) संत ज्ञानेश्वरांच्या ग्रंथसंपत्तीचा परिचय करून द्या.
- (ब) संत नामदेवांनी केलेल्या वारकरी संप्रदायाच्या विस्ताराची माहिती लिहा.
- (द) कलाकवी मुक्तेश्वरांच्या साहित्याची माहिती लिहा.
- (घ) 'तुका झालासे कळस' असे का म्हटले जाते ?

किंवा

गट—ख

- (प) ज्ञानेश्वरीची महती सांगा.
- (फ) ज्ञानेश्वरांचा वारसा नामदेवांनी कसा सांभाळला, हे स्पष्ट करा.
- (ब) मुक्तेश्वरांच्या महाभारताचे वेगळेपण स्पष्ट करा.
- (भ) "संत तुकारामांचा पिंड परखड समाजसुधारकाचाही होता" हे विधान पटवून द्या.

16

5. खालील सर्व प्रश्नांची संक्षिप्त स्वरूपात उत्तरे लिहा :-

- (1) प्रा. कार्कर्कर यांना टस्कीगीत कुणी व का बोलविले ?
- (2) प्रा. कार्कर्कर यांच्या फिरत्या कृष्ण विशालयाची माहिती लिहा.
- (3) संत ज्ञानेश्वरांच्या अभंगांचे वैशिष्ट्ये सांगा.
- (4) संत तुकारामांच्या जीवनाविषयी थोडक्यात माहिती लिहा.
- (5) वाक्याचे स्वरूप थोडक्यात समजावून द्या.
- (6) वाक्य पृथक्करण म्हणजे काय ?
- (7) प्रमाणभाषेची व्याख्या लिहा.
- (8) बोलीच्या निर्मितीची कारणे कोणती आहेत ?

16

Master of Science (M.Sc.) Third Semester Choice Based Credit System (CBCS)
(Chemistry) Examination

CORE (SUBJECT CENTRIC) : SPECTROSCOPY—I

Optional Paper—4

Paper—IV

Time : Three Hours]

[Maximum Marks : 80

- N.B. :— (1) All questions are compulsory.
(2) All questions carry equal marks.
(3) Use of calculator is permitted.
(4) Draw labelled diagrams wherever necessary.

1. (a) Explain in brief symmetry elements and symmetry operations. ✓ 6
(b) Construct character table for c_{2v} point group. 5
(c) Describe Great Orthogonality Theorem. ✓ 5

OR

- (d) Identify the point groups of the following molecules :

- (1) NO_3^-
(2) POCl_3
(3) AuCl_4^-
(4) WOCl_4
(5) $\begin{array}{c} \text{Cl} \quad \text{Cl} \\ \diagdown \quad \diagup \\ \text{C} = \text{C} = \text{C} \\ \diagup \quad \diagdown \\ \text{Cl} \quad \text{Cl} \end{array}$

- (6) Boric acid (H_3BO_3) 6

- (e) Identify the irreducible components of the following reducible representation in c_{3v} point group :

c_{3v}	E	$2C_3$	$3\sigma_v$	
τ	4	1	0	5

- (f) What is similarity transformation ? Give its application in group theory. 5

2. (a) Explain the schematic instrumentation of Mossbauer spectroscopy. Discuss the application of Mossbauer spectroscopy in determination of molecular structure. ✓ 6

- (b) Distinguish among ethylamine, diethylamine and triethylamine on the basis of mass spectral fragmentation. ✓ 5

- (c) Explain application of mass spectrometry in study of McLafferty rearrangement. ✓ 5

OR

- (d) Explain high resolution mass spectrometry and molecular ion peak. 6
- (e) Suggest a mechanism to account for the formation of ion at m/z 57 (44%) in the mass spectrum of 2-Methyl Cyclohexanol. Account for the formation of ion at m/z 71 also. 5
- (f) Explain recoilless emission and absorption in Mossbauer Spectroscopy. 5
3. (a) Explain classification of molecule on the basis of moment of Inertia. 6
- (b) Discuss about Kramer's degeneracy. 5
- (c) What is 'g' value ? Explain factors affecting 'g' value. 5

OR

- (d) Discuss the principle of ESR spectroscopy and its instrumentation technique. 6
- (e) Calculate the moment of Inertia of a diatomic molecule whose bond length is 150 pm and reduced mass is 1.5×10^{-27} kg. 5
- (f) Explain application of ESR spectra to study free radicals like naphthalene. 5
4. (a) Explain the following terms :
- (i) Morse potential energy diagram ✓ 6
- (ii) Force constant. 5
- (b) Discuss the classical theory of Raman effect. 5
- (c) Explain coherent antistokes Raman spectroscopy. 5

OR

- (d) Discuss the following terms :
- (i) Pure vibrational Raman Spectra
- (ii) Vibrational Rotational Raman Spectra. 6
- (e) Calculate the difference in frequency expected for $v = 0$ to $v = 1$ vibrational transition of HCl^{35} and HCl^{37} assuming that the force constant of the two molecules are identical and equal to 4.84×10^5 dyne/cm. <https://www.rtmnuonline.com> 5
- (f) Explain the term P, Q, R branches. 5
5. (a) Explain Schoenflies Symbols. 4
- (b) Write a note on N-rule. 4
- (c) Explain the ESR spectrum of biphenylene anion with spectral intensities. 4
- (d) Draw schematic representation of IR spectrometer and write its any two applications. 4

Master of Sci. (M.Sc.) Third Semester Choice Based Credit System (CBCS)
(Chemistry) Examination
ELECTIVE : POLYMER
Optional Paper-3
Paper-III

[Maximum Marks : 80]

Time : Three Hours]

N.B. :—All questions are compulsory and carry equal marks.

1. (a) Write a note on Copolymer. 5
- (b) Explain with examples Syndiotactic, Isotactic and Atactic chains. 6
- (c) Explain with examples linear and branched polymer. 5

OR

- (d) Explain the classification of polymers on the basis of their mode of synthesis. 6
- (e) Write a note on Coordination Polymerization. 5
- (f) Discuss in brief free radical Polymerization. 5
2. (a) Explain any one method for determination of molecular weight of polymer based on colligative property. 5
- (b) In a given polymer sample 30% molecules have molecular mass 20,000, 40% have molecular mass 30,000 and the rest 30% have 60,000. Calculate M_n and M_w . 6
- (c) How will you determine the molecular weights of polymer by light scattering method? 5

OR

- (d) Discuss in brief End group analysis of Polymer. 6
- (e) How to determine the molecular weight of polymer by sedimentation equilibrium method? 5
- (f) Write a note on Gel permeation chromatography. 5
3. (a) Explain effect of the following factors on T_g of Polymer :
 - (i) Molecular geometry. 6
 - (ii) Steric hindrance. 5
- (b) Give the relationship between structure and crystalliability of polymer. 5
- (c) Describe any one method for the determination of Crystallinity of the polymer. 5

OR

- (d) Describe in brief morphology of crystalline polymers. ✓ (9) 6
- (e) Discuss the Calorimetric method for the determination of glass transition temperature of the polymer. (11) 5
- (f) Explain effect of the following factors on Crystallinity of the polymer :
- (i) Permeability
 - (ii) Young's modulus. 5
4. (a) Give brief account of fire retarding polymer. 6
- (b) Write synthesis and applications of PMMA. 5
- (c) Write a note on Polyamides. 5

OR

- (d) Discuss on the conductivity of :
- (i) Poly (sulphur-nitride)
 - (ii) Poly acetylene. 6
- (c) Write synthesis and applications of polyvinyl pyrrolidone. 5
- (f) Write preparation and uses of polyesters. 5
5. All questions are compulsory :
- (a) What is Inhibitor ? Explain in short.
 - (b) Write down application of Cellulose Acetate.
 - (c) Write the difference between thermosetting and thermoplastic polymer. (
 - (d) Write down Mark-Houwink equation and explain terms involved in it.
 - (e) Write short note on PVC. (<https://www.rtmnuonline.com>)
 - (f) Draw the structure of monomers of following polymers :
 - (i) PETP _____
 - (ii) Nylon 6. _____ - (g) Define the term relative viscosity. Write down the relationship between η and $\bar{\eta}_s$. _____
 - (h) Write down the chemical reaction for the synthesis of PET. _____
- 2×8=16

Master of Science (M.Sc.) Third Semester Choice Based Credit System (CBCS)
(Chemistry) Examination

SPECIAL : II : ORGANIC

Paper - 2

Paper - II

Time : Three Hours]

[Maximum Marks : 80

- N.B. : - (1) All questions are compulsory.
(2) All questions carry equal marks.
(3) Use of calculator is allowed.

1. (a) Discuss the classification of terpenoids along with isoprene rule. Δ 6
(b) How is the structure of geraniol established? 4 6
(c) Write the steps involved in the synthesis of haemoglobin. 3 4

OR

- (d) Discuss the steps involved in the biosynthesis of camphor. 6
(e) How is the structure of citral proved by degradation and its synthesis? 6
(f) Write structure and functions of Chlorophyll 'a' and 'b'. 4
2. (a) Discuss how the structure of Ephedrine (+) is established using degradation and synthesis method. 6
(b) Discuss the nomenclature and occurrence of Alkaloids. 5
(c) Write synthetic steps for PGI^{2a} . 5

OR

- (d) How is the structure of Nicotine established? 4 6
(e) Explain the following :
(i) Physiological action, and
(ii) Role of alkaloids in plants. 5

(f) Give synthesis of PGE_2 . 2 5

(a) Comment on the following :

(i) Diel's Hydrocarbon 6

(ii) Basic skeleton of steroids. 5

(iii) How will you prove the presence of angular methyl group in cholesterol? 5

(iv) Write synthetic steps for :

(i) Cyanidin

(ii) Quercetin.

OR

- (d) How is the structure of Cyanidin-7-arabinoside established ? (Synthesis required) 6
- (e) Discuss the Shikimic acid pathway for the biosynthesis of plant pigments (1) 5
- (f) How the structure of testosterone is established by degradation method ? (5
- 4. (a) Discuss the chemistry of polysaccharide cellulose. 6
- (b) Illustrate the Strecker synthesis of amino acids. 6
- (c) Comment on the following :
 - (i) Amino Sugars
 - (ii) Iso-electric point in amino acids. 4

OR

- (d) How is the structure of Maltose established ? 6
- (e) Write steps involved in solid phase peptide synthesis. 6
- (f) Discuss in brief the chemistry of starch. 4
- 5. (a) Write down structure and functions of β -Carotene. 1
- (b) Provide biosynthesis of coniine.
- (c) What are bile acids ? Explain their role.
- (d) Discuss the secondary structure of protein. (

Master of Science (M.Sc.) Third Semester Choice Based Credit System (CBCS)
(Chemistry) Examination
SPECIAL-I : ORGANIC

Paper-I

Paper-I

Time : Three Hours]

N.B. :— (1) All questions are compulsory.

[Maximum Marks : 80]

(2) All questions carry equal marks.

1. (a) What are Norrish type-I reactions ? Give its mechanism. 5

5

(b) What are Photo-Fries rearrangements ? Explain with suitable example. 5

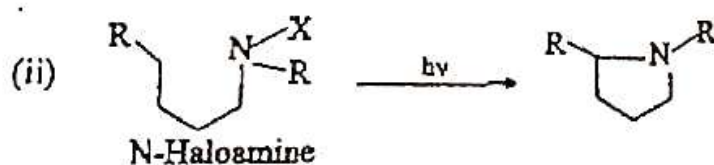
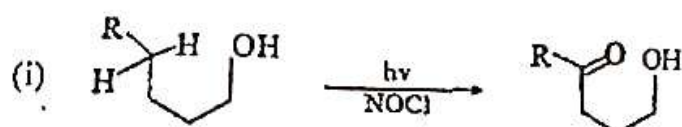
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(c) Explain transfer of excitation energy through Singlet and Triplet States. 5

5

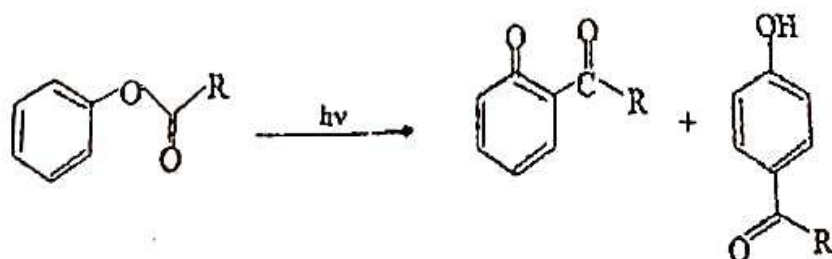
OR

(d) Write suitable mechanism for the following photochemical reactions :



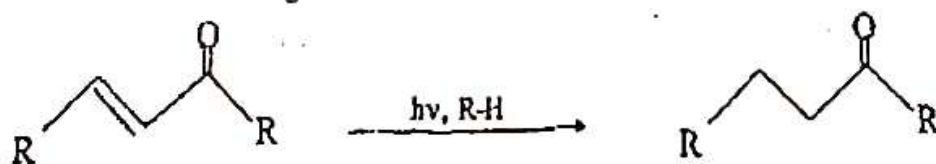
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(e) Give the mechanisms involved in the following conversions :



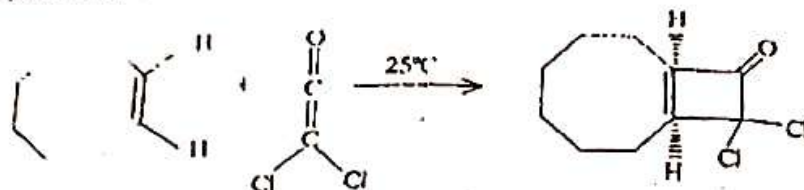
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(f) Provide mechanisms for photoreduction of the following compound :



5

- (a) Explain the stereochemistry of 1,3-polar cyclo-addition with suitable example. 6
 (b) Explain how stereochemistry in following cyclo-addition is retained in the product. 5



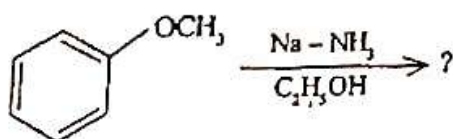
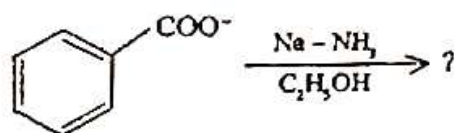
- (c) Explain the Woodward-Hoffman Rule and Orbital Symmetry. 5

OR

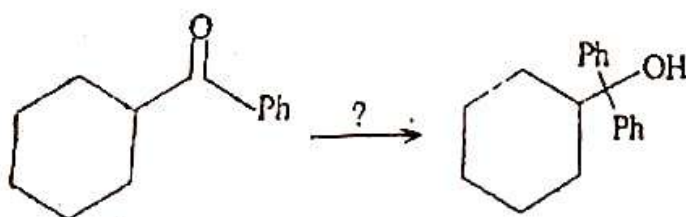
- (d) Rationalise Ene Reaction with suitable example. 5
 (e) Discuss the Claisen Rearrangement with example 4 5
 (f) Write in detail Diels-Alder Reaction. 3 6
 3. (a) Explain oxidation with PDC and Reduction with NaBH_4 . 5
 (b) Rationalise Sharpless asymmetric epoxidation with example. 5
 (c) Reduction with diamides with suitable example. 6

OR

- (d) Discuss the following :
 (i) Oxidation with KMnO_4 in alkaline and neutral medium
 (ii) Oxidation of aldehydes with Jones's reagent. 5
 (e) Provide the reduction products with stereo-chemical aspects with two different substrates using (i) Reduction with Li-NH_3 and alcohol (ii) Reduction with B_2H_6 . 6
 (f) Predict the product and explain the mechanism :



4. (a) Explain application of umpolung with following example :



(b) Comment on :

(i) Dipole inversion and

(ii) Peterson synthesis.

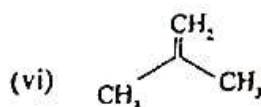
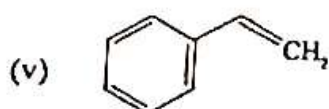
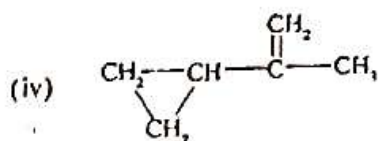
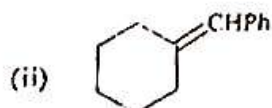
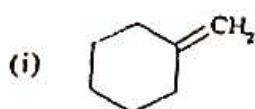
6

(c) What are Organoboranes ? Discuss stereo and regioselectivity of organoboranes in the synthesis of primary and secondary alcohols.

5

OR

(d) Which ylides will be used in the synthesis of the following production from their keto-precursors ?



6

(e) Give preparation and application of Catechol and Triethyl borane.

5

(f) Use of 1, 3-dithiane in organic synthesis with examples.

5

5. (a) Explain Photochemical isomerization of cis-and trans-alkenes.

4

(b) Provides synthesis and applications of Me_3SiCl .

4

(c) Discuss in short :

(i) 1, 3-sigmatropic rearrangement

4

(ii) Cope reaction.

(d) Give two applications of :

(i) SeO_2 for oxidation 2m

4

(ii) Bu_3SnH for reduction. 2m

Master of Science (M.Sc.) Chemistry Semester-I (CBCS) (NEP) Examination

MCH11T04 : RESEARCH METHODOLOGY

Paper-IV

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Use of calculator is permitted.

1. (a) Define 'Null Hypothesis'. Give its principle with formula. 6
 (b) What is 'Research Question'? Explain qualitative, quantitative and mixed approach. 5
 (c) Explain salient features of good research design. 5

OR

- (d) Describe research process and its stages. 6
 (e) What are dependent and independent variables in experimental design of research problem? 5
 (f) How will you identify a research problem? Explain with example. 5
 2. (a) Discuss classification of analytical techniques based on their principles. 6
 (b) What are significant figures? Give rules for calculating them. Round off the following numbers upto 4 significant figures : 1.29003, 22.345, 0.00226921, 1.00286 5
 (c) A dye forms colourless complex with nickel metal ion. The effect of nickel concentration on the colour intensity was plotted from the following observation table.

Calculate the correlation coefficient and interpret your result.

Conc of Ni^{2+} (mM)	5	10	15	20	25
Absorbance	1.03	0.91	0.83	0.70	0.60

OR

- (d) You have developed a new spectrophotometric method for estimation of Fe(II) in a solution using a new reagent 'R'. How will you validate your method for 'Accuracy' and 'Precision'? 6
 (e) An enzymatic method for determining alcohol in wine is evaluated by comparison with gas chromatography method. The same sample was analyzed by two methods giving following results. Determine if the means of the two methods differ significantly at 95% confidence level. ($t = 2.776$ for $v = 4$ at 95% confidence level).

Enzymatic method (%)	13.1	12.7	12.6	13.3	13.3
GC method (%)	13.5	13.3	13.0	12.9	13.0

(Contd.)

- (f) Explain F-test for comparison of data. Predict if the precision levels of two methods given in numerical (e) above differ significantly or not. Given, $F = 6.39$ at $v_1 = v_2 = 4$ at "5%" confidence level.

3. (a) Write short notes on :

- (i) Types of report writing 6
- (ii) References style.
- (b) Define and explain the terms 'h-index' and 'Impact factor'. How are they calculated? Give their significance in academic evaluation of a researcher. 5
- (c) Explain the importance of IPR for protection of scientific knowledge. 5

OR

(d) Explain with suitable examples :

- (i) Copyright 6
 - (ii) Trademarks. 5
 - (c) Explain the layouts of research paper and research thesis.
 - (f) What do you understand by 'Research Ethics'? Explain the tools used to identify ethical misappropriations. <https://www.rtmnuonline.com> 5
4. (a) Write short notes on :
- (i) Mendeley
 - (ii) Microcal Origin
 - (iii) Chemdraw. 6
 - (b) Compare MS PowerPoint and Beamer presentation. 5
 - (c) What are different reference management softwares? Explain one of them in detail. 5

OR

- (d) What is plagiarism? How can it be avoided? Name various software used in plagiarism detection. 6
 - (e) What are the advantages and disadvantages of using MS Word in research? 5
 - (f) What are computational softwares? Give significant points of Mathematica. 5
5. (a) Write a note on : Exploratory research.
- (b) Explain the terms : precision, repeatability, robustness, accuracy.
 - (c) Distinguish between Citescore and Impact factor.
 - (d) Explain applications of MS Excel program for research paper preparation. 4×4=16

M.Sc. Chemistry (Semester-1) (CBSC) New Education Policy (NEP) Examination

MCHIT03 ELECTIVE -(B) : BIOMOLECULES

Paper-III

[Maximum Marks : 80]

[Time : Three Hours]

Note : - (1) All questions are compulsory and carry equal marks.

(2) Use of calculator is permitted.

1. (A) What are monosaccharides ? What happens when glucose and fructose are treated with the

Following :

(i) Bromine water

(ii) Nitric Acid

(iii) Fehling Solution ?

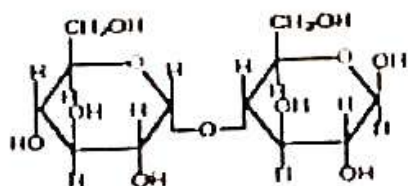
6

(B) Discuss the general method of structure determination of sucrose.

5

(C) The Structure of maltose is given below :

5



(i) Label the acetal and hemiacetal carbons.

(ii) What products are formed when maltose is treated with each of the following :

(a) H_3O^+

(b) CH_3OH and HCl

(c) Excess NaH_2 then excess CH_3I ?

OR

(D) Discuss the following :

(i) Deoxy sugar

6

(ii) Amino sugar

5

(E) Discuss the structure elucidation of lactose.

(F) Write notes on :

5

(i) Chitin

(ii) Heparin

2 (A) what are proteins? How are they classified? Explain the primary structure of Protein.

6

(B) Explain why the peptide bond is planar. Write the structure of the peptide:

(i) Val-Ala-Leu

(ii) Gly-Val-Arg

5

(C) Explain the detailed steps involved in solid phase peptide synthesis

5

OR

(D) Write short notes on:

(i) stereochemistry of Amino acids

(ii) Dipole properties of Amino acids

6

(E) Discuss Strecker synthesis of Amino acids.

5

(F) How is the structure of polypeptide established by using C-End Carboxypeptidase Method?

5

3. (A) Explain structure, function and types of RNA.

6

(B) Comment on structure and function of Spingolipids

5

(C) Write a note on β -oxidation of fatty acids.

5

OR

(D) Explain Polymerase Chain Reaction (PCR) and Reverse Transcription Polymerase Chain Reaction (RTPCR)

6

(E) Describe the structure and function of lipoproteins.

5

(F) Explain DNA replication and heredity

5

4 (A) What is lock and key model? How does lock and key model work? Give its Limitations.

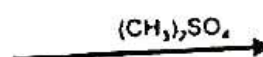
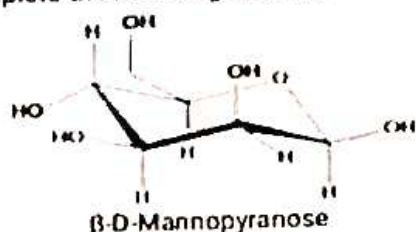
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(B) Explain structure and function of Carboxypeptidase A.

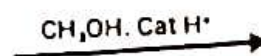
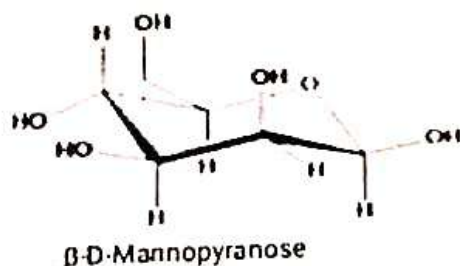
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(C) Complete the following reaction:

5



?



?

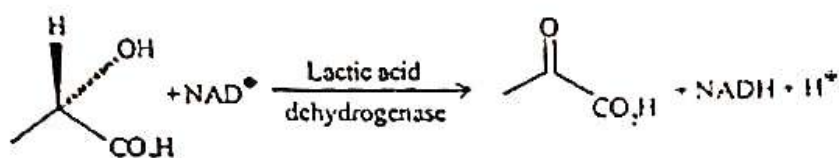
OR

(D) Write short notes on :

(i) Baker's yeast catalysed reactions.

(ii) Enzyme mechanisms for chymotrypsin.

(E) NAD^+ is the most important oxidant of nature. Write how NAD^+ performs the following oxidation reaction ?



(F) Write a note on acid-base catalysis using enzymes.

5. Write short notes on :

(A) Composition of Cellulose.

(B) Sanger's method for polypeptide analysis.

(C) Structure and functions of triglycerols.

(D) Mutagenesis.

4×4=16

M.Sc. Chemistry (Semester—I) (CBCS) New Education Policy (NEP) Examination
MCH11702 : PHYSICAL CHEMISTRY

Paper—II

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory and carry equal marks.
(2) Use of calculator is permitted.

1. (A) Write the condition for exactness. Determine whether the given differential equation is exact $(\sin y - y \sin x)dx + (\cos x + x \cos y - y)dy = 0$. 6
(B) Show that the volume of an ideal gas is a homogenous function of zeroth degree in pressure and temperature. 5
(C) Prove the unattainability of absolute zero using Nernst Heat Theorem. 5

OR

- (D) If pressure, volume and temperature of one mole of a gas are related as $\frac{P}{RT} + \frac{a}{V^2RT} = \frac{1}{V}$, show that :

- (i) P is a state function
(ii) dP is an exact differential.

- (E) Prove the following Maxwell relations :

$$(i) \left(\frac{\partial T}{\partial V} \right)_S = - \left(\frac{\partial P}{\partial S} \right)_V$$

$$(ii) \left(\frac{\partial V}{\partial T} \right)_P = - \left(\frac{\partial S}{\partial P} \right)_T$$

5

- (F) Explain Residual entropy and its applications. 5

2. (A) Test whether the given functions are eigen function and also calculate the eigenvalue :

(i) Function = λe^{-x} Operator = $\frac{d^2}{dx^2}$

(ii) Function = $\cos ax \cos by \cos cz$ Operator = ∇^2

6

- (B) Show that the operator $\frac{h}{2\pi i} \frac{d}{dx}$ for linear momentum is Hermitian. 5

- (C) For a particle in 3-dimensional box derive an expression for energy; also discuss the degeneracy of energy state $14h^2/8ma^2$. 5

OR

(D) Show that the function $\psi = e^{i(k_x x + k_y y + k_z z)}$ is an eigen function of the operator $\frac{h}{2\pi i} \nabla$. What will be the eigenvalue ? 6

(E) Prove that position and momentum operator do not commute; also show that the value of commutator is $\frac{h}{2\pi i} \cdot i\hbar^{n-1}$. 5

(F) For Hydrogen atom give the expression of Schrodinger equation in Polar coordinates. Separate the equation in Radial and Angular/Azimuthal Part and discuss their significance. 5

3. (A) Write BET equation. How can it be used to find the volume (V_m) of the gas adsorbed to form a unimolecular layer on the surface of the adsorbent ? 6

(B) Write notes on :

(i) Electro-kinetic phenomena

(ii) Micro-emulsion. 5

(C) Explain the sedimentation method for the determination of molecular weight of macromolecules. 5

OR

(D) What is the CMC, or Critical Micelle Concentration ? Which factors have an influence on CMC ? <https://www.rtmnuonline.com> 6

(E) The following data were obtained on the adsorption of acetic acid on charcoal :

Acetic acid (mol dm ⁻³)	0.05	0.10	0.50	1.0	1.5
x (g)	0.01	0.06	0.12	0.16	0.19

Verify that the data obey the Freundlich isotherm, $x = kp^n$ where x is the mass adsorbed per unit mass of charcoal. Determine the constant k and n. 5

(F) Explain the Osmometric method for the determination of molecular weight of macromolecules. 5

4. (A) For a given reaction at temperature T, the velocity constant, k is expressed as $k = A \cdot e^{-27000k/RT}$. Given $R = 2 \text{ cal. mole}^{-1} \text{ K}^{-1}$, calculate the value of energy of activation. Comment on the results. 6

(B) Discuss in brief Eyring equation of rate constant for a bimolecular reaction. 5

(C) Discuss Bodeinstein steady state approximation in consecutive reactions. 5

OR

- (D) The rate constant for the decomposition of 5-hydroxymethyl furfural (5-HMF) at 120°C is 1.173 hr^{-1} and at 140°C is 4.86 hr^{-1} . What is the activation energy in kcal/mol and the frequency factor in sec^{-1} for the break-down of 5-HMF in this temperature range ? 6
- (E) How kinetics of unimolecular reactions can be explained by Lindemann theory ? 5
- (F) Write notes on :
- (A) Thermodynamic formulation of transition state theory.
 - (B) Collision theory. 5
- (A) State Caratheodory principle. Prove its equivalence with Kelvin Planck and Clausius statement of the second law of Thermodynamics.
- (B) What is quantum mechanical tunnelling ? Explain it with appropriate example.
- (C) Explain shape and structure of micelles.
- (D) Write note on RRKM theory. 4×4=16

M.Sc. Chemistry (Semester—I) (CBCS) New Education Policy (NEP) Examination

MCHIT01 : INORGANIC CHEMISTRY

Paper—I

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory and carry equal marks.

(2) Use of calculator is permitted.

1. (a) What are Orgel diagram ? Discuss the utility of Orgel diagrams. Explain the spectra of d^1 using Orgel diagram. 6
- (b) Explain L-S coupling scheme for energy terms. Derive the ground terms symbol for d^2 and d^8 system. 5
- (c) Discuss the formation of the complex $[\text{Co}(\text{NH}_3)_6]^{3+}$ on the basis of MOT. 5

OR

- (d) Define π -bonding complex. Discuss MO diagram of $[\text{PtCl}_4]^{2-}$ complex. 6
- (e) What is charge transfer spectra ? Discuss the types of charge transfer spectra with suitable examples. 5
- (f) State and explain Laporte selection rule and spin selection rule. 5
2. (a) What are metal clusters ? How are they classified ? Explain the structure of low nuclearity and high nuclearity metal clusters with suitable examples. 6
- (b) Sketch the possible topological structures in terms of STYX number for the following boranes :
- (i) B_6H_{10}
- (ii) B_5H_{11}
- (iii) B_4H_{10}
- (iv) B_3H_9 5
- (v) B_2H_6
- (c) What are Metallocarboranes ? Discuss the structure and bonding of Metallocarboranes. 5

OR

- (d) What are electron deficient compounds ? Explain the structure and bonding in diborane. 6
- (e) Discuss hexanuclear metal cluster with suitable examples. 5
- (f) Explain the structure of dinuclear metal cluster $[\text{Re}_2\text{Cl}_8]^{2-}$. 5

(Contd.)

(a) What are the types of substitution reaction in Octahedral complexes ? Explain the mechanism of SN^1 and SN^2 reaction in Octahedral complexes with suitable example and discuss the stereochemistry of intermediate involved in it. 6

(b) How would you determine metal-ligand composition of complexes by Irving-Rossotti Potentiometric method ? 5

(c) What are inert and labile complexes ? Discuss the lability and inertness of complexes on the basis of VBT with suitable example. 5

OR

(a) What is overall and stepwise formation constant of complex ? Derive relationship between them. 6

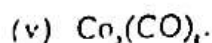
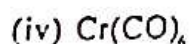
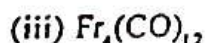
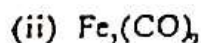
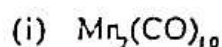
(b) Explain in detail reaction without metal-ligand bond breaking. 5

(c) What is conjugate base mechanism ? Explain it in $[Co(NH_3)_5Cl]^{2+}$ complex. 5

(a) What are nitrosyls ? Give any two methods of preparation of nitrosyls. Explain how vibrational spectroscopy and X-ray diffraction technique helps in elucidating the structure of nitrosyls with suitable examples. <https://www.rtmnuonline.com> 6

(b) Discuss the bonding in Carbonyls. Explain how carbonyls act as σ -donor and π -acceptor with suitable example. 5

(c) Calculate EAN in the following carbonyls :

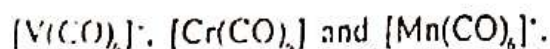


5

OR

(d) How will you identify linear and bent bond M-N-O ? Explain with suitable example. 6

(e) Explain the trends in Carbonyls (CO) stretching frequency in series :



5

(f) Explain structure and bonding in metal-dioxygen complexes. 5

5 (a) What is Tanabe-Sugano diagram ? Draw diagram of d^3 Octahedral complex.

(b) Discuss 4-digit code number of borane. Calculate STYX number for B_3H_6 .

(c) Discuss the mechanism of Annation reaction.

(d) Explain the classification of metal carbonyl clusters.

4×4=16

Bachelor of Science (B.Sc.) Semester—IV Examination
(New & Old)

CH-402 : CHEMISTRY (Physical Chemistry)

Compulsory Paper—II

(New Course)

Time Three Hours]

[Maximum Marks : 50

N.B. :— (1) All FIVE questions are compulsory.

(2) Write chemical equations and draw diagrams wherever necessary.

- ✓ (A) State and explain laws of crystallography. 5
(B) Derive Bragg's equation for diffraction of X-rays. The diffraction of X-rays of wavelength 3.0×10^{-10} m gives first order reflection at 27° . Calculate the interplanar distance 5

OR

- (C) Write the difference between crystalline and amorphous solids. $2\frac{1}{2}$
(D) A crystal plane cuts the X-axis at unit distance and is parallel to Y and Z axes. Calculate Weiss and Miller indices. $2\frac{1}{2}$
(E) Explain Powder method of crystallography. What are its advantages over other methods? $2\frac{1}{2}$
(F) Why is Bragg's method unable to show that KCl has FCC crystal structure like NaCl. $2\frac{1}{2}$
- 2 (A) What is transport number? Explain moving boundary method for determination of transport number. 5
(B) Give the application of Kohlrausch's law in the determination of solubility of sparingly soluble salt. The specific conductivity of 0.001028 m acetic acid is 4.95×10^{-5} S.cm⁻¹. Calculate dissociation constant, if λ_{∞} for acetic acid is 390.7 S cm² mol⁻¹. 5

OR

- (C) Write note on Relaxation effect. $2\frac{1}{2}$
(D) Explain variation of equivalent conductivity of the weak electrolytes with dilution. $2\frac{1}{2}$
(E) What are advantages of conductometric titrations over usual titration. $2\frac{1}{2}$
(F) The resistance of a 0.1 m KCl solution in a conductivity cell is 325 ohm and the specific conductance of the same solution is 1.29 S m⁻¹. If the resistance of a 0.05 m NaCl solution in the same cell is 752.4 ohm. Calculate the equivalent conductance of NaCl solution. $2\frac{1}{2}$

0.011

(Contd.)

3. (A) Derive an expression for the frequency of rotational lines in the pure rotational spectrum. What types of molecules exhibit rotational spectra? 5

- (B) What is simple harmonic oscillator? How does its potential energy vary with displacement from equilibrium position? Sketch its vibrational energy levels. What is zero point energy? 5

OR

- (C) The rotational spectrum of CO shows a series of equidistant lines spaced 384.235 cm^{-1} apart. Calculate moment of inertia and bond length of CO bond. (Atomic mass of C = 12, O = 16 amu and $h = 6.626 \times 10^{-34} \text{ J.s.}$) 2½

- (D) Discuss P, Q and R branches of vibrational-rotational spectra. 2½

- (E) Describe normal modes of vibrations of H_2O molecule. 2½

- (F) Which of the following give pure rotational spectra $\text{CO}_{2(g)}$, $\text{HCl}_{(g)}$, $\text{NO}_{(g)}$ and $\text{H}_{2(g)}$? 2½

- (A) Derive de Broglie relation. How is dual nature of electron verified experimentally? 5

- (B) Explain the applications of magnetic susceptibility in :

(i) Deciding molecular structure of substance.

(ii) The study of co-ordination compounds. 5

OR

- (C) State the postulates of quantum mechanics. 2½

- (D) Explain the terms :

(i) Normalised wave function.

(ii) Orthogonal wave function. 2½

- (E) Calculate magnetic moment of a molecule having four unpaired electrons. 2½

- (F) Explain Gouy's method for the determination of magnetic susceptibility. 2½

- 5 Attempt any TEN questions of the following : <https://www.rtmnuonline.com>

(1) Identify the crystal system having unit cell parameters $a \neq b \neq c$; $\alpha \neq \beta \neq \gamma$.

(2) Define Unit Cell.

(3) Draw the unit cell of CsCl.

(4) Give the relation between specific conductance, observed conductance and cell constant.

(5) State Ostwald's dilution law.

(6) If the transport number of cation is 0.84. Calculate the transport number of anion.

(7) Give selection rule for pure vibrational spectra.

(8) What is rigid rotor?

(9) Define fundamental vibrational frequency.

(10) Define threshold frequency.

(11) State Heisenberg's Uncertainty principle.

(12) Write Clausius-Mosotti equation

1×10=10

Bachelor of Science (B.Sc.) Semester—IV Examination
(New & Old)

CH-401 : CHEMISTRY (Inorganic Chemistry)

Compulsory Paper—I

(New)

Time Three Hours]

[Maximum Marks 50]

N.B. :— (1) All FIVE questions are compulsory and carry equal marks

(2) Write equations and draw diagrams wherever necessary

(A) What are postulates of valence bond theory for co-ordination? Explain the structure and magnetic properties of $[\text{Fe}(\text{CN})_6]^{3-}$ using VBT. 5

(B) What are Chelates? Give classification of chelates formed by bidentate ligands. Give any two applications of chelates in chemical analysis. 5

OR

(C) Discuss postulates of Werner's theory of co-ordination. 2.5

(D) Give IUPAC names of the following :

(i) $[\text{Co}(\text{en})_2(\text{NO}_2)]^+$

(ii) $[\text{Ag}(\text{CN})_2]^-$ 2.5

(E) Define EAN. Calculate EAN in the following :

(i) $[\text{Co}(\text{en})_3]^{3+}$

(ii) $[\text{Fe}(\text{CN})_6]^{4-}$ 2.5

(F) Differentiate between double salt and co-ordination compounds. 2.5

(A) (i) Explain optical isomerism in octahedral complexes.

(ii) Discuss Ionization and linkage isomerism with example of each. 5

(B) (i) Write a short note on stability field of water.

(ii) Draw and explain Frost diagram of oxygen using following Latimer diagram



OR

(C) What is Pourbaix diagram? Draw it for Iron species. 2.5

(D) Explain disproportionation reaction and comproportionation with one example each. 2.5

(E) Explain geometrical isomerism in square planar complexes. 2.5

(F) Explain co-ordination isomerism and ligand isomerism with example. 2.5

(Contd.)

(A) State Beer-Lambert's Law. Explain the method for estimation of Cu(II) as copper ammonia complex by colorimetry. Draw schematic diagram of single beam photoelectric colorimeter. 5

(B) Explain principle and technique of ascending paper chromatography. Calculate Rf values of Ni^{2+} and Co^{2+} if distance travelled by Ni^{2+} , Co^{2+} and solvent are 0.5 cm, 6.5 cm and 8.2 cm respectively. 5

OR

(C) Define :

(i) Top exchange capacity

(ii) Chromatography

(iii) Elution. 2.5

(D) Discuss deviations from Beer-Lambert's Law. 2.5

(E) Explain applications of ion exchange chromatography. 2.5

(F) Draw schematic diagram of single beam spectrophotometer. 2.5

(A) What are Phosphazenes ? Explain structure and bonding in $(\text{NPCl}_2)_3$. 5

(B) What is meant by hardness of water ? Give its types. Explain the method for determination of hardness of water. 5

OR

(C) Write a note on silicon oil. 2.5

(D) How does silicone react with

(i) LiAlH_4

(ii) RMgBr . 2.5

(E) Define COD of water. How is it analysed ? 2.5

(F) What is pH ? How pH of water is determined ? 2.5

5. Attempt any TEN of the following :

(1) Define co-ordination number.

(2) Write the type of hybridization involved in $[\text{Co}(\text{CN})_6]^{3-}$ and $[\text{Fe}(\text{CN})_6]^{4-}$.

(3) How many moles of AgCl will be precipitated in $\text{CoCl}_2 \cdot 6\text{NH}_3$ and $\text{CoCl}_2 \cdot 4\text{NH}_3$ on treatment with AgNO_3 ? <https://www.rtmnuonline.com>

(4) Draw structure of geometrical isomers of $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$ ion.

(5) What is Latimer diagram ?

(6) Draw structure of optical isomer exhibited by tetrahedral complex.

(7) Convert 10% transmittance into absorbance.

(8) Define adsorption chromatography.

(9) Give two applications of solvent extraction.

(10) Give any two applications of phosphazenes.

(11) Give IUPAC name of $(\text{CH}_3)_2\text{Si}(\text{OH})_2$. $1 \times 10 = 10$

(12) What is the unit of TDS ?

(Contd.)

Bachelor of Science (B.Sc.) Semester—II Examination
CHEMISTRY (Physical Chemistry) (CH-202)
Compulsory Paper—2

Time : Three Hours]

[Maximum Marks : 50

Note :— (1) All FIVE questions are compulsory and carry equal marks.
(2) Draw diagrams wherever necessary.

1. (a) Describe Carnot cycle. Derive an expression for efficiency of reversible heat engine working between temperature T_1 and T_2 . 5
(b) Derive Van't-Hoff reaction isotherm. 5

OR

- (c) Write note on thermodynamic scale of temperature. 2½
(d) Define 'Partial molar free energy'. Write the relation between ΔG and ΔA . 2½
(e) Calculate the entropy change when 2 moles of an ideal gas are allowed to expand from a volume of 1 litre to 10 litre at 300 K, isothermally and reversibly. 2½
(f) Explain the change in entropy in irreversible processes. 2½
2. (a) Draw and discuss the phase diagram of sulphur system. 5
(b) State and explain Nernst's Distribution law. In the distribution of benzoic acid between water and benzene, the following results were obtained :
- | | | | |
|--|-------------------|------|------|
| Concentration of benzoic acid in water (C_1) : | gdm ⁻³ | 1.50 | 1.95 |
| Concentration of benzoic acid in benzene (C_2) : | gdm ⁻³ | 24.2 | 41.2 |
- Show that benzoic acid exists as dimer in benzene. 5

OR

- (c) State and explain Raoult's law of ideal solutions. 2½
(d) Explain :
(i) Phase
(ii) Degree of freedom. 2½
(e) What is critical solution temperature ? Discuss the system with upper CST. 2½
(f) State Henry's law and give its limitations. 2½

3. (a) What is order of reaction ? For the reaction $2 \text{N}_2\text{O}_5 \rightarrow 4 \text{NO}_2 + \text{O}_2$ the rate is directly proportional to $[\text{N}_2\text{O}_5]$. At 45°C , 90% of the N_2O_5 reacts in 3600 second. Find the value of the rate constant k . 5

(b) What are assumptions of collision theory ? What modifications were suggested for this theory ? Give any two limitations of the theory. 5

OR

(c) Define half-life period. Describe half-life period method for the determination of order of reaction. 2½

(d) Explain the pseudo-unimolecular reactions with suitable example. 2½

(e) What is energy of activation of a chemical reaction ? How can it be calculated with the help of Arrhenius equation ? 2½

(f) A second order reaction is 25% complete in 10 minutes. Determine the time for 80% of the reaction to complete. 2½

4. (a) Discuss liquid drop model of nucleus. What are the evidences in its favour ? Give its limitations. 5

(b) Discuss the various methods used to control gaseous pollutants. 5

OR

(c) Calculate the binding energy per nucleon for ^{11}B nucleus, if its isotopic mass is 10.81 amu (Given : Mass of proton = 1.007277 amu, Mass of neutron = 1.008665 amu, Mass of electron = 0.00054862 amu). 2½

(d) What are the main causes of acid rain ? 2½

(e) Discuss the nuclear stability on the basis of average binding energy per nucleon and mass number. 2½

(f) What impacts will global warming have in the future ? 2½

5. Attempt any TEN questions :-

(i) Write Gibbs -- Helmholtz equation.

(ii) Give any two limitations of first law of thermodynamics.

(iii) Write down the relation between K_p and K_c .

(iv) Write the reduced phase rule equation.

(v) What is an ideal solution ?

(vi) Write one limitation of Nernst's Distribution law.

(vii) Define 'Zero order' reaction.

(viii) Write integrated form of second order reaction, when the concentrations of both reactants are different.

(ix) Define: Collision frequency.

(x) Give two medicinal applications of radioisotopes.

(xi) Give two examples of photochemical smog.

(xii) Give two examples of green house gases.

1×10=10

Bachelor of Science (B.Sc.) Semester—II Examination
CHEMISTRY (Organic Chemistry) (CH201)
Compulsory Paper—1

Time : Three Hours]

[Maximum Marks : 50

Note :—(1) All FIVE questions are compulsory and carry equal marks.
 (2) Draw diagrams and chemical equations wherever necessary.

1. (A) Explain the terms by giving suitable examples :—

5

- (i) Inductive effect and
- (ii) Hyperconjugation effect.

(B) What are reactive intermediates ? Discuss formation and stability of :

5

- (i) Carbanion
- (ii) Carbenes.

(C) Explain formation of methane molecule on the basis of hybridization.

2½

(D) Write a note on Hydrogen bonding with reference to alcohol.

2½

(E) Explain with suitable example :

- (i) Addition reaction and
- (ii) Substitution reaction.

2½

(F) Define the term Homolytic and Heterolytic bond fission with example.

2½

2. (A) Discuss :

- (i) E-Z system of nomenclature and
- (ii) Conformational analysis of Ethane.

5

(B) Define the terms with example :

- (i) Enantiomers and
- (ii) Diastereomers.

Give chemical method for resolution of racemic mixture.

5

OR

- (C) Discuss Geometrical isomerism exhibited by Fumaric and Maleic acid. 2½
- (D) Write a note on Walden Inversion. 2½
- (E) Discuss optical activity in Tartaric acid. 2½
- (F) Give sequence rule related to R-S system of nomenclature. 2½

3. (A) What are alkanes ? How is Ethane prepared by :

- (i) Wurtz reaction and
(ii) Kolbe's reaction ?

Explain the following reaction of alkanes :

- (i) Pyrolysis
(ii) Aromatization. 5

(B) State Markownikoff's rule. Give free radical mechanism of addition of HBr to propylene. 5

OR

- (C) Explain free radical mechanism of chlorination of methane. 2½
- (D) Explain axial and equatorial bonds in cyclohexane. 2½
- (E) How does ethylene react with :
(i) Ozone and
(ii) HIO_4 ? 2½
- (F) Discuss Ionic mechanism of addition of Br_2 to ethylene. 2½

4. (A) What are alkadienes ? How are they classified ? Give preparation of 1, 3-butadiene from :

- (i) 1, 4-Butanediol and
(ii) Acetylene. 5

(B) What is aromaticity ? Discuss structure of Benzene on the basis of :

- (i) Molecular orbital theory and
(ii) Resonance theory. 5

OR

- (C) Discuss mechanism of nitration of benzene. 2½
- (D) Explain acidic nature of acetylene. 2½
- (E) Define Huckel's rule. How does it explain aromaticity of cyclopentadienyl anion ? 2½

Bachelor of Science (B.Sc.) Semester-II Examination

CHEMISTRY (Organic Chemistry) (CH201)

Compulsory Paper — I

Time : Three Hours]

[Maximum Marks : 50

Note:— (1) All five questions are compulsory and carry equal marks.

(2) Write chemical equations and draw diagrams wherever necessary.

1. (A) What is hydrogen bonding ? Give its types. Explain effect of hydrogen bonding on boiling point and solubilities of compound. 5

(B) Explain the terms with suitable examples : 5

(i) Carbonium ion

(ii) Nucleophile

(iii) Carbene

(iv) Carboanion

OR

(C) Explain the formation of ethylene molecule on the basis of hybridization. 2½

(D) Classify the following as electrophiles and nucleophiles : 2½

(i) FeCl_3

(ii) H_2O

(iii) CH_3NH_2

(iv) OH^-

(v) BF_3

(E) What is 'no bond resonance' ? Explain with suitable example. 2½

(F) Comment on formation and stability of free radicals. 2½

2. (A) Explain the terms : 5

(i) Plane of symmetry

(ii) Axis of symmetry

(iii) Centre of symmetry

(iv) Molecular chirality

(B) What is conformation ? Discuss conformational analysis of n-butane with energy profile diagram. 5

OR

(C) Comment on D and L nomenclature with suitable example. 2½

(D) Write a note on asymmetric synthesis. 2½

(E) Discuss the geometrical isomerism in 2-Butene. 2½

(F) Write a note on Newman's projection and Sawhorse formulae of Ethane. 2½

3. (A) Discuss Baeyer's Strain Theory. How does it explain relative stability of cycloalkanes ? Write its limitations. 5

(B) (i) How will you prepare ethylene from : 5

(i) Ethyl alcohol, and

(ii) Ethyl bromide ?

(ii) What is the action of :

(i) Ozone followed by hydrolysis, and

(ii) HIO_4 on propylene ?

OR

(C) How is ethane prepared by : 2½

(i) Decarboxylation of carboxylic acid, and

(ii) Wurtz reaction ?

(D) Explain hydroboration of ethylene. 2½

(E) Explain ionic mechanism of addition of Br_2 to ethylene. 2½

(F) Write a note on composition and uses of L.P.G. 2½

4. (A) What is the action of : 5

(i) Bromine, and

(ii) HBr on 1,3-butadiene ?

Discuss Diels-Alder reaction.

(B) Explain mechanism of sulphonation of benzene. 5

Give the calorific value, composition and uses of CNG.

OR

- (C) Write a note on oxyacetylene flame. 2½
- (D) Explain aromaticity of : 2½
- (i) Cyclopentadienyl anion
- (ii) Cycloheptatrienylcation
- (E) What are dienes ? How are they classified ? 2½
- (F) What are lubricants ? Give their classification with suitable examples. 2½
- Attempt any ten of the following : 10×1=10

- (i) What is the geometry of sp hybridized carbon atom ?
- (ii) Write a reaction representing elimination reaction.
- (iii) What is the order of stability of primary, secondary and tertiary carbocation ?
- (iv) What do you mean by stereogenic centre ?
- (v) 1-bromoethane does not exhibit geometrical isomerism. Why ?
- (vi) Draw structural formulae of two optical isomers of lactic acid ?
- (vii) What is peroxide effect ?
- (viii) What is pyrolysis ?
- (ix) Draw axial and equatorial bonds of cyclohexane.
- (x) Define the term octane number.
- (xi) Name three possible isomers of disubstituted benzene.
- (xii) Draw molecular orbital diagram of acetylene.

M.Sc. Second Semester (Chemistry) (NEP) (C.B.C.S.)
Choose Any One Elective Paper-VII - MCH2T07 d) Instrumental Methods of Analysis

P. Pages : 2
Time : Three Hours



PRS/KS/24/10058
Max. Marks : 80

- Notes : 1. All questions are compulsory and carry equal marks.
2. Use of calculator is permitted.

1. a) Discuss the method of sampling of liquids, w.r.t. ground water and surface water. 6
b) Discuss about sub-Stoichiometric reactions. Give suitable example. 5
c) Explain the terms: 5
i) Acid digestion and fusion process
ii) Limit of quantification and limit of detection

OR

- d) What is sampling? Give the criteria for representative sample to be obtained from milk container. 6
e) 42.3 ml of 0.24N HCl was used for titrating sodium carbonate sample having weight of 0.3492 g. Calculate % Na_2CO_3 in sample. (At. wt. Na=23, C=12, O=16). 5
f) Explain the concept of 'limit of detection'. Discuss the effect of noise on detection limit. 5
2. a) Discuss physical and ionization interferences in AAS. How they can be removed? 6
b) Explain construction and working of 'electrodeless discharge lamp'. 5
c) Discuss 'Grotrian diagram' and its role in AAS. 5

OR

- d) Explain the terms: 6
i) Flame atomizers
ii) Beam modulation in AAS
e) Construct and explain premix burner and give its advantages. 5
f) Compare and discuss AAS with FES. Give four applications of AAS. 5
3. a) Explain principle of amperometric titrations and its types. 6
b) Derive an equation of polarographic wave. How half wave potential is determined? 5
c) Explain the terms: 5
i) Maxima suppressors
ii) Amperometric titration curve of Pb^{2+} with $\text{Cr}_2\text{O}_7^{2-}$.

OR

- d) Discuss residual current, diffusion current and limiting current in polarography. 6
- e) Discuss the terms:
 i) Role of nitrogen purging in polarography
 ii) Polarographic maxima 5
- f) Discuss applications of polarography in metal ion quantification and metal ions speciation. 5
4. a) Draw Jablonski diagram and discuss various molecular electronic transitions. 6
- b) Discuss instrumentation of turbidimetry. Write its two applications. 5
- c) Construct and discuss PAS instrumentation and write its advantages over absorption spectroscopy. 5

OR

- d) Explain the terms:
 i) Overvoltage
 ii) Fluorescence quenching 6
- e) Describe principle of 'phosphorescence'. Give its two applications. 5
- f) Discuss 'nephelometry'. Explain its instrumentation. 5
5. a) Describe in short 'Hazards in sampling'. Write two safety aspects of handling them. 4
- b) What is the role Monochromators and chopper in AAS? 4
- c) Write about Ilkovic equation and diffusion current constant. 4
- d) Give chemical and surface applications of PAS. 4

Bachelor of Science (B.Sc.) Semester-VI Examination
CHEMISTRY- CH-602 (Organic Chemistry) (New & Old)

Compulsory Paper —2

(New)

Time : Three Hours

[Maximum Marks : 50]

N.B.:— (1) All five questions are compulsory and carry equal marks.

(2) Write chemical equations and draw diagrams wherever necessary.

1. (A) Explain the significance of peak area in NMR spectroscopy with an example. An organic compound with molecular formula C_7H_8 gave the following data :

(i) Singlet, $\delta - 2.32$, 3H

(ii) Singlet, $\delta - 7.17$, 5H

Assign the structure of the compound and give reasons.

5

(B) Explain :

(i) Types of molecular vibration

(ii) Intensity

(iii) Position of IR bands in respect to IR Spectroscopy

5

OR

(C) Why is Tetramethyl Silane (TMS) used as reference compound in NMR spectroscopy ? 2½

(D) What is shielding and deshielding of proton in NMR spectroscopy ? 2½

(E) Write a note on finger print region in IR spectroscopy. 2½

(F) What is Hook's law ? Explain with examples. 2½

2. (A) Discuss reactive methylene group in Malonic ester, how will you synthesize :

(i) Succinic acid, and

(ii) Barbituric acid from malonic Ester ?

5

(B) Discuss the open chain structure of glucose. Give its limitations.

5

OR

(C) Explain Keto-enol tautomerism with reference to acetoacetic Ester. 2½

(D) Explain the term "Epimerisation" with suitable example. 2½

(E) How aldopentose is converted into aldohexose ? 2½

(F) How will you convert ethyl acetoacetate into :

- (i) Acetic acid, and
- (ii) Acetone ?

3. (A) What are proteins ? How are they classified on the basis of hydrolysis ? Discuss the secondary structure of protein. 5

(B) Write a note on "Hydrogenation of unsaturated oils"
Define :

- (i) Saponification value
- (ii) Iodine value
- (iii) Acid value

OR

(C) Explain :

- (i) Nucleosides 2½
- (ii) Nucleotides 2½

(D) What are detergents ? How are they differ from traditional soaps ? 2½

(E) Discuss the acid-base behaviours of Amino acids. 2½

(F) Explain cleansing action of soaps.

4. (A) Define synthetic dyes and give its classification. Give an account of electronic theory of colour and chemical constitution of dyes. 5

(B) Give the preparation and uses of :

- (i) Bakelite 5
- (ii) Nylon 66

OR

(C) Give synthesis and uses of Alizarin dye. 2½

(D) How will you prepare Dacron by condensation polymerisation ? 2½

(E) Write two principles of green chemistry with an example. 2½

(F) What are the need and goal of green chemistry ?

5. Attempt any ten of the following :

(i) Define the term "chemical shift".

(ii) Assign the structural formula for C_3H_6O which give only one NMR signal.

10×1=10

ITEM

- (i) Give the range of infrared region.
- (iv) What are enolates ?
- (v) Draw the structure of Lactose.
- (vi) What is the action of hydroxylamine on Glucose ?
- (vii) What are peptides ?
- (viii) Define "Isoelectric point".
- (ix) What is meant by chromophore ?
- (x) What is Natural Fats ?
- (xi) Define Green Chemistry.
- (xii) Give any two uses of Nylon-6.

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Bachelor of Science (B.Sc.) Semester-VI Examination
CHEMISTRY- CH-602 (Organic Chemistry) (New & Old)

Compulsory Paper —2

(New)

Time : Three Hours]

[Maximum Marks : 50

N.B.:— (1) All five questions are compulsory and carry equal marks.

(2) Write chemical equations and draw diagrams wherever necessary.

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Assign the structure of the compound and give reasons.

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(C) Why is Tetramethyl Silane (TMS) used as reference compound in NMR spectroscopy ? 2½

(D) What is shielding and deshielding of proton in NMR spectroscopy ? 2½

(E) Write a note on finger print region in IR spectroscopy. 2½

(F) What is Hook's law ? Explain with examples. 2½

2. (A) Discuss reactive methylene group in Malonic ester, how will you synthesize :

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(ii) Barbituric acid from malonic Ester ?

5

5

(B) Discuss the open chain structure of glucose. Give its limitations.

OR

(C) Explain Keto-enol tautomerism with reference to acetoacetic Ester.

2½

(D) Explain the term "Epimerisation" with suitable example.

2½

(E) How aldopentose is converted into aldohexose ?

2½

(F) How will you convert ethyl acetoacetate into :

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(B) Write a note on "Hydrogenation of unsaturated oils"
Define :

- (i) Saponification value
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- (iii) Acid value

OR

(C) Explain :

- (i) Nucleosides 2½
- (ii) Nucleotides 2½

(D) What are detergents ? How are they differ from traditional soaps ? 2½

(E) Discuss the acid-base behaviours of Amino acids. 2½

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OR

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(D) How will you prepare Dacron by condensation polymerisation ? 2½

(E) Write two principles of green chemistry with an example. 2½

(F) What are the need and goal of green chemistry ? 2½

5. Attempt any ten of the following : 10×1=10

(i) Define the term "chemical shift".

(ii) Assign the structural formula for C_3H_6O which give only one NMR signal.

- (iii) Give the range of infrared region.
- (iv) What are enolates ?
- (v) Draw the structure of Lactose.
- (vi) What is the action of hydroxylamine on Glucose ?
- (vii) What are peptides ?
- (viii) Define "Isoelectric point".
- (ix) What is meant by chromophore ?
- (x) What is Natural Fats ?
- (xi) Define Green Chemistry.
- (xii) Give any two uses of Nylon-6.

M. Sc. Second Semester (Chemistry) (C.B.C.S.) (Old)
CH 2T3 : Physical Chemistry Paper-VII Paper-III

P. Pages : 2
Time : Three Hours

PRS/KS/24/1537

Max. Marks : 80



- Notes : 1. All questions are compulsory and carry equal marks.
2. Use of calculator is permitted.

1. A) Which of the following operators are linear? 6
i) $\hat{a}\phi = \lambda\phi$
ii) $\hat{c}\phi = \phi^2$
- B) Show that if two operators A and B are Hermitian, then their product (A B) is also Hermitian if and only if A and B commute. 5
- C) Give the application of the Schrodinger wave equation to prove the Quantization of Rotational Energy for Rigid Rotor. 5

OR

- D) Show that the function $Ae^{-\beta x}$ is an eigenfunction of the operator $\frac{d^2}{dx^2}$. What is the eigenvalue? 6
- E) Explain the terms with suitable example: (i) Laplacian operator and (ii) Hamiltonian operator. 5
- F) Write the Schrodinger wave equation for hydrogen atom in terms of polar coordinates. Separate the resultant equation in three equations using the technique of separation of variables. 5
- A) Explain the physical significance of fugacity. How fugacity coefficient determined for a real gas? 6
- B) What do you mean by activity coefficient for non-ideal system? Derive an expression for mean activity coefficient of electrolyte solution. 5
- C) In light of coupled reaction, explain irreversible thermodynamics for biological systems. 5

OR

- D) Derive an expression for enthalpy of mixing and entropy of mixing for non-ideal mixtures. 6
- E) Calculate the ionic strength of a solution obtained by mixing aq. Solution of 50 mL 0.04 M $AlCl_3$; 50 mL of 0.04 M K_2SO_4 and 100 mL of 0.02 M urea at a given temperature. 5
- F) Explain Thermodynamic criteria of irreversibility. 5

3. A) What do you understand by packing factor in crystals? Show that the packing factor for bcc structure is $\sqrt{3}\pi/8$. 6
- B) Describe various symmetry elements in crystals. 5
- C) Derive Bragg's equation to determine the interplanar distance of solids. 5

OR

- D) Calculate the Miller indices of crystal planes which cut through the crystal axes at
 i) (a, b, c)
 ii) (6a, 3b, 3c) and
 iii) (2a, 3b, 3c) 6

- E) What is axis of symmetry. Why C_5 symmetry axis is absent in crystal symmetry? 5
- F) What are point defects? Derive thermodynamic equations for the formation of Schottky defects. 5
4. A) With the help of thermodynamic probability and Lagrange's undermined multipliers derive the expression for Maxwell-Boltzmann statistics. 6
- B) What is the most probable distribution? Explain its role in deriving various statistical thermodynamic laws. 5
- C) Describe Radiometric titration. 5

OR

- D) Derive an expression for most probable distribution of N-indistinguishable particles among various energy levels according to BE statistics. 6
- E) Explain the concept of Stirling Approximation. 5
- F) Give an account of Scintillation counter. 5
5. A) Explain Tunneling Effect. 4
- B) Calculate the fugacity of CO_2 at 2 atm. and 300°C for. CO_2 , $b = 0.04 \text{ litre mole}^{-1}$ and $a = 3.6 \text{ atm litre}^2\text{mol}^{-1}$. 4
- C) Explain non-stoichiometric defects. 4
- D) What is radioactive decay? Explain transient equilibrium. 4

P. Pages : 2
Time : Three Hours

M. Sc. Second Semester (Chemistry) (C. B. C. S.) (Old)
CH-2T1 : Inorganic Chemistry Paper-V Paper-I

PRS/KS/24/1535

Max. Marks : 80



- Notes : 1. All questions are compulsory and carry equal marks.
2. Use of calculator is permitted.

1. a) Discuss Electronic spectra of the octahedral complexes of d^2 and d^8 configuration on the basis of Orgel diagram. 6

b) Discuss high spin-low spin cross over phenomenon in complexes with suitable example. 5

c) What are T-S diagrams? How can T-S diagram be helpful in determining Racah Parameters? Explain. 5

OR

d) What is meant by L-S coupling? Using L-S coupling method, derive energy terms for free. 5

e) Explain how the magnetic data can be used to distinguish tetrahedral & octahedral Ni(II) complexes. 5

f) Explain correlation between the magnetic moment and structure in Tetrahalo cobalt (II) complexes. 5

2. a) Discuss the salient features of electron transfer reactions occurring through outer sphere mechanism. 6

b) Discuss effect of leaving group and solvent effect on the rates of substitution reaction in Pt (II) square planar complexes. 5

c) What is two electron transfer reaction? Explain. 5

OR

d) What is inner sphere electron transfer reaction? Explain its mechanism in details. 6

e) Discuss the π -bonding theory of trans effect with diagrammatic representation. 5

f) Explain the Complementary and Non-complementary two electron transfer reaction with Suitable example. 5

3. a) How does vibrational spectroscopy differentiate terminal and bridging carbonyl groups? Explain with suitable examples. 6

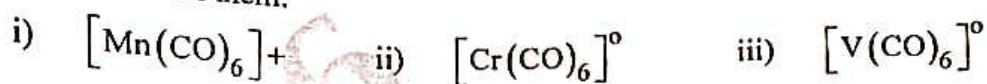
b) Discuss the classification of metal carbonyl clusters; with suitable examples. 5

c) What is EAN rule? Calculate EAN for metals in following metal carbonyls: 5

- i) $\text{Fe}(\text{CO})_5$ ii) $\text{Mn}_2(\text{CO})_{10}$ iii) $\text{Co}_2(\text{CO})_8$

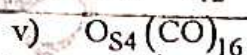
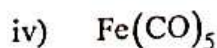
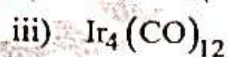
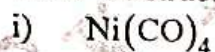
OR

d) Explain the strength of back π -bonding in following on the basis of position of IR frequencies in them. 6



e) What is metal carbonyl? Give any two general methods of preparation of metal carbonyls. 5

f) Draw the structures for following: 5



4. a) How are nitrosyl species bonded with metal in different ways in metal nitrosyls? Explain with suitable example. 6

b) Discuss structure and bonding in metal dinitrogen complexes. 5

c) What is Vaska's Compound? Give its any two preparation and properties. 5

OR

d) Discuss the structure and bonding in metal nitrosyls with suitable example. 6

e) What is Wilkinson Catalyst? Discuss its structure and important properties. 5

f) What are metal nitrosyls? How are they prepared? Give any two important properties of it. 5

5. a) What are charge transfer transitions? How do these differ from d-d transitions? Explain. 4

b) Write the mechanism of electron transfer from $[\text{Fe}(\text{CN})_6]_{4-}$ to $[\text{Fe}(\text{CN})_6]_{3-}$. 4

c) Discuss the Structure of $\text{Rh}_4(\text{CO})_{12}$ molecule. 4

d) How sulphide, sulphite and sulphate can be differentiated with the help of nitrosyl complexes? Explain. 4

M.Sc. Second Semester (Chemistry) (C.B.C.S. / NEP)
Paper-V - MCH2T05 - Organic Chemistry

P. Pages : 3

Time : Three Hours

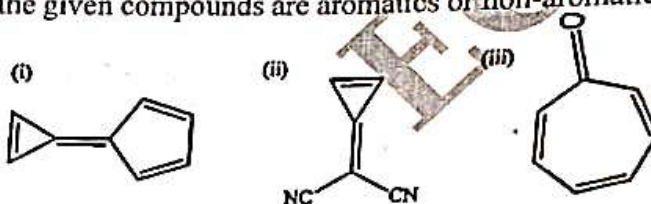
PRS/KS/24/10053

Max. Marks : 80



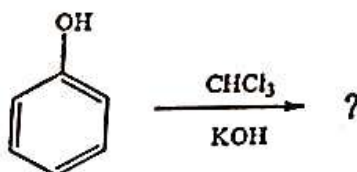
- Notes : 1. All questions are compulsory and carry equal marks.
 2. Use of calculator is permitted.

1. a) What is hyperconjugation and explain its application about the stability of Alkyl free radicals. 5
 b) Discuss the carbanion mechanism of Shapiro reaction by taking a suitable example. 5
 c) Classify whether the given compounds are aromatics or non-aromatics and why? 6

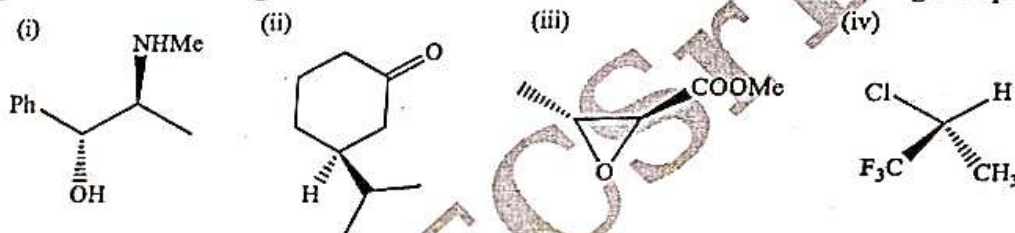


OR

- d) Predict the product with mechanism of the following reaction. Also give the name of the reaction. 5



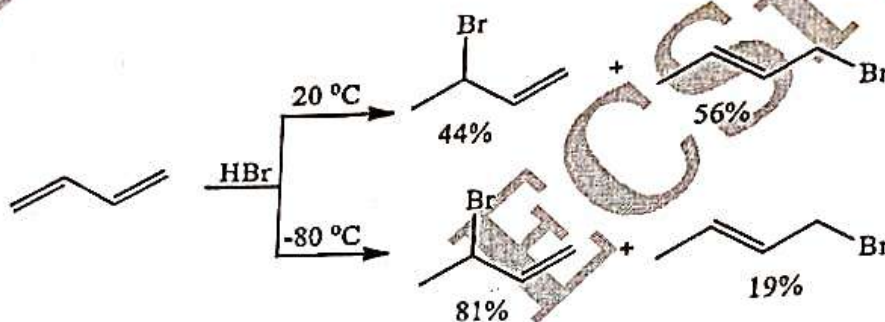
- e) Discuss the structure and reactivity of nitrenes. 5
 f) Discuss the following. 6
 i) Homo-aromaticity with suitable example.
 ii) Aromaticity in [18] - Annulene.
2. a) What is Asymmetric synthesis? Discuss it using suitable example. 5
 b) What are spiranes? Discuss the optical activity of spiranes with suitable examples. 5
 c) Assign the absolute configuration R or S to each chiral centre in the following compounds: 6



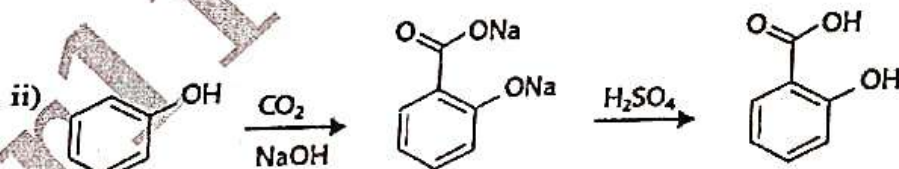
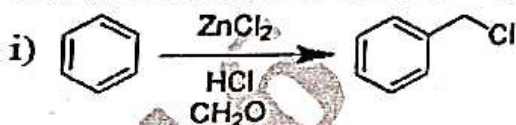
OR

- d) Discuss the enantiotopic and distereotopic ligands with suitable examples.
- e) Explain why trans-fused cyclohexane rings are more stable than cis-fused cyclohexane rings.
- f) Write a brief account of :
 i) Meso compounds
 ii) Chirality due to helical shape.

3. a) Discuss the concept of thermodynamic and kinetic control with respect to following reaction.



- b) Write a note on:
 i) Hammond postulate
 ii) Taft equation
- c) Give the mechanism of the following transformations:



OR

- d) What are the different methods for determining the reaction mechanism? Discuss isotopic labelling in detail.
- e) Discuss the Pechman reaction and give its mechanism.
- f) Explain the following:
 i) Significance of substitution constant.
 ii) The o/p ratio
4. a) Discuss the aromatic nucleophilic substitution reaction via benzyne. Give the evidence in support of benzyne mechanism.
- b) What is neighbouring group participation? Explain the halogens as neighbouring group with suitable example.

Explain:

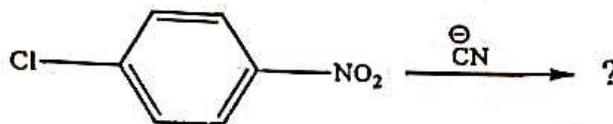
- i) SET mechanism
- ii) Ambient nucleophiles.

6

OR

- d) Predict the product of the following reaction. Give its mechanism and also write the name of the reaction.

5



- e) Discuss effect of substrate and leaving group in aromatic nucleophilic substitution $\text{S}_{\text{N}}\text{Ar}$ reaction.

5

- f) Discuss the following:

6

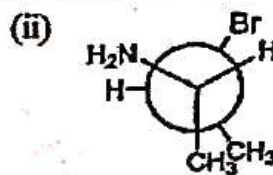
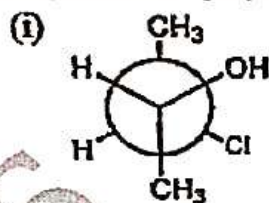
- i) $\text{S}_{\text{N}}\text{i}$ mechanisms.
- ii) Nucleophilic substitution at vinylic carbon atoms.

5. a) Discuss the energy levels in benzene with the help of Frost Circles.

4

- b) Convert the following Newman projections into Fisher projections.

4



- c) Discuss the reaction co-ordinate diagram for a two-step reaction.

4

- d) Write a note on following (no mechanism)

4

- i) Mitsunobu reaction.
- ii) Smiles rearrangement.

Bachelor of Science (B.Sc.) Semester-IV Examination
CHEMISTRY (PHYSICAL CHEMISTRY) (CH402) (New & Old)

Compulsory Paper—II

(Old)

Time : Three Hours]

[Maximum Marks : 50

Note :— (1) All five questions are compulsory and carry equal marks.

(2) Write chemical equation and draw diagram wherever necessary.

1. (A) What is 'Unit Cell'? Draw unit cell of NaCl. Show that unit cell of NaCl is made up of four molecules of NaCl. 5

(B) State and explain the laws of crystallography. 5

OR

(C) Derive Bragg's equation for diffraction of X-rays. 2½

(D) Draw 110 plane of BCC. Calculate the interplanar distance between successive 110 planes of BCC. 2½

(E) The diffraction of X-rays of wavelength 3.0×10^{-10} m gives first order reflection at 27° . Calculate the interplanar distance. 2½

(F) Explain powder method of structure determination of crystal. 2½

2. (A) Discuss Debye-Huckel theory of conductance of strong electrolyte. 5

(B) How the solubility of BaSO_4 is determined by conductance measurement. Calculate the dissociation constant of acetic acid if specific conductance of 10^{-3} M acetic acid is $4.95 \times 10^{-5} \text{ Scm}^{-1}$ and equivalent conductance at infinite dilution is $390.7 \text{ Scm}^2 \text{ mol}^{-1}$. 5

OR

(C) Discuss conductometric titration of HCl with NaOH. 2½

(D) Explain the variation of equivalent conductivity of weak electrolyte with dilution. 2½

(E) What is transport number? If transport number of Ag^+ in AgNO_3 is 0.6, what is transport number of NO_3^- ion? 2½

(F) Define specific conductance and equivalent conductance of electrolyte. 2½

3. (A) What is rotational spectroscopy? What types of molecules exhibit rotational spectra?

The rotational spectrum of CO molecule shows a series of equidistant lines spaced by 384.235 m^{-1} . Calculate the bond length of CO bond.

(Atomic mass of C = 12 amu, O = 16 amu, $h = 6.626 \times 10^{-34} \text{ JS}$) 5

(B) What is vibrational spectroscopy? What types of molecules exhibit vibrational spectra? Calculate the force constant of HCl bond if fundamental vibrational frequency is $8.667 \times 10^{13} \text{ sec}^{-1}$ and reduced mass is $1.6277 \times 10^{-27} \text{ kg}$. 5

OR

- (C) Which of the following give pure rotational spectra : $H_2(g)$, $CO(g)$, $HCl(g)$, $NH_4Cl(s)$. 2½
- (D) Calculate number of modes of vibration in CO_2 . 2½
- (E) Derive an expression for the wave number of rotational lines in a rotational spectrum. 2½
- (F) Draw energy level diagram of harmonic and anharmonic oscillators. 2½
4. (A) State Heisenberg's Uncertainty principle.
A cricket ball weighing 100g is to be located within 0.1 \AA . What is the uncertainty in its velocity? 5
- (B) State and explain postulates of quantum mechanics. 5

OR

- (C) Derive de-Broglie relation for electron wave. 2½
- (D) What is photoelectric effect ? How classical mechanics failed to explain photoelectric effect ? 2½
- (E) Find the degeneracy of state of a particle in three dimensional box having energy $11h^2/8ma^2$. 2½
- (F) Define orthogonal and normalized wave function. 2½
5. Attempt any ten questions of the following : 10
- (1) A crystal plane cuts X-axis at unit distance and parallel Y and Z-axis. Calculate Miller indices.
- (2) Draw the unit cell of $CsCl$.
- (3) Draw 100, 110 and 111 plane of SCC .
- (4) Define cell constant and give its SI unit.
- (5) Why DC current is not used in electrolytic conductance measurement ?
- (6) Plot a graph of measured conductance Vs Volume of alkali added in the conductometric titration of weak acid and strong base.
- (7) Write the selection rule for pure rotational spectroscopy in terms of rotational quantum No.
- (8) What is a non-rigid rotor ?
- (9) Define normal mode of vibration.
- (10) Define threshold frequency.
- (11) Explain the significance of ψ^2 .
- (12) Write the Schrodinger equation for particle in one-dimensional box.

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Bachelor of Science (B.Sc.) Semester-VI Examination
CHEMISTRY- CH-602 ORGANIC CHEMISTRY (New & Old)

Compulsory Paper —2
(Old)

Time : Three Hours]

[Maximum Marks : 50

N.B.:— (1) All five questions are compulsory and carry equal marks.

(2) Write chemical equations and draw diagrams wherever necessary.

1. (A) Discuss the principle of NMR spectroscopy. How many signals would you expect from the following :

(i) Toulene

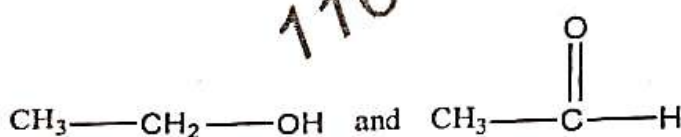
5

(ii) Acetyl acetone

(iii) 1, 2 – dibromoethane

(B) Explain equivalent and non-equivalent proton with suitable examples in NMR spectroscopy. How will you distinguish between the following pair of compounds by NMR spectroscopy ?

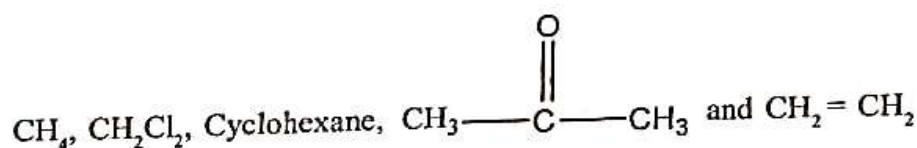
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OR

(C) With reference to NMR spectroscopy, explain : Shielding and Deshielding of protons. 2½

(D) The following compounds all show single peak in their ¹H NMR spectra. List of them in order of the increasing chemical shift : 2½



(E) Why Tetra Methyl Silane (TMS) used as a reference compound in NMR spectroscopy ? 2½

(F) How many NMR signals obtained in following compounds ? 2½

(i) Ethyl bromide

(ii) Ethyl acetate

d)

2. (A) What are reactive methylene compounds ? Starting from malonic ester, how will you prepare

(i) Succinic acid

(ii) Adipic acid

(iii) Crofonic acid

(B) Discuss Haworth methylation method for determination of ring size of glucose.

OR

(C) Discuss Claisen condensation reaction. Give its mechanism.

(D) How will you prove ethyl acetoacetate (acetoacetic ester) is an equilibrium mixture of two isomeric forms ?

(E) What happens when glucose is treated with :

(i) Hydroxylamine

(ii) Phenyl hydrazine in excess

(F) Prove that sucrose is an α -glucoside and β -fructoside. Draw its structure.

3. (A) What are proteins ? How are they classified on the basis of its chemical composition ? Discuss the secondary structure of protein ?

(B) What are detergents ? How do they differ from soaps ? Explain the cleansing action of soap.

OR

(C) Write a note on denaturation of proteins. Give two important effects of denaturation.

(D) Explain the double helix structure of DNA.

(E) Explain hydrogenation reaction in oil. Illustrate the answer with suitable chemical reaction.

(F) Explain the term :

(i) Saponification value

(ii) Iodine value used in the analysis of fats and oils.

4. (A) Define synthetic dyes and give its classification. Give an account of electronic theory of colour and chemical constitution of dyes.

(B) What is addition and condensation polymerisation ? Discuss free radical mechanism of chain growth polymerisation.

OR

- (C) Give the method of preparation and uses of Congo-red.
 (D) Write a synthesis and uses of Bakelite.
 (E) Give the preparation and uses of phenobarbitone.
 (F) Give the structure and uses of Dettol.

2½

2½

2½

2½

Attempt any ten of the following :

10×1=10

- (i) Define Coupling Constant 'J'.
 (ii) How many NMR signals would you expect from Acetophenone ?
 (iii) What is shielding and deshielding of proton in NMR spectroscopy ?
 (iv) What are enolate ?
 (v) How is acetoacetic ester (Ethyl acetoacetate) is prepared ?
 (vi) What are reducing and non-reducing sugars ?
 (vii) What is meant by rancidification ?
 (viii) What are nucleotides ?
 (ix) Write a note on Isoelectric point.
 (x) What is Auxochrome ?
 (xi) Write the name of monomers used in synthesis of polyester.
 (xii) Give the preparation and use of Aspirin.

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M.Sc. First Semester (Chemistry) (CBCS NEP)
MCH1T01 Paper-I : Inorganic Chemistry

PRS/KS/24/10045

Max. Marks : 80

Pages : 2
Time : Three Hours



- Notes : 1. All questions are compulsory and carry equal marks.
2. Use of calculator is permitted.

- a) What are Orgel diagrams? Discuss their utility. Draw energy level Orgel diagram for d^2 system. 6
- b) Discuss spin orbit (L-S) coupling scheme. Find out ground state term for octahedral complexes with: 5
- i) d^3 ii) d^6 and
- iii) d^9 configuration.
- c) Draw M.O. diagram for octahedral complex. Explain the formation of $[\text{CoF}_6]^{3-}$ complex on the basis of MOT. 5

OR

- d) Discuss Tanabe – Sugano diagrams of octahedral complexes with d^8 configuration. 6
- e) What is charge transfer spectra? Explain LMCT spectra with suitable example. 5
- f) Absorption spectrum of $[\text{CrF}_6]^{3-}$ ion gives three dimensional bands at 14900, 22700 and 34400 cm^{-1} . Calculate the Dq and β value from data. 5
- (Given B free ion = 918 cm^{-1})
- a) What are Metallocarborane? Discuss the method of preparations of Metallocarboranes. 6
- b) Discuss the structure of $[\text{Re}_2\text{Cl}_8]^{2-}$. 5
- c) Explain the structure and bonding in Decaborane – 14. 5

OR

- d) What are metal alkoxide Clusters? How are they classified? Give suitable examples. 6
- e) What is metal – metal bond? Discuss different types of bonds in metal clusters. Give an example of acetate cluster. 5
- f) Derive the STYX number of B_5H_9 and B_5H_{11} compound and draw the structure of each compound. 5

P.T.O.

3. a) Acid hydrolysis proceeds through dissociative mechanism. Explain it on the basis of experimental evidences.
- b) What are the factors affecting the stability of complexes? Discuss the following factors:
 i) Nature of metal ion and
 ii) Nature of ligands.
- c) Describe the mole ratio method for the determination of stability constant of metal complexes.

OR

- d) What is SN^1CB mechanism? Explain the mechanism of base hydrolysis of $[Co(en)_2NH_3Cl]^{2+}$ complex.
- e) What do you mean by kinetic stability of complexes? Discuss with suitable examples the inertness and lability of complexes.
- f) Describe the Job's method for determination of stability constant of complexes.
4. a) How will you differentiate terminal, doubly and triply bridged CO ligands in metal carbonyls? Explain it on the basis of vibrational spectra with C-O stretching frequency by citing suitable examples.
- b) What is EAN concept? Calculate EAN in the following:
 i) $Cr(CO)_6$
 ii) $Mn_2(CO)_{10}$
 iii) $Fe(CO)_5$
 iv) $Co_2(CO)_8$ and
 v) $Fe_2(CO)_9$
- c) Discuss linear geometry versus bent geometry of Nitrosyl ligand considering hybridization of nitrogen of Nitrosyl.

OR

- d) Discuss the structure and bonding of Dinitrogen complexes.
- e) Discuss the structure and bonding in $Fe_2(CO)_9$.
- f) Explain the chemistry of brown ring test with special reference to the bonding aspects of nitrosyl species.
5. a) Explain Spin and Laporte selection rule with suitable examples.
- b) Discuss the structure and bonding in diborane.
- c) Explain the concept of reaction without metal – ligand breaking.
- d) Draw the structure of:
 i) $Co_2(CO)_8$
 ii) $Fe_3(CO)_{12}$
 iii) $Os_4(CO)_{14}$

M.Sc. First Semester (Chemistry) (C.B.C.S.)
Paper-I CH 1T1 : Inorganic Chemistry

PRS/KS/24/1531

Max. Marks : 80

P. Pages : 2
Time : Three Hours



- Notes : 1. All questions are compulsory and carry equal marks.
2. Use of Calculator is permitted.

1. a) Describe VSEPR theory giving an illustrative account of various spectrochemical rules. Explain why BF_3 is trigonal planar while ClF_3 is T-shaped. 6
b) Why square planar complexes have more crystal field splitting energy than octahedral? Explain in detail. 5
c) Explain Jahn-Teller Theorem and condition of slight and strong distortion. 5

OR

- d) Explain the following in terms of VSEPR theory 6
i) Bond angle of PF_3 is greater than PH_3
ii) Lone pair tend to occupy trans rather than C is position in octahedral structure
e) Explain molecular orbital diagram for $[\text{CoF}_6]^{3-}$ molecule as an example of octahedral complex, predict its magnetic behaviour. 5
f) Discuss the limitation of CFT with respect to: 5
i) Spectrochemical series
ii) Nephelauxetic effect and
iii) d-d transition
a) What do you understand by stepwise and overall stability constant? How are they related to each other. 6
b) What do you mean by Anation reaction? Explain its mechanism giving suitable example. 5
c) Acid hydrolysis proceeds through dissociative mechanism. Explain it on the basis of experimental evidences. 5

OR

- d) Discuss various factor affecting the rate of reaction of base hydrolysis. 6
e) What is chelate effect? Why chelates are more stable than simple complexes? Explain it on the basis of thermodynamic parameter. 5

- f) Explain giving reason that the rate of acid hydrolysis of C is $[\text{Co(en)}_2\text{OHCl}]^+$ is faster than C is $[\text{Co(en)}_2\text{NH}_3\text{Cl}]^{2+}$.
3. a) Discuss structure and bonding in Decaborane-14.
- b) What is meant by dicarbollide anion? How are metallocarborane of Fe(II) and Fe(III) obtained from it?
- c) What is STYX number? Sketch the possible topological structure of following in terms of STYX number
- | | |
|--------------------------------|-------------------------------|
| i) B_2H_6 | ii) B_6H_{10} |
| iii) B_4H_{10} | iv) B_5H_{11} |
- OR
- d) Sketch the polyhedral structure of following molecule
- | | |
|--|---|
| i) nido - B_5H_9 | ii) closo - 1, 5 - $\text{C}_2\text{B}_3\text{H}_5$ |
| iii) closo - 1, 2 $\text{C}_2\text{B}_{10}\text{H}_{12}$ | iv) nido - 2 - $\text{C}_2\text{B}_5\text{H}_9$ |
- e) What are different types of bond present in boranes? Explain the formation of banana bond in diborane.
- f) What are metallocarboranes? How are they prepared? Describe any one method of its preparation.

4. a) Discuss the structure of $\text{Re}_2\text{Cl}_8^{2-}$.
- b) Explain the structure and bonding in tetranuclear metal clusters.
- c) What do you mean by poly acid? Explain Heteropoly acid with their structural aspect.

OR

- d) What are ISO and Heteropoly acid? Describe how isopoly acid of Mo & W are prepared. Discuss in brief an account of their structure.
- e) What are metal cluster? Give the classification of metal halide clusters with suitable examples.
- f) Give a detailed account on Keggin's theory used to explain structure of heteropoly acid.
5. a) Write limitations of CFT.
- b) Discuss the mechanism of Acid hydrolysis of octahedral complex proceeds through intermediate.
- c) How is tetraborane-10 prepared in Hot-Cold reactor? Explain.
- d) Give preparation of Isopoly acid of molybdenum.

**Bachelor of Science (B.Sc.) Semester—IV Examination
CHEMISTRY (Inorganic Chemistry) (CH401) (New and Old)**

Compulsory Paper—I

(New)

[Maximum Marks : 50]

Time : Three Hours]

B. :— (1) All five questions are compulsory and carry equal marks.

(2) Write equations and draw diagram wherever necessary.

(A) What are the postulates of valence bond theory of complexes ? Explain inner and outer orbital complexes with suitable examples. 5

(B) What are chelates ? Why chelates are more stable than complexes ? Discuss classification of chelate with bidentate ligand. 5

OR

(C) How do the following complexes differ from each other using Werner's theory ? 2½

(i) $\text{CoCl}_3 \cdot 5\text{NH}_3$

(ii) $\text{CoCl}_3 \cdot 3\text{NH}_3$

(D) Define EAN. Calculate EAN in the following complexes : 2½

(i) $[\text{Fe}(\text{CN})_6]^{2+}$

(ii) $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$ $[\text{Cu}(\text{NH}_3)_4]^{2+}$

(E) Give applications of chelate in chemical analysis. 2½

(F) Explain the terms with examples : 2½

(i) Coordination Number

(ii) Complex ion

(iii) Ligand

(A) Define isomerism. Discuss any four structural isomerisms exhibited by six coordinated complexes. 5

(B) What are frost diagrams ? Draw and explain frost diagram of nitrogen under standard state (PH = 0) indicating positions of N_2 , N_2O , NO , HNO_2 , N_2O_4 and HNO_3 . 5

OR

(C) Discuss Geometrical isomerism in complexes with coordination number 4. 2½

(D) Draw and discuss Pourbaix diagram of Iron. 2½

(E) Explain the term disproportionation with suitable example. 2½

(F) Discuss optical isomerism in octahedral complexes. 2½

(A) State and derive Beer-Lambert's law. A cell of thickness 1.5 cm contain $9.0 \times 10^{-4} \text{ ML}^{-1}$ solution of a salt. If the transmitted light is 30% of incident light of wavelength 490 nm, calculate the absorbance and molar extinction coefficient. 5

(B) Describe the principle and technique used in ascending paper chromatography. Give its any two applications. 5

OR

(Contd.)

- (C) Draw well labelled diagram of single beam spectrophotometer. 2½
- (D) Discuss application of spectrophotometry in estimation of copper as copper ammonia complex. 2½
- (E) Define ion exchange capacity. How will you determine ion exchange capacity of cation exchanger ? 2½
- (F) What is solvent extraction ? Give factors affecting solvent extraction. 2½
- (A) What are silicones ? How will you prepare straight chain and cross-linked silicones ? 5
- (B) Discuss physical quality parameters of water. 5

OR

- (C) What happens when $(\text{NPCl}_2)_3$ reacts with 2½
- (i) C_6H_6
- (ii) Water.
- (D) (i) Give any one method for preparation of $(\text{NPCl}_2)_3$. 2½
- (ii) Mention any three applications of phosphonitrilic trihalide polymer.
- (E) What do you mean by COD. ? How it is determined in water ? 2½
- (F) How temporary and total hardness is determined in water ? 2½

Attempt any ten of the following :

- (i) Give any one example of ambident ligand.
- (ii) Write IUPAC name of $[\text{Co}(\text{en})(\text{NH}_3)_2\text{Cl}_2]^+$.
- (iii) Define Double salt.
- (iv) Why are optical isomerism very rare in square planer complexes ?
- (v) Draw Latimer diagram of chlorine indicating conversion of ClO_2 to Cl_2 .
- (vi) Write Nernst equation.
- (vii) Define λ_{max} .
- (viii) What do you mean by chromatogram ?
- (ix) In paper chromatography Ni^{2+} and solvent travels 6.2 cm and 11.7 cm respectively. Calculate the R_f value of Ni^{2+} .
- (x) What is RTV and HTV ?
- (xi) What do you understand by island of π character ?
- (xii) Define TDS in water. 1×10=10

Bachelor of Science (B.Sc.) Semester—IV Examination
CHEMISTRY (Inorganic Chemistry) (CH401) (New and Old)

Compulsory Paper—I

(Old)

[Maximum Marks : 50]

Time : Three Hours]

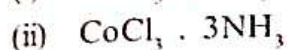
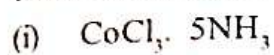
3. :— (1) All five questions are compulsory and carry equal marks.

(2) Write equations and draw diagram wherever necessary.

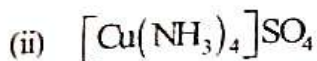
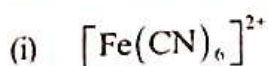
- (A) What are the postulates of valence bond theory of complexes ? Explain inner and outer orbital complexes with suitable examples. 5
- (B) What are chelates ? Why chelates are more stable than complexes ? Discuss classification of chelate with bidentate ligand. 5

OR

- (C) How do the following complexes differ from each other using Werner's theory ? 2½



- (D) Define EAN. Calculate EAN in the following complexes : 2½



- (E) Give applications of chelate in chemical analysis. 2½

- (F) Explain the terms with examples :

(i) Coordination Number

(ii) Complex ion

(iii) Ligand

- (A) Define isomerism. Discuss any four structural isomerisms exhibited by six coordinated complexes. 5

- (B) What are frost diagrams ? Draw and explain frost diagram of nitrogen under standard state (PH = 0) indicating positions of N_2 , N_2O , NO , HNO_2 , N_2O_4 and HNO_3 . 5

OR

- (C) Discuss Geometrical isomerism in complexes with coordination number 4. 2½

- (D) Draw and discuss Pourbaix diagram of Iron. 2½

- (E) Explain the term disproportionation with suitable example. 2½

- (F) Discuss optical isomerism in octahedral complexes.

- (A) State and derive Beer-Lambert's law. A cell of thickness 1.5 cm contains $9.0 \times 10^{-4} \text{ ML}^{-1}$ solution of a salt. If the transmitted light is 30% of incident light of wavelength 490 nm, calculate the absorbance and molar extinction coefficient. 5

- (B) Describe the principle and technique used in ascending paper chromatography. Give its any two applications. 5

OR

(Contd.)

- (C) Draw well labelled diagram of single beam spectrophotometer. 2½
- (D) Discuss application of spectrophotometry in estimation of copper as copper ammonia complex. 2½
- (E) Define ion exchange capacity. How will you determine ion exchange capacity of cation exchanger ? 2½
- (F) What is solvent extraction ? Give factors affecting solvent extraction. 2½
- (A) What are silicones ? How will you prepare straight chain and cross-linked silicones ? 5
- (B) What are phosphazenes ? Discuss in detail the structure of $[\text{NPCl}_2]_3$. 5

OR

- (C) Write a note on silicon elastomer. 2½
- (D) What are silicon oils ? Give any three applications of silicon oil. 2½
- (E) What happens when $(\text{NPCl}_2)_3$ react with : 2½
- (i) C_6H_6
- (ii) Water ?
- (F) (i) Give any one method for preparation of $(\text{NPCl}_2)_3$. 2½
- (ii) Give any three applications of phosphonitrilic halide polymer.

Solve any ten of the following :

- (i) Give any one example of ambident ligand.
- (ii) Write IUPAC name of $[\text{Co}(\text{en})(\text{NH}_3)_2\text{Cl}_2]^+$.
- (iii) Define Double salt.
- (iv) Why is optical isomerism very rare in square planar complexes ?
- (v) Draw Latimer diagram of chlorine indicating conversion of ClO_2^- to Cl_2 .
- (vi) Write Nernst equation.
- (vii) Define λ_{max} .
- (viii) What do you mean by chromatogram ?
- (ix) In paper chromatography Ni^{2+} and solvent travels 6.2 cm and 11.7 cm respectively. Calculate the R_f value of Ni^{2+} .
- (x) What is RTV and HTV ?
- (xi) What do you understand by island of π character ? 1×10=10
- (xii) Draw structure of tetraphosphonitrilic chloride.

: 2

Three Hours



- Notes : 1. All questions are compulsory and carry equal marks.
2. Use of calculator is permitted.

What are Orgel diagrams? Discuss their utility. Draw energy level Orgel diagram for d^2 system. 6

Discuss spin orbit (L-S) coupling scheme. Find out ground state term for octahedral complexes with: 5

- i) d^3 ii) d^6 and
iii) d^9 configuration.

Draw M.O. diagram for octahedral complex. Explain the formation of $[\text{CoF}_6]^{3-}$ complex on the basis of MOT. 5

OR

Discuss Tanabe – Sugano diagrams of octahedral complexes with d^8 configuration. 6

What is charge transfer spectra? Explain LMCT spectra with suitable example. 5

Absorption spectrum of $[\text{CrF}_6]^{3-}$ ion gives three dimensional bands at 14900, 22700 and 34400 cm^{-1} . Calculate the Dq and β value from data. 5
(Given B free ion = 918 cm^{-1})

What are Metallocarborane? Discuss the method of preparations of Metallocarboranes. 6

Discuss the structure of $[\text{Re}_2\text{Cl}_8]^{2-}$. 5

Explain the structure and bonding in Decaborane – 14. 5

OR

What are metal alkoxide Clusters? How are they classified? Give suitable examples. 6

What is metal – metal bond? Discuss different types of bonds in metal clusters. Give an example of acetate cluster. 5

Derive the STYX number of B_5H_9 and B_5H_{11} compound and draw the structure of each compound. 5

3. a) Acid hydrolysis proceeds through dissociative mechanism. Explain it on the basis of experimental evidences.
- b) What are the factors affecting the stability of complexes? Discuss the following:
 i) Nature of metal ion and
 ii) Nature of ligands.
- c) Describe the mole ratio method for the determination of stability constant of metal complexes.

OR

- d) What is SN^1CB mechanism? Explain the mechanism of base hydrolysis of $[Co(en)_2NH_3Cl]^{2+}$ complex.
- e) What do you mean by kinetic stability of complexes? Discuss with suitable examples inertness and lability of complexes.
- f) Describe the Job's method for determination of stability constant of metal complexes.
4. a) How will you differentiate terminal, doubly and triply bridged CO ligands in metal carbonyls? Explain it on the basis of vibrational spectra with C-O stretching frequency by citing suitable examples.
- b) What is EAN concept? Calculate EAN in the following:
 i) $Cr(CO)_6$
 ii) $Mn_2(CO)_{10}$
 iii) $Fe(CO)_5$
 iv) $Co_2(CO)_8$ and
 v) $Fe_2(CO)_9$
- c) Discuss linear geometry versus bent geometry of Nitrosyl ligand considering hybridization of nitrogen of Nitrosyl.

OR

- d) Discuss the structure and bonding of Dinitrogen complexes.
- e) Discuss the structure and bonding in $Fe_2(CO)_9$.
- f) Explain the chemistry of brown ring test with special reference to the bonding in nitrosyl species.
5. a) Explain Spin and Laporte selection rule with suitable examples.
- b) Discuss the structure and bonding in diborane.
- c) Explain the concept of reaction without metal – ligand breaking.
- d) Draw the structure of:
 i) $Co_2(CO)_8$
 ii) $Fe_3(CO)_{12}$
 iii) $Os_4(CO)_{14}$
 iv) $Ni(CO)_4$

M.Sc. First Semester (Chemistry) (C.B.C.S.)
Paper-I CH 1T1 : Inorganic Chemistry

PRS/KS/24/1531

Max. Marks : 80

P. Pages : 2
Time : Three Hours



- Notes : 1. All questions are compulsory and carry equal marks.
2. Use of calculator is permitted.

1. a) Describe VSEPR theory giving an illustrative account of various spectrochemical rules. 6
Explain why BF_3 is trigonal planar while ClF_3 is T-shaped.
b) Why square planar complexes have more crystal field splitting energy than octahedral? 5
Explain in detail.
c) Explain Jahn-Teller Theorem and condition of slight and strong distortion. 5

OR

- d) Explain the following in terms of VSEPR theory 6
i) Bond angle of PF_3 is greater than PH_3
ii) Lone pair tend to occupy trans rather than C is position in octahedral structure
e) Explain molecular orbital diagram for $[\text{CoF}_6]^{3-}$ molecule as an example of octahedral 5
complex, predict its magnetic behaviour.
f) Discuss the limitation of CFT with respect to: 5
i) Spectrochemical series
ii) Nephelauxetic effect and
iii) d-d transition
a) What do you understand by stepwise and overall stability constant? How are they related 6
to each other.
b) What do you mean by Anation reaction? Explain its mechanism giving suitable 5
example.
c) Acid hydrolysis proceeds through dissociative mechanism. Explain it on the basis of 5
experimental evidences.

OR

- d) Discuss various factor affecting the rate of reaction of base hydrolysis. 6
e) What is chelate effect? Why chelates are more stable than simple complexes? Explain it 5
on the basis of thermodynamic parameter.

P.T.O.

3. a) Explain giving reason that the rate of acid hydrolysis of C is $[\text{Co(en)}_2\text{OHCl}]$ than C is $[\text{Co(en)}_2\text{NH}_3\text{Cl}]^{2+}$.
 b) Discuss structure and bonding in Decaborane-14.
 c) What is meant by dicarbollide anion? How are metallocarborane of Fe(II) and Fe obtained from it?
 d) What is STYX number? Sketch the possible topological structure of following
 of STYX number
 i) B_2H_6 ii) B_6H_{10}
 iii) B_4H_{10} iv) B_5H_{11}
 OR
 e) Sketch the polyhedral structure of following molecule
 i) nido- B_5H_9 ii) closo-1, 5- $\text{C}_2\text{B}_3\text{H}_5$
 iii) closo-1, 2- $\text{C}_2\text{B}_{10}\text{H}_{12}$ iv) nido-2- $\text{C}_2\text{B}_5\text{H}_9$
 f) What are different types of bond present in boranes? Explain the formation of bond in diborane.
 g) What are metallocarboranes? How are they prepared? Describe any one method of preparation.

4. a) Discuss the structure of $\text{Re}_2\text{Cl}_8^{2-}$.
 b) Explain the structure and bonding in tetranuclear metal clusters.
 c) What do you mean by poly acid? Explain Heteropoly acid with their structural formula.

OR

- d) What are ISO and Heteropoly acid? Describe how isopoly acid of Mo & W are prepared. Discuss in brief an account of their structure.
 e) What are metal cluster? Give the classification of metal halide clusters with suitable examples.
 f) Give a detailed account on Keggin's theory used to explain structure of heteropoly acids.
 5. a) Write limitations of CFT.
 b) Discuss the mechanism of Acid hydrolysis of octahedral complex proceeds through intermediate.
 c) How is tetraborane-10 prepared in Hot-Cold reactor? Explain.
 d) Give preparation of Isopoly acid of molybdenum.

Bachelor of Science (B.Sc.) Semester-IV Examination

CHEMISTRY (Physical Chemistry) (CII-402)

(New and Old)

Compulsory Paper-2

(New Course)

[Maximum Marks : 50]

Time : Three Hours]

B. :— (1) All the five questions are compulsory and carry equal marks.

(2) Use of calculator or log table is allowed.

(3) Draw diagram wherever necessary.

(A) Derive Bragg's Equation. A beam of X-rays of wavelength 0.071 nm is diffracted by (110) plane of rock salt with lattice constant, (a) of 0.23 nm. Find the glancing angle for the second order diffraction. 5

(B) Explain the three laws of Crystallography. 5

OR

(C) Explain Laue's Method for the determination of crystal structure. 2.5

(D) Differentiate between Crystalline and Amorphous solids. 2.5

(E) What are Bravais Lattices ? Explain the different types. 2.5

(F) A crystal plane has intercepted on the three axes of the crystal as $a/3$, $3b/4$ and $c/2$. What are the Miller indices of the face ? 2.5

(A) Explain the application of Kohlrausch's law in the determination of λ^∞ of weak base like NH_4OH . From the following equivalent conductance at infinite dilution, calculate λ^∞ for NH_4OH :

λ^∞ for $\text{Ba}(\text{OH})_2 = 288.8 \text{ ohm}^{-1} \text{ cm}^2 \text{ equivalent}^{-1}$

λ^∞ for $\text{BaCl}_2 = 120.3 \text{ ohm}^{-1} \text{ cm}^2 \text{ equivalent}^{-1}$

λ^∞ for $\text{NH}_4\text{Cl} = 129.8 \text{ ohm}^{-1} \text{ cm}^2 \text{ equivalent}^{-1}$. 5

(B) Discuss Arrhenius Theory of Electrolytic dissociation. What are its limitations ? 5

OR

(C) Explain the variation of Specific conductance and Equivalent conductance with dilution. 2.5

(D) Write a short note on Electrophoretic effect. 2.5

(E) Explain acid-base Conductometric titration by taking an example of strong acid versus strong base. 2.5

(F) The specific conductivity of N/50 solution of KCl at 298 K is 0.2765 Sm^{-1} . If the resistance of the same solution, placed in the cell is 200 ohms, what is the cell constant ? 2.5

(A) Derive the expression for wave number of pure rotational spectra of diatomic molecule. Also give the selection rules for pure rotational spectra. 5

(B) Explain P, Q and R branches of the Vibrational-Rotational Spectra. 5

OR

- (C) Calculate the force constant for the bond in HCl if the vibrational frequency and its reduced mass is 1.627×10^{-27} kg.
- (D) Draw the different vibrational modes of H_2O .
- (E) The far-infrared spectrum of HI consists of a series of equally spaced lines. What is the moment of inertia?
- (F) Which types of molecules give vibrational spectra? Explain with suitable examples.
4. (A) Explain how Classical mechanics fail to prove Photoelectric effect and how it is explained.
- (B) What are the applications of magnetic susceptibility measurements?

OR

- (C) What are the conditions of an acceptable wave function?
- (D) Which of the following functions are the Eigen functions of the operator $\frac{d}{dx}$? Eigen value.
- (a) $\sin 2x$
- (b) e^x
- (c) e^{ikx}
- (E) The bond length of H-I bond is 1.60 \AA and its dipole moment is 0.38 D . Calculate the ionic character of H-I bond.
- (F) Explain the method of determination of magnetic moment of a paramagnetic substance.
5. Solve any ten questions :
- Define space lattice.
 - What is the effect of temperature on conductance in case of metals and electrolytes?
 - Define Transport number of an ion.
 - Define the term degeneracy.
 - What is the effect of a force constant of a bond on vibrational frequency?
 - State Heisenberg Uncertainty Principle.
 - Why do molecules behave as a non-rigid rotor?
 - Draw the crystal structure of CsCl.
 - Write down two factors affecting degree of dissociation of a weak electrolyte.
 - What are black body radiations?
 - State Ostwald Dilution law.
 - Give the physical significance of ψ^2 .

Bachelor of Science (B.Sc.) Semester-IV Examination

CHEMISTRY (Physical Chemistry) (CII-402)

(New and Old)

Compulsory Paper-2

(New Course)

[Maximum Marks : 50]

Time : Three Hours]

B. :— (1) All the five questions are compulsory and carry equal marks.

(2) Use of calculator or log table is allowed.

(3) Draw diagram wherever necessary.

(A) Derive Bragg's Equation. A beam of X-rays of wavelength 0.071 nm is diffracted by (110) plane of rock salt with lattice constant, (a) of 0.23 nm. Find the glancing angle for the second order diffraction. 5

(B) Explain the three laws of Crystallography. 5

OR

(C) Explain Laue's Method for the determination of crystal structure. 2.5

(D) Differentiate between Crystalline and Amorphous solids. 2.5

(E) What are Bravais Lattices ? Explain the different types. 2.5

(F) A crystal plane has intercepted on the three axes of the crystal as $a/3$, $3b/4$ and $c/2$. What are the Miller indices of the face ? 2.5

(A) Explain the application of Kohlrausch's law in the determination of λ^∞ of weak base like NH_4OH . From the following equivalent conductance at infinite dilution, calculate λ^∞ for NH_4OH :

$$\lambda^\infty \text{ for } \text{Ba}(\text{OH})_2 = 288.8 \text{ ohm}^{-1} \text{ cm}^2 \text{ equivalent}^{-1}$$

$$\lambda^\infty \text{ for } \text{BaCl}_2 = 120.3 \text{ ohm}^{-1} \text{ cm}^2 \text{ equivalent}^{-1}$$

$$\lambda^\infty \text{ for } \text{NH}_4\text{Cl} = 129.8 \text{ ohm}^{-1} \text{ cm}^2 \text{ equivalent}^{-1}$$

(B) Discuss Arrhenius Theory of Electrolytic dissociation. What are its limitations ? 5

OR

(C) Explain the variation of Specific conductance and Equivalent conductance with dilution. 2.5

(D) Write a short note on Electrophoretic effect. 2.5

(E) Explain acid-base Conductometric titration by taking an example of strong acid versus strong base. 2.5

(F) The specific conductivity of N/50 solution of KCl at 298 K is 0.2765 Sm^{-1} . If the resistance of the same solution, placed in the cell is 200 ohms, what is the cell constant ? 2.5

(A) Derive the expression for wave number of pure rotational spectra of diatomic molecule. Also give the selection rules for pure rotational spectra. 5

(B) Explain P, Q and R branches of the Vibrational-Rotational Spectra. 5

OR

(Contd.)

- (C) Calculate the force constant for the bond in HCl if the vibrational frequency is 1.627×10^{-27} kg. and its reduced mass is 1.627×10^{-27} kg.
- (D) Draw the different vibrational modes of H_2O .
- (E) The far infrared spectrum of HI consists of a series of equally spaced lines with what is the moment of inertia?
- (F) Which types of molecules give vibrational spectra? Explain with suitable examples.
4. (A) Explain how Classical mechanics fail to prove Photoelectric effect and how Quantum explained it.
- (B) What are the applications of magnetic susceptibility measurements?

OR

- (C) What are the conditions of an acceptable wave function?
- (D) Which of the following functions are the Eigen functions of the operator d/dx ? Eigen value.
- (a) $\sin 2x$
- (b) e^x
- (c) e^{ikx}
- (E) The bond length of H-I bond is 1.60 \AA and its dipole moment is 0.38 D . Calculate character of H-I bond.
- (F) Explain the method of determination of magnetic moment of a paramagnetic substance.
5. Solve any ten questions:
- Define space lattice.
 - What is the effect of temperature on conductance in case of metals and electrolytic.
 - Define Transport number of an ion.
 - Define the term degeneracy.
 - What is the effect of a force constant of a bond on vibrational frequency of $S.H.O$.
 - State Heisenberg Uncertainty Principle.
 - Why do molecules behave as a non-rigid rotor?
 - Draw the crystal structure of $CsCl$.
 - Write down two factors affecting degree of dissociation of a weak electrolyte.
 - What are black body radiations?
 - State Ostwald Dilution law.
 - Give the physical significance of ψ^2 .

Bachelor of Science (B.Sc.) Semester-IV Examination
CHEMISTRY (Physical Chemistry) (CH-402)

(New and Old)

Compulsory Paper-2

(New Course)

[Maximum Marks : 50]

Time : Three Hours]

B. :— (1) All the five questions are compulsory and carry equal marks.

(2) Use of calculator or log table is allowed.

(3) Draw diagram wherever necessary.

(A) Derive Bragg's Equation. A beam of X-rays of wavelength 0.071 nm is diffracted by (110) plane of rock salt with lattice constant, (a) of 0.23 nm. Find the glancing angle for the second order diffraction. 5

(B) Explain the three laws of Crystallography. 5

OR

(C) Explain Laue's Method for the determination of crystal structure. 2.5

(D) Differentiate between Crystalline and Amorphous solids. 2.5

(E) What are Bravais Lattices ? Explain the different types. 2.5

(F) A crystal plane has intercepted on the three axes of the crystal as $a/3$, $3b/4$ and $c/2$. What are the Miller indices of the face ? 2.5

(A) Explain the application of Kohlrausch's law in the determination of λ^∞ of weak base like NH_4OH . From the following equivalent conductance at infinite dilution, calculate λ^∞ for NH_4OH :

λ^∞ for $\text{Ba}(\text{OH})_2 = 288.8 \text{ ohm}^{-1} \text{ cm}^2 \text{ equivalent}^{-1}$

λ^∞ for $\text{BaCl}_2 = 120.3 \text{ ohm}^{-1} \text{ cm}^2 \text{ equivalent}^{-1}$ 5

λ^∞ for $\text{NH}_4\text{Cl} = 129.8 \text{ ohm}^{-1} \text{ cm}^2 \text{ equivalent}^{-1}$. 5

(B) Discuss Arrhenius Theory of Electrolytic dissociation. What are its limitations ? 5

OR

(C) Explain the variation of Specific conductance and Equivalent conductance with dilution. 2.5

(D) Write a short note on Electrophoretic effect. 2.5

(E) Explain acid-base Conductometric titration by taking an example of strong acid versus strong base. 2.5

(F) The specific conductivity of N/50 solution of KCl at 298 K is 0.2765 Sm^{-1} . If the resistance of the same solution, placed in the cell is 200 ohms, what is the cell constant ? 2.5

(A) Derive the expression for wave number of pure rotational spectra of diatomic molecule. Also give the selection rules for pure rotational spectra. 5

(B) Explain P, Q and R branches of the Vibrational-Rotational Spectra. 5

OR

(Contd.)

- (C) Calculate the force constant for the bond in HCl if the vibrational frequency is $8 \times 10^{13} \text{ s}^{-1}$ and its reduced mass is $1.627 \times 10^{-27} \text{ kg}$.
- (D) Draw the different vibrational modes of H_2O .
- (E) The far infrared spectrum of HI consists of a series of equally spaced lines with $\Delta \nu = 12.8 \text{ cm}^{-1}$. What is the moment of inertia?
- (F) Which types of molecules give vibrational spectra? Explain with suitable example.
4. (A) Explain how Classical mechanics fail to prove Photoelectric effect and how Quantum mechanics explained it.
- (B) What are the applications of magnetic susceptibility measurements?

OR

- (C) What are the conditions of an acceptable wave function?
- (D) Which of the following functions are the Eigen functions of the operator d/dx ? Also give the Eigen value.
- (a) $\sin 2x$
- (b) e^x
- (c) e^{ikx}
- (E) The bond length of H-I bond is 1.60 \AA and its dipole moment is 0.38 D . Calculate the ionic character of H-I bond.
- (F) Explain the method of determination of magnetic moment of a paramagnetic substance.
5. Solve any ten questions :
- Define space lattice.
 - What is the effect of temperature on conductance in case of metals and electrolytic solutions?
 - Define Transport number of an ion.
 - Define the term degeneracy.
 - What is the effect of a force constant of a bond on vibrational frequency of S.H.O.
 - State Heisenberg Uncertainty Principle.
 - Why do molecules behave as a non-rigid rotor?
 - Draw the crystal structure of CsCl.
 - Write down two factors affecting degree of dissociation of a weak electrolyte.
 - What are black body radiations?
 - State Ostwald Dilution law.
 - Give the physical significance of ψ^2 .

PSM/KW/23/10046

M.Sc. Chemistry (Semester—I) (CBCS) New Education Policy (NEP) Examination

MCHHT02 : PHYSICAL CHEMISTRY

Paper—II

: Three Hours]

[Maximum Marks : 80

:—(1) All questions are compulsory and carry equal marks.

(2) Use of calculator is permitted.

(A) Write the condition for exactness. Determine whether the given differential equation is exact. $(\sin y - y \sin x)dx + (\cos x + x \cos y - y)dy = 0$. 6

(B) Show that the volume of an ideal gas is a homogenous function of zeroth degree in pressure and temperature. 5

(C) Prove the unattainability of absolute zero using Nernst Heat Theorem. 5

OR

(D) If pressure, volume and temperature of one mole of a gas are related as $\frac{P}{RT} + \frac{a}{V^2RT} = \frac{1}{V}$, show that :

(i) P is a state function

(ii) dP is an exact differential. 6

(E) Prove the following Maxwell relations :

(i) $\left(\frac{\partial T}{\partial V}\right)_S = -\left(\frac{\partial P}{\partial S}\right)_V$

$$H = E + PV$$
$$G = H - TS$$
$$H = E - TS$$

(ii) $\left(\frac{\partial V}{\partial T}\right)_P = -\left(\frac{\partial S}{\partial P}\right)_T$ 5

(F) Explain Residual entropy and its applications. 5

(A) Test whether the given functions are eigen function and also calculate the eigenvalue :

(i) Function = Ae^{-ax} Operator = $\frac{d^2}{dx^2}$

(ii) Function = $\cos ax \cos by \cos cz$ Operator = ∇^2 6

(B) Show that the operator $\frac{h}{2\pi i} \frac{d}{dx}$ for linear momentum is Hermitian. 5(C) For a particle in 3-dimensional box derive an expression for energy; also discuss the degeneracy of energy state $14h^2/8ma^2$. 5

OR

(D) Show that the function $\psi = e^{ik_x x + ik_y y + ik_z z}$ is an eigen function of the operator $\frac{h}{2\pi i} \nabla^2$ will be the eigenvalue ?

(E) Prove that position and momentum operator do not commute; also show that the commutator is $\frac{h}{2\pi i} \cdot nx^{n-1}$.

(F) For Hydrogen atom give the expression or Schrodinger equation in Polar coordinates. Separate the equation in Radial and Angular/Azimuthal Part and discuss its significance.

3. (A) Write BET equation. How can it be used to find the volume (V_m) of the gas adsorbed to form a unimolecular layer on the surface of the adsorbent ?

(B) Write notes on :

(i) Electro-kinetic phenomena

(ii) Micro-emulsion.

(C) Explain the sedimentation method for the determination of molecular weight of macromolecules.

OR

(D) What is the CMC, or Critical Micelle Concentration ? Which factors have an influence on CMC ?

(E) The following data were obtained on the adsorption of acetic acid on charcoal :

Acetic acid (mol dm ⁻³)	0.05	0.10	0.50	1.0	1.5
x (g)	0.01	0.06	0.12	0.16	0.19

Verify that the data obey the Freundlich isotherm, $x = kp^n$ where x is the mass adsorbed per unit mass of charcoal. Determine the constant k and n.

(F) Explain the Osmometric method for the determination of molecular weight of macromolecules.

4. (A) For a given reaction at temperature T, the velocity constant, k is expressed as $k = A \cdot e^{-27000/K}$. Given $R = 2 \text{ cal. mole}^{-1} \text{ K}^{-1}$, calculate the value of energy of activation. Comment on the results.

(B) Discuss in brief Eyring equation of rate constant for a bimolecular reaction.

(C) Discuss Bodeinstein steady state approximation in consecutive reactions.

OR

- (D) The rate constant for the decomposition of 5-hydroxymethyl furfural (5-HMF) at 120°C is 1.173 hr^{-1} and at 140°C is 4.86 hr^{-1} . What is the activation energy in kcal/mol and the frequency factor in sec^{-1} for the break-down of 5-HMF in this temperature range ? 6
- (E) How kinetics of unimolecular reactions can be explained by Lindemann theory ? 5
- (F) Write notes on :
- (i) Thermodynamic formulation of transition state theory. 5
 - (ii) Collision theory.
5. (A) State Caratheodory principle. Prove its equivalence with Kelvin Planck and Clausius statement of the second law of Thermodynamics.
- (B) What is quantum mechanical tunnelling ? Explain it with appropriate example.
- (C) Explain shape and structure of micelles.
- (D) Write note on RRKM theory. $4 \times 4 = 16$

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Bachelor of Science (B.Sc.) Semester—I Examination
(New)

CHEMISTRY
(Physical Chemistry)
Compulsory Paper—2

[Maximum Marks : 50]

Time : Three Hours]

- N.B. :-** (1) All the FIVE questions are compulsory and carry equal marks.
(2) Use of calculator or long table is allowed.
(3) Draw diagrams wherever necessary.

1. (A) What is Joule-Thomson Effect ? Show that in Joule-Thomson experiment, the change in enthalpy of an ideal gas is zero. 5

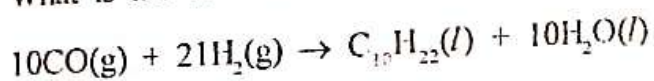
(B) State and explain Hess's law of constant heat summation. Calculate the heat of formation of acetic acid if its heat of combustion is 867 KJ mol^{-1} . The heats of formation of $\text{CO}_2 (\text{g})$ and $\text{H}_2\text{O} (\text{l})$ are $-393.5 \text{ KJ mol}^{-1}$ and $-285.9 \text{ KJ mol}^{-1}$ respectively. 5

OR

(C) Discuss Intrinsic and Extrinsic properties with examples. 2½

(D) What is first law of thermodynamics ? Give its mathematical equation and explain the terms involved in it. 2½

(E) For the reaction below, constant-pressure heat of reaction is $q_p = -2051 \text{ KJ/mol}$ at 25°C . What is the constant volume heat of reaction, q_v , at 25°C ?



$$R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}.$$

(F) Define C_p and C_v . Derive the relationship between them. 2½

2. (A) Write the Postulates of kinetic theory of gases. Deduce Boyle's law from kinetic gas equation. 5

(B) How van der Waal's equation explain the deviation of real gases from ideal gases at lower temperature and higher pressure ? 5

OR

(C) Discuss Maxwell-Boltzmann distribution of velocities. 2½

(D) Derive reduced equation of state and explain law of corresponding states. 2½

(Contd.)

(E) Calculate the root mean square velocity of sulphur dioxide molecules at 298K.

($R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$), Molar mass of $\text{SO}_2 = 64 \times 10^{-3} \text{ Kg}$. 2½

(F) Given that the van der Waal's constants for 1 gram molecule of carbon di-oxide are $a = 3.609 \times 10^6$ and $b = 42.75$ (volume in millilitres and pressure in atm.). Calculate V_c and P_c . 2½

(A) Explain :

(i) Dipole-Induced Dipole

(ii) Induced dipole-induced dipole, interactions. 5

(B) How relative viscosity of a liquid is determined by Ostwald viscometer ? Benzene takes 46 sec. to flow through an Ostwald's viscometer while water takes 57 sec at 25°C. Their respective densities are $0.8 \times 10^3 \text{ Kg m}^{-3}$ and $0.998 \times 10^3 \text{ kg m}^{-3}$. Calculate the coefficient of viscosity of Benzene. (Viscosity of water at 25°C is $1.008 \times 10^{-3} \text{ kg ms}^{-1}$). 1.01 × 10⁻³

OR

(C) Write a short note on Cholesteric liquid crystal. 2½

(D) The density of acetone at 20°C is 0.7910 g/ml. Calculate the surface tension of acetone, given that the parachor equivalents of C, H, O and double bonds are 7.2, 16.2, 20.0 and 23.2 respectively. 28.83 d/cm 2½

(E) Explain the effect of temperature on viscosity of liquid. Give CGS and SI unit of viscosity. 2½

(F) Write a short note on Thermography.

(A) Define catalysis. What are homogenous and heterogeneous catalyst ? Explain by giving example of each. Give some characteristics of catalyst. 5

(B) What are Lyophilic and Lyophobic colloids ? Differentiate between True solutions, Colloidal solutions and suspensions. 5

OR

(C) Derive Freundlich adsorption isotherm. 2½

(D) What are the applications of colloids ? 2½

(E) Differentiate between Physiosorption and Chemisorption. 2½

(F) Write a short note on Electrophoresis. 2½

(Contd.)

Attempt any TEN questions :—

- (i) Define Isolated system.
- (ii) Heat of neutralisation of weak acid is lower than heat of neutralisation of strong acid—why?
- (iii) Define average bond dissociation energy.
- (iv) Define Bry's temperature.
- (v) Real gases deviate from ideal nature at low temperature and higher pressure. Explain.
- (vi) Define Collision number.
- (vii) Define Refractive Index.
- (viii) Write any two applications of liquid crystal.
- (ix) Define coefficient of viscosity. Give its SI unit.
- (x) Define adsorption isotherm.
- (xi) What is emulsion ? Give its one example.
- (xii) Define catalytic promoter with example.

1×10

RTM NAGPUR UNIVERSITY EXAMINATION W-2022
KAMLA NEHRU MAHAVIDYALAYA NAGPUR

B.VOC SEM III

Retail Management/ Software Development/ Consumer Electronics
English and Communication Skill III

Time: 3 Hours

Max Marks: 70

1. All questions are compulsory.
2. All questions carry equal marks.

(14m)

EITHER:

Q1. A. Do as directed:

- 1) Please _____ the lights when you leave. (give phrasal verb).
- 2) Safe and _____. (give word pair).
- 3) Law and _____. (give word pair).
- 4) Kindle - _____. (give synonym).
- 5) Loyal - _____. (give synonym).
- 6) Afraid - _____. (give antonym).
- 7) Complex - _____. (give antonym).

OR:

B. Do as directed:

- 1) Please _____ your socks before you enter the room. (give phrasal verb).
- 2) Ups and _____. (give word pair).
- 3) Sick and _____. (give word pair).
- 4) Conventional - _____. (give synonym).
- 5) Worn-out - _____. (give synonym).
- 6) Artificial - _____. (give antonym).
- 7) Gloomy - _____. (give antonym).

(14m)

EITHER:

Q2. A. What is written communication? Why is it important?

B. What is the role of computer in our life?

OR:

C. What are the steps involved in written communication?

D. How to plan and write content on social media?

(14m)

EITHER:

Q3. A. Explain types of communication.

B. Explain briefly importance and scope of communication.

OR

C. Explain communication process with a proper diagram.

D. What are the objectives of communication?

EITHER:

(14m)

Q4.A. What are the barriers of effective communication?

B. Explain role and functions of Media.

OR:

C. What is Media? Explain role of effective communication in social media.

D. What are the characteristics of Media?

EITHER:

(14m)

Q5.A. Why is professional vocabulary important?

B. Give 7 C's of effective communication.

OR:

C. Explain Non- Verbal Communication.

D. Explain in short precautions to be taken while using social media.

R.T.M.N.U. NAGPUR UNIVERSITY EXAMINATION W-2022

KAMLA NEHRU MAHAVIDYALAYA NAGPUR

Bachelor of Vocation (B.VOC) – (Semester-III)

(Retail Management / Software Development / Consumer Electronics)

(Skill Development component)

Soft Skill Development - III

Paper-II

Time: 3-Hours]

[MaxMarks:70

Note: 1) All Questions are compulsory and carry equal marks

1. Either

A. What is Procrastination, explain its effects in detail?

7

B. What is impact of indecision in an organization?

7

OR

C. How to act with incomplete information?

7

D. Explain the various types of time stealers.

7

2. Either

A. What are the effects of unclear objectives?

7

B. What is lack of Planning and explain its effects?

7

OR

C. What is Stress and Fatigue?

7

D. Why ability to say "NO" is important?

7

3. Either

A. Explain in detail management of Priorities.

7

215-19

B. What are the techniques to increase work effectiveness of employees? 7

OR

C. Explain the five ways to battle job stress. 7

D. What is scheduling and planning? 7

4. Either

A. What are Office etiquettes, explain in detail? 7

B. How to manage a balance lifestyle explain in detail? 7

OR

C. Explain reducing stress with effective planning. 7

D. How to be more controlled in routine activities? 7

5. Write a note on .

A. Telephonic Interruptions 3 ½

B. Inadequate technical knowledge 3 ½

C. Increasing productivity 3 ½

D. Telephone etiquettes 3 ½

R.T.M.N.U. NAGPUR UNIVERSITY EXAMINATION W-2022
KAMLA NEHRU MAHAVIDYALAYA NAGPUR
Bachelor of Vocation (B.VOC) – (Semester-III)
(Retail Management/Software Development/Consumer Electronics)
(General Education component)
Aptitude Development-III
Paper-III

Time: 3Hrs]

Marks:70

Note: 1) All Questions are Compulsory and carry equal marks

2) Draw diagram where necessary

1. Either

A. Two Pipes A and B can fill a tank separately in 12 and 16 hours respectively. If both of them are opened together when the tank is initially empty, how much time will it take to completely fill the tank? 7

B. A train is running at the speed of 56 Km/hr crosses a pole in 18 seconds. What is the length of the Train? 7

OR

C. Three pipes A, B and C are connected to a tank. Out of the three, A is the inlet pipe and B and C are the outlet pipes. If opened separately, A fills the tank in 10 hours, B empties the tank in 12 hours and C empties the tank in 30 hours. If all three are opened simultaneously, how much time does it take to fill/empty the tank? 7

D. A vessel is filled with liquid, 3 parts of which are water and 5 parts syrup. How much of the mixture must be drawn off and replaced with water so that the mixture may be half water and half syrup? 7

2. Either

A. Find the simple Interest for Rs. 2000 invested at 2.5% for 3 Years.7

B. If the Radius of a sphere is $3r$, What is its volume? 7

OR

C. Find the Compound Interest on Rs. 12,600 for 2 Years at 10% per annum compounded annually. 7

D. What is the Total Surface area of a Cuboid whose length=5 cm, width = 2cm and Height= 3 cm. 7

3. Either

A. If '+' stands for Division, '÷' stands for subtraction and '-' stands for Addition. Solve the following :

$$18 \div 6 - 7 + 5 \times 2$$

7

B. Insert the Missing Character. 7

6	6	8
7	9	4
4	3	?
861	261	422

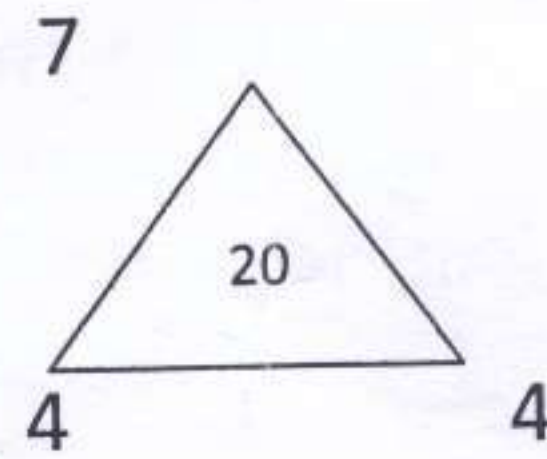
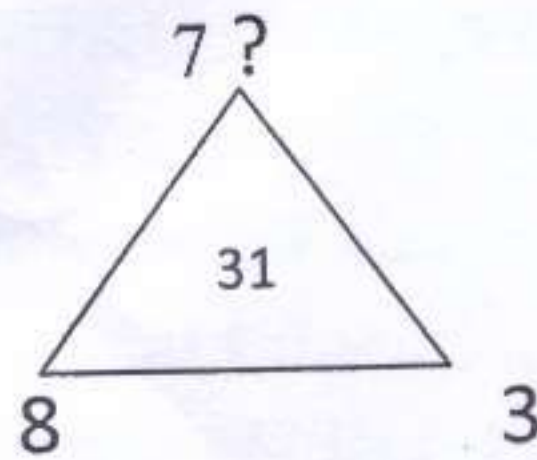
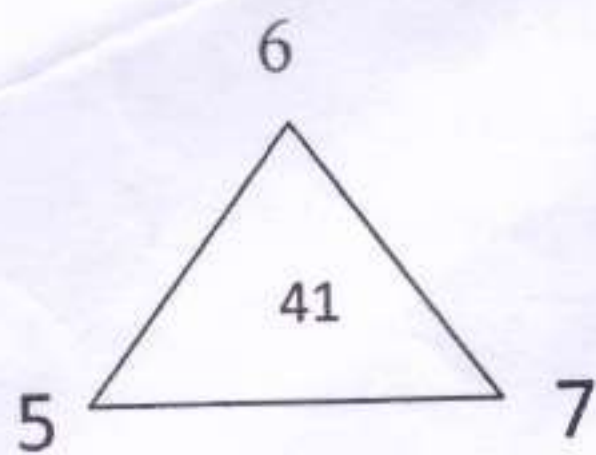
OR

C. If '+' stands for Division, '÷' stands for subtraction and '-' stands for Addition. Solve the following :

$$175 - 25 \div 5 + 20 \times 3 + 10 = ?$$

7

D. Find the Missing Number?



4 Either

A. What is Pollution? Also explain types of Pollution.

7

B. What are Nuclear hazards? Explain in Detail.

7

OR

C. Explain Solid Waste Management by giving Example.

7

D. What is the role of Individual in prevention of Pollution?

7

5. Write Short Notes on:

A. Explain the terms Inlets and Outlets.

3½

B. Write the Formula of Volume of Cube, Cuboid and cylinder.

3½

C. About data sufficiency.

3½

D. Earthquake and Cyclones.

3½

303

282

MSP/KS/23/7155

Advance Diploma (Two Years) (B.Voc.) Semester-IV (Common to all Branches) Examination
ENGLISH AND COMMUNICATION SKILL-IV

Compulsory Paper—1
Common Paper

Time : Three Hours]

[Maximum Marks : 70

N.B. :—All questions are compulsory and carry equal marks.

EITHER

1. (A) Change the narration of the following sentences :

7

- (i) She said to her mother, "I am doing my homework now".
- (ii) Rohit said, "I have watched this movie".
- (iii) He said, "I will try my best to score good marks".
- (iv) Leela said, "How beautiful the garden is"?
- (v) Aahil said to her, "Where do you live"?
- (vi) She said to him, "Close the window, please".
- (vii) Akansha said to Anay, "Will you send me your book"?

(B) Fill in the blanks with appropriate modal auxiliary given in the bracket :

7

- (i) We follow traffic rules. (should/would/can)
- (ii) you please lend me your book ? (may/might/could)
- (iii) You obey your parents. (can/would/ought to)
- (iv) He jump high. (would/can/might)
- (v) I consult the physician for my health issue. (shall/may/need to)
- (vi) You bring your hall-ticket. (must/can/may)
- (vii) It rain today. (may/shall/would)

OR

(C) Write in detail about narration. Give examples.

7

(D) Write in detail about modal auxiliaries and their usage.

7

EITHER

2. (A) Write a note on Writing as a skill.

7

(B) Write a note on Paragraph Writing.

7

- (C) Write a note on Media texts. 7
- (D) What are the purposes of media texts ? 7
5. Answer the following questions : (All questions are compulsory)
- (A) Where do we use the modal auxiliaries 'used to' and 'may' ? Give one example of each. $3\frac{1}{2}$
- (B) What would you do to develop your writing skill ? $3\frac{1}{2}$
- (C) Write a short paragraph on 'Mobile as a boon'. $3\frac{1}{2}$
- (D) Write a short note on 'Benefits of Media Literacy'. $3\frac{1}{2}$

Bachelor of Vocation (B.Voc.) (Three Years) Semester—V
(Consumer Electronics) Examination
MAINTENANCE OF COMPUTER SYSTEM

Paper—2

Time : Three Hours]

[Maximum Marks : 70

Note :—(1) All questions are compulsory and carry equal marks.

(2) Draw neat and well labelled diagrams wherever necessary.

EITHER

1. (A) Draw and explain the block diagram of 8086 microprocessor: 7
- (B) Explain CALL and RET instruction with example. 7

OR

- (C) Draw and explain the block diagram of DMA controller. 7
- (D) Explain the concept of serial I/O port in detail. 2 7

EITHER

2. (A) What is Monochrome Graphic Adapter (MGA) ? Explain in detail. 7
- (B) Explain interlaced scan method. 2 7

OR

- (C) Explain basic principle of working of Video Monitor. 2 7
- (D) Draw and explain constructional features of Hard Disk. 7

EITHER

3. (A) Draw a block diagram (SMPS) Switch Mode Power Supply. Explain in detail. 3 7
- (B) What are the different factors to be considered for choice on display card adaptor ? 7

OR

- (C) Discuss the working mechanisms of inject printer. 2 7
- (D) Explain the working of UPS. 7

EITHER

4. (A) Explain the HUB in detail. 3 7
- (B) What is LAN ? How it works ? Explain in detail. 7

OR

- (C) What are the different types of Routers used in Networking. 7
- (D) What is BIOS ? List and explain any three functions of BIOS. 3 7

5. Attempt ALL :

- (A) Explain different types of bus.
- (B) List different types of video mode.
- (C) Write short note on Plotter.
- (D) List the different functions of bios.

1) bio's power of self dect
(past)
2) book strap loader
3) biodice setup 3 1/2 x 4 = 14
utility program.

Diploma (One Year) (B. Voc.) (Semester-I) (Common to all Branches) Examination

SOFT SKILL DEVELOPMENT-I

Compulsory Paper—2

Common Paper

Time : Three Hours]

[Maximum Marks : 70

- N.B. :— (1) All questions are compulsory.
(2) All questions carry equal marks.

EITHER

1. (A) Explain effective writing in business correspondence. 7
(B) Explain importance of listening and responding. 7

OR

- ~~(C)~~ Explain Importance of marketing. 7
~~(D)~~ What is importance of planning ? 7

EITHER

2. (A) How to create master plan ? 7
(B) What is goal setting and time management ? 7

OR

- ~~(C)~~ Explain marketing environment. 7
~~(D)~~ Explain Importance of self management techniques. 7

EITHER

3. (A) What are the Tips for technical writing ? 7
~~(B)~~ Explain communication etiquettes and manners in a group. 7

OR

- (C) Explain marketing and also explain marketing mix. 7
(D) Explain 4P's of marketing mix. 7

EITHER

4. (A) How to face personal interview and group discussions ? 7
(B) Explain team work in an organization. 7

OR

- (C) What is diversity in team dynamics ? 7
(D) Explain features and importance of team work. 7

5. Write short notes on :

- ~~(A)~~ SWOT analysis 3½
(B) Self Image and esteem 3½
~~(C)~~ Self Motivation 3½
~~(D)~~ Group discussions 3½

Diploma (One Year) (B.Voc.) Semester-I (Consumer Electronics) (Faculty of Science)

Examination

MAINTENANCE CONCEPT

Compulsory Paper-4

(Skill Development Component)

Time : Three Hours]

[Maximum Marks : 70

EITHER

1. (A) Explain the concept of Modern Electronics equipments. 7
- (B) Explain in detail about Circuit Tracing Techniques. 7

OR

- (C) What are the different types of Maintenance methods ? Explain corrective maintenance. 7
- (D) Explain the Mean Time to Repair (MTTR), MTBF. 7

EITHER

2. (A) What is the importance of service and maintenance manuals necessary for fault finding in instruments ? 7
- (B) Explain the concept of fault location procedure. 7

OR

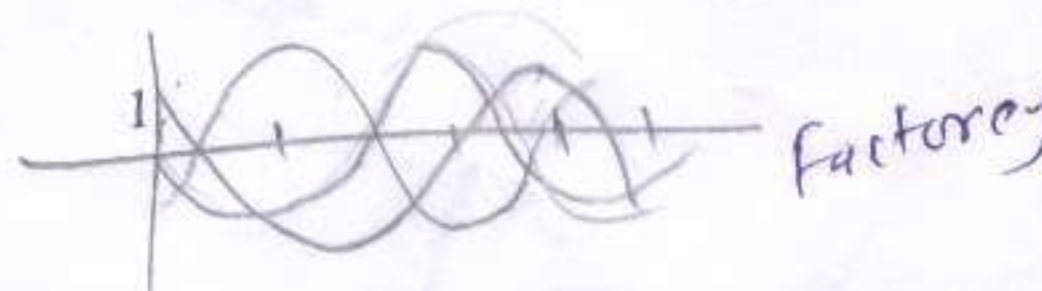
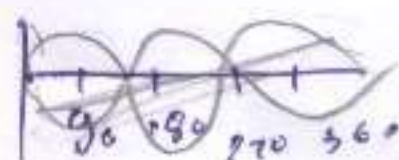
- (C) Explain the most commonly needed aids in Troubleshooting process. 7
- (D) What are the different Troubleshooting process ? Explain (a) Fault Establishment (b) Fault correction. 7

EITHER

3. (A) Explain the basis terms such as RMS value and Peak to Peak in terms of Electronics measurements. 7
- (B) Explain the concept of frequency and time period in terms of Electronics measurements. 7

OR

- (C) What is power supply ? Explain line voltage and phase voltage of power supply. 7
- (D) What is three Phase supply ? Explain it with diagram. 7



EITHER

4. (A) What is De-Soldering ? Explain different types of soldering guns. 7

(B) Classify the soldering iron related to the bits. 7

OR

(C) Explain the concept of selection of a soldering gun for specific requirement. 7

(D) What is Soldering ? Explain the concept of solder materials and flux. 7

5. Attempt ALL :

(A) What is concept of shielding ? 3½

(B) What is Service manuals ? 3½

(C) What are the characteristics of meters for Electronics measurements ? 3½

(D) What are the different types of soldering gun ? 3½

Ans

① explanation
② heat control
③ safety
④ hot air

Diploma (One Year) (B.Voc.) Semester—I (Consumer Electronics) (Faculty of Science)

Examination

PASSIVE DEVICES AND CIRCUITS

Compulsory Paper—5

Time : Three Hours]

[Maximum Marks : 70

1. EITHER

(A) What is Ohm's law ? Explain it with circuit diagram.

7

(B) What is resistor ? Explain the different types of resistors.

7

OR

(C) What is capacitor ? Explain the different types of capacitors.

7

(D) What is switches ? What are its types ? Explain.

7

2. EITHER

(A) What is DC circuits ? Explain the behavior of resistance in DC circuits.

7

(B) Explain the combination of resistor and capacitor in DC circuit network.

7

OR

(C) Explain the combination of resistor and inductor in DC circuit network.

7

(D) Explain the behavior of LCR circuit network.

7

3. EITHER

(A) Explain the basis terms such as amplitude and phase difference in terms of Electronics.

7

(B) Explain the concept of RMS value and average value.

7

OR

(C) Explain the vector diagram addition in sine wave in phase.

7

(D) Explain the combination of resistor and capacitor in AC circuit network

7

4. EITHER

(A) What is transformer ? Explain different types according to construction.

7

(B) Classify the transformer according to number of turns and explain.

7

OR

(C) Explain the construction of transformer with diagram.

7

(D) Explain the different types of losses in transformer.

7

5. Attempt ALL :—

(a) What is concept of Electromagnetic relay ?

3½

(b) What is the concept of RC in DC circuit ?

3½

(c) What is power factor and form factor ?

3½

(d) What is active and reactive power in transformer ?

3½

Bachelor of Vocation (Three Years) (B.Voc.) Semester-V (Consumer Electronics) Examination

CELLULAR PHONES : PRINCIPLES AND PRACTICE

Paper-1

Time : Three Hours]

[Maximum Marks : 70

- Note :—** (1) All questions are compulsory.
(2) All questions carry equal marks.

EITHER

1. (A) What is cellular system ? Explain the concept of interference. 7
(B) What is base station ? Explain in-call handover and power control in cell planning. 7

OR

- (C) Write a note on Cell Splitting and Sectorisation in cellular system. 7
(D) Classify the mobile phones according to size. Write a note on palm sized PDA. 7

EITHER

2. (A) What is cellular technology ? Explain the concept of RF (Radio Frequency) issues in it. 7
(B) What is digital speech coding ? Explain channel coding. 7

OR

- (C) Explain signal processing in cellular technology. 7
(D) Explain the radio system software. 7

EITHER

3. (A) What is mobile messaging ? Explain the SMS messaging. 7
(B) Explain the concept of EMS and MMS messaging. 7

OR

- (C) What is message value chain ? Explain the concept of wireless carrier. 7
(D) Classify security threats. Explain the concept of data tampering in mobile security. 7

EITHER

4. (A) What are mobile standards ? Explain the concept of 2G standard. 7
(B) Explain the concept of (Infrared dates association) IrDA in mobile communication. 7

OR

- (C) Explain the GSM and CDMA network protocols. 7
(D) Explain the 3G devices and its applications. 7
5. Attempt ALL :
- (A) Explain the concept of base station (BS). 3½
(B) What is cellular technology ? 3½
(C) What is the concept of data sniffing in mobile security ? 3½
(D) What is network protocol in cellular system ? 3½

Bachelor of Vocation (B.Voc.) (Three Years) Semester—V

(Consumer Electronics) Examination

MAINTENANCE OF COMPUTER SYSTEM

Paper—2

Time : Three Hours]

[Maximum Marks : 70

Note :—(1) All questions are compulsory and carry equal marks.

(2) Draw neat and well labelled diagrams wherever necessary.

EITHER

1. (A) Draw and explain the block diagram of 8086 microprocessor. 7
- (B) Explain CALL and RET instruction with example. 7

OR

- (C) Draw and explain the block diagram of DMA controller. 7
- (D) Explain the concept of serial I/O port in detail. 7

EITHER

2. (A) What is Monochrome Graphic Adapter (MGA) ? Explain in detail. 7
- (B) Explain interlaced scan method. 7

OR

- (C) Explain basic principle of working of Video Monitor. 7
- (D) Draw and explain constructional features of Hard Disk. 7

EITHER

3. (A) Draw a block diagram (SMPS) Switch Mode Power Supply. Explain in detail. 7
- (B) What are the different factors to be considered for choice on display card adaptor ? 7

OR

- (C) Discuss the working mechanisms of inject printer. 7
- (D) Explain the working of UPS. 7

EITHER

4. (A) Explain the HUB in detail. 7
- (B) What is LAN ? How it works ? Explain in detail. 7

OR

- (C) What are the different types of Routers used in Networking. 7
- (D) What is BIOS ? List and explain any three functions of BIOS. 7

5. Attempt ALL :

- (A) Explain different types of bus.
- (B) List different types of video mode.
- (C) Write short note on Plotter.
- (D) List the different functions of bios.

 $3\frac{1}{2} \times 4 = 14$

Bachelor of Vocation (B.Voc.) (General Education Component) Semester—IV Examination
APTITUDE DEVELOPMENT-IV

Paper—III

Time : Three Hours]

[Maximum Marks : 70

Note :—(1) All questions are compulsory.
(2) All questions carry equal marks.

EITHER

1. (A) On what dates of March 2005 did Friday fall ? 7
(B) Find the angel between the hour hand and the minute hand of a clock when the time is 3.25. 7

47.5°

OR

- (C) (I) Find the cost of : 14
(i) Rs. 7200, 8% stock at 90. 6480/-
(ii) Rs. 6400, 10% stock at 15 discount. 5440/-
(II) Find the odd man out :
(i) 6, 9, 15, 21, 24, 28, 30
(ii) 41, 43, 47, 53, 61, 71, 73, 81

EITHER

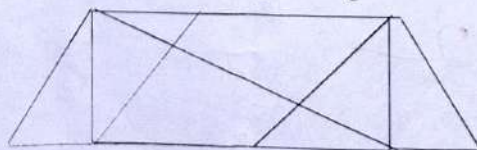
2. (A) (I) Find the value of : 7
(i) $^{10}C_3$ 120
(ii) $^{100}C_{98}$ 4950
(II) In a throw of a coin, find the probability of getting a head.
(B) (I) Find the value of : 7
(i) $^{60}P_3$ 205320
(ii) 4P_4 24
(II) Two unbiased coins are tossed. What is the probability of getting at most one head ?

OR

- (C) Evaluate : 14
(i) $\log_3 27$
(ii) $\log_{100} (0.01)$
(iii) $\log_7 (1/343)$
(iv) A ladder leaning against a wall makes an angle of 60° with the ground. If the length of the ladder is 19 m, find the distance of the foot of the ladder from the wall.

EITHER

3. (A) (I) Find the number of triangles in the given figure : 7



(II) Choose the alternative which is closely resembles the mirror image of the given combination :

ANS43Q12

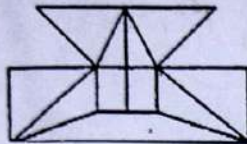
- (1) ANS43Q12 (2) SIO43Q12
(3) SIA43Q12 (4) TSO43Q12

(B) (I) Choose the alternative which is closely resembles the mirror image of the given combination :

TARAIN1014A

- (1) APT01N1ARAL (2) APT01N1ARAT
(3) APT01N1ARAT (4) APT01N1ARAT

(II) Find the minimum number of straight lines required to make the given figure :



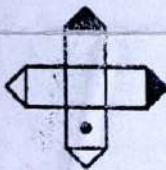
OR

(C) (I) Choose the alternative which is closely resembles the water-image of the given combination :

NUCLEAR

- (1) NUCLEAR (2) NUCLEAR
(3) NUCLEAR (4) NUCLEAR

(II) Choose the box that is similar to the box formed from the given sheet of paper (X) :



(X)



(1)



(2)



(3)



(4)

EITHER

4. (A) What is meant by equitable ?

(B) Explain environmental issues and possible solutions.

OR

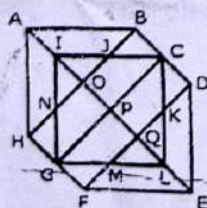
(C) (I) What is climate changes, and global warming ?

(II) Describe aims and objectives of the Environment Protection Act (EPA).

5. (A) What was the day of the week on 15th August, 1947 ? Friday

(B) How many words can be formed by using all letters of the word 'BIHAR' ?

(C) Find the number of triangles in the given figure :



(D) Explain Main Provisions of Environment Protection Act.

MH-3223

PRS/KS/24/8064

Bachelor of Vocation (B.Voc.) (General Education Component) Semester—IV Examination

APTITUDE DEVELOPMENT-IV

Paper-III

Time : Three Hours]

[Maximum Marks : 70

Note :—(1) All questions are compulsory.

(2) All questions carry equal marks.

EITHER

1. (A) On what dates of March 2005 did Friday fall? *4, 11, 18, 25* 7
 (B) Find the angle between the hour hand and the minute hand of a clock when the time is 3.25. *47.50* 7

OR

- (C) (I) Find the cost of: 14
 (i) Rs. 7200, 8% stock at 90. *6480/-*
 (ii) Rs. 6400, 10% stock at 15 discount. *5440/-*
 (II) Find the odd man out :
 (i) 6, 9, 15, 21, 24, 28, 30
 (ii) 41, 43, 47, 53, 61, 71, 73, 81

EITHER

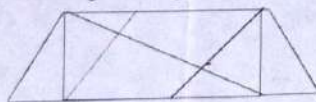
2. (A) (I) Find the value of: 7
 (i) ${}^{10}C_3 = 120$
 (ii) ${}^{100}C_{99} = 4950$
 (II) In a throw of a coin, find the probability of getting a head.
 (B) (I) Find the value of: 7
 (i) ${}^{60}P_3 = 205200$
 (ii) ${}^4P_4 = 24$
 (II) Two unbiased coins are tossed. What is the probability of getting at most one head?

OR

- (C) Evaluate : 14
 (i) $\log_e 27$
 (ii) $\log_{100} (0.01)$
 (iii) $\log_e (1/343)$
 (iv) A ladder leaning against a wall makes an angle of 60° with the ground. If the length of the ladder is 19 m, find the distance of the foot of the ladder from the wall.

EITHER

3. (A) (I) Find the number of triangles in the given figure : 7



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1

(Contd.)

- (II) Choose the alternative which is closely resembles the mirror image of the given combination :

ANS43Q12

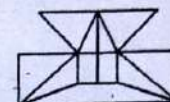
- (1) ANB+EDF S *(2) S+DE+ENA*
 (3) 2NAE+DSI (4) I+SD+ENA

- (B) (I) Choose the alternative which is closely resembles the mirror image of the given combination :

TARA IN1014A

- (1) A+T+O+M+I+A+R+A+L (2) A+T+O+M+I+A+R+A+T
 (3) A+T+O+M+I+A+R+A+I (4) A+T+O+M+I+A+R+A+T

- (II) Find the minimum number of straight lines required to make the given figure :



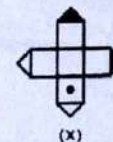
OR

- (C) (I) Choose the alternative which is closely resembles the water-image of the given combination : 14

NUCLEAR

- (1) NUCLEAR (2) NUCLEAR
 (3) NUCLEAR (4) NUCLEAR

- (II) Choose the box that is similar to the box formed from the given sheet of paper (X) :



(X)



(1)



(2)



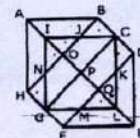
(3)



(4)

EITHER

4. (A) What is meant by equitable ? 7
 (B) Explain environmental issues and possible solutions. 7
 OR
 (C) (I) What is climate changes, and global warming ? 14
 (II) Describe aims and objectives of the Environment Protection Act (EPA).
 5. (A) What was the day of the week on 15th August, 1947 ? *Friday* 3½
 (B) How many words can be formed by using all letters of the word 'BIHAR' ? *120* 3½
 (C) Find the number of triangles in the given figure : 3½



- (D) Explain Main Provisions of Environment Protection Act.

MH-3223

2

10

Diploma (One Year) (B.Voc.) Semester-I (Common to All) Examination

APTITUDE DEVELOPMENT – I

Compulsory Paper – 3

Common Paper

Time : Three Hours]

[Maximum Marks : 70

- N.B. :— (i) All questions are compulsory and carry equal marks.
 (ii) Draw neat and well labeled diagrams wherever necessary.

EITHER

1. (A) Solve the following : 7
 (i) Calculate the output of $936 \times 587 - 936 \times 487$.
 (ii) If $5^x = 3125$, then the calculate value of $5^{(x-3)}$.
 (B) Solve the following : 7
 (i) If $2x + 3y + z = 4$ and $y - x + z = 12$, then what are the values of x , y and z ?
 (ii) Find out the output of $\left((964 + 578)^2 + (964 - 578)^2 \right) / (964 \times 964 + 578 \times 578)$.

OR

- (C) Solve the following : 7
 (i) Find the square root of $(3 + \sqrt{5})$.
 (ii) Simplify the expression $(2x + 3y)^2 - (2x - 3y)^2$.
 (D) Solve the following : 7
 (i) Find the largest from among $\sqrt[3]{6}$, $\sqrt{2}$ and $\sqrt[3]{4}$.
 (ii) Simplify: $\left[(0.35)^2 - (0.03)^2 \right] / 0.19$.

EITHER

2. (A) Solve the following : 7
 (i) The sum of the squares of three consecutive odd numbers is 2531. Find the numbers.
 (ii) Evaluate: $(\sqrt{5} + \sqrt{3})(\sqrt{5} - \sqrt{3})$.

(B) Solve the following :

7

- (i) The H.C.F. of two numbers is 23 and the other two factors of their L.C.M. are 13 and 14. The larger of the two numbers is ?
- (ii) In the first 10 overs of a cricket game, the run rate was only 3.2. What should be the run rate in the remaining 40 overs to reach the target of 282 runs ?

OR

(C) Solve the following :

7

- (i) The difference of two numbers is 11 and one-fifth of their sum is 9. Find the numbers.
- (ii) A family consists of two grandparents, two parents and three grandchildren. The average age of the grandparents is 67 years, that of the parents is 35 years and that of the grandchildren is 6 years. What is the average age of the family ?

(D) Solve the following :

7

- (i) Evaluate : $\frac{\sqrt{24} + \sqrt{216}}{\sqrt{96}} = ?$
- (ii) Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together ?

EITHER

3. (A) Find out the missing term from the following :

3½

- (i) Moon : Satellite :: Earth : ?
- (ii) Influenza : Virus :: Typhoid : ?

(B) Which number would replace question mark in the series 7, 12, 19, ?, 39 ?

3½

(C) If Rashmi is taller than Manisha, Manisha is taller than Priyanka, Sugandha is taller than Rashmi. Harsha is shorter than Priyanka ; who among these girls is the tallest ?

3½

(D) In a certain code language,

'134' means 'good and tasty' ;

'478' means 'see good pictures' and

'729' means 'pictures are faint'.

Which of the following digits stands for 'see' ?

3½

OR

(E) Find out the missing term from the following :

3½

- (i) Melt : Liquid :: Freeze : ?
- (ii) Clock : Time :: Thermometer : ?

(F) Which is the number that comes next in the sequence : 0, 6, 24, 60, 120, 210, ?

3½

(G) Complete the given blank in the series below :

SCD, TEF, UGH, _____, WKL.

3½

(H) If South-East becomes North, North-East becomes West and so on. What will West become ?

3½

EITHER

4. (A) Write down the characteristic function of forest desert in detail.

7

(B) Explain Energy Flow in the ecosystem.

7

OR

(C) Explain the Concept of Ecosystem.

7

(D) Explain Computer Skills needed in Ecological succession.

7

5. All questions are compulsory :

(I) Find the largest from among $\sqrt[3]{6}$, $\sqrt{2}$ and $\sqrt[3]{4}$.

3½

(II) Three numbers are in the ratio of 3 : 2 : 5. The sum of their squares is 1862. Find the numbers.

3½

(III) In the series 357, 363, 369, what will be the 10th term ?

3½

(IV) Write a note on Energy cycle in Nature.

3½

Diploma (One Year) (B.Voc.) Semester-I (Common to All) Examination

APTITUDE DEVELOPMENT - I

Compulsory Paper - 3

Common Paper

Time : Three Hours]

[Maximum Marks : 70

- N.B. :- (i) All questions are compulsory and carry equal marks.
 (ii) Draw neat and well labeled diagrams wherever necessary.

EITHER

1. (A) Solve the following : 7
 (i) Calculate the output of $936 \times 587 - 936 \times 487 = 93600$
 (ii) If $5^x = 3125$, then calculate value of $5^{(x-3)}$.
 (B) Solve the following : 7
 (i) If $2x + 3y + z = 4$ and $y - x + z = 12$, then what are the values of x , y and z ?
 (ii) Find out the output of $\left((964 + 578)^2 + (964 - 578)^2\right) / (964 \times 964 + 578 \times 578)$.

OR

- (C) Solve the following : 7
 (i) Find the square root of $(3 + \sqrt{5})$.
 (ii) Simplify the expression $(2x + 3y)^2 - (2x - 3y)^2$.
 (D) Solve the following : 7
 (i) Find the largest from among $\sqrt[3]{6}$, $\sqrt{2}$ and $\sqrt[3]{4}$.
 (ii) Simplify: $\left[(0.35)^2 - (0.03)^2\right] / 0.19$.

EITHER

2. (A) Solve the following : 7
 (i) The sum of the squares of three consecutive odd numbers is 2531. Find the numbers.
 (ii) Evaluate: $(\sqrt{5} + \sqrt{3})(\sqrt{5} - \sqrt{3})$.

(B) Solve the following :

7

- (i) The H.C.F. of two numbers is 23 and the other two factors of their L.C.M. are 13 and 14. The larger of the two numbers is ?
- (ii) In the first 10 overs of a cricket game, the run rate was only 3.2. What should be the run rate in the remaining 40 overs to reach the target of 282 runs ?

OR

(C) Solve the following :

7

- (i) The difference of two numbers is 11 and one-fifth of their sum is 9. Find the numbers.
- (ii) A family consists of two grandparents, two parents and three grandchildren. The average age of the grandparents is 67 years, that of the parents is 35 years and that of the grandchildren is 6 years. What is the average age of the family ?

(D) Solve the following :

7

- (i) Evaluate : $\frac{\sqrt{24} + \sqrt{216}}{\sqrt{96}} = ?$
- (ii) Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together ?

EITHER

3. (A) Find out the missing term from the following :

3½

- (i) Moon : Satellite :: Earth : ?
- (ii) Influenza : Virus :: Typhoid : ?
- (B) Which number would replace question mark in the series 7, 12, 19, ?, 39 ?
- 3½
- (C) If Rashmi is taller than Manisha, Manisha is taller than Priyanka, Sugandha is taller than Rashmi, Harsha is shorter than Priyanka, who among these girls is the tallest ?
- 3½
- (D) In a certain code language,

'134' means 'good and tasty';
'478' means 'see good pictures' and
'729' means 'pictures are faint'.
Which of the following digits stands for 'see' ?

3½

OR

(E) Find out the missing term from the following :

3½

- (i) Meli : Liquid 2 : Freeze : ?
- (ii) Clock : Time :: Thermometer : ?

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2

(Contd.)

(F) Which is the number that comes next in the sequence : 0, 6, 24, 60, 120, 210, ?

3½

(G) Complete the given blank in the series below :

SCD, TEF, UGH, _____, WKL.

3½

(H) If South-East becomes North, North-East becomes West and so on. What will West become ?

3½

EITHER

4. (A) Write down the characteristic function of forest desert in detail.

7

(B) Explain Energy Flow in the ecosystem.

7

OR

(C) Explain the Concept of Ecosystem.

7

(D) Explain Computer Skills needed in Ecological succession.

7

5. All questions are compulsory :

(i) Find the largest from among $\sqrt[3]{6}$, $\sqrt{2}$ and $\sqrt[3]{4}$.

3½

(ii) Three numbers are in the ratio of 3 : 2 : 5. The sum of their squares is 1862. Find the numbers.

3½

(iii) In the series 357, 363, 369, what will be the 10th term ?

3½

(iv) Write a note on Energy cycle in Nature.

3½

NI-10849

3

10

Bachelor of Arts (B.A.) Semester—II (NEP) Examination

HISTORY

(History of India from 1526 to 1761)

Optional Paper

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory.

(2) All questions carry equal marks.

(मराठी माध्यम)

325

1. छत्रपती शिवाजी महाराजच्या राज्यभिषेकावर माहिती लिहा.

किंवा

छत्रपती संभाजी-मुघल संघर्षाची माहिती द्या.

2. मराठ्यांच्या स्वातंत्र्य युद्धाचा आढावा घ्या.

किंवा

पानीपतच्या तिसऱ्या लढाईचे कारणे व परिणाम लिहा.

3. (अ) पानीपतच्या पहिल्या लढाईवर (1526) टिपण लिहा.

(ब) शेरशाह सूरीच्या प्रशासकीय सुधारणांची माहिती द्या.

किंवा

(1) 'बाबरनामा' वर टिपण लिहा.

(2) दीन-ए-इलाही वर टिपण लिहा.

4. (अ) शहाजहाँनकालीन वारसा युद्धावर टिपण लिहा.

(ब) 'ताजमहाल' वर टिपण लिहा.

किंवा

(1) औरंगजेबाच्या गोळकोंडा विजया बद्दल माहिती लिहा.

(2) मुघलकालीन स्थापत्य कलेचा विकास स्पष्ट करा.

5. योग्य पर्याय निवडून रिकाम्या जागा भरा :

(1) राजा सांगा _____ च्या लढाईत पराभूत झाला होता.

(पानीपत, सानुआ, घाघरा)

(2) शेरशाहच्या काळत _____ या नावाची मुद्रा होती.

(रुपया, दिनार, होन)

(3) दीन-ए-इलाहीचा _____ हा सदस्य होता.

(राजा मानसिंह, तोडरमल, बीरबल)

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- (4) गोंडवाना येथील राणी _____ सोबत अकबराचा संघर्ष झाला होता.
(पद्मावती, दुर्गावती, चांदबिबी)
- (5) औरंगजेब व दारा शुकोह यांच्यात सत्ता प्राप्तीसाठी _____ येथे लढाई झाली.
(सामुगढ, खनुआ, हल्दीघाटी)
- (6) इ.स. _____ मध्ये औरंगजेब मृत्यू झाला.
(1709, 1708, 1707)
- (7) 'ताजमहल' _____ या नदीच्या काणवर आहे.
(गंगा, जमुना, सरस्वती)
- (8) 'बीबी का मकबरा' _____ यहा ठिकाणी आहे.
(दौलताबाद, खुल्दाबाद, औरंगाबाद)
- (9) पुणेतील लाल महालात मुघल सुबेदार _____ वर शिवाजीने हल्ला केला होता.
(शाहिस्ताखान, अफजलखान, दिलेरखान)
- (10) छत्रपती शिवाजीचा राज्याभिषेक _____ गढावर झाला होता.
(राजगढ, रायगढ, सिंहगढ)
- (11) छत्रपती शिवाजीचा सरनौबत (सेनापती) _____ हे होते.
(रामचंद्रपंत अमात्य, अण्णाजी दत्तो हंबीरराव मोहिते)
- (12) औरंगजेब पुत्र _____ हा संभाजीच्या आश्रयास आला.
(बहादुरशाह, आजमशाह, अकबर)
- (13) मराठ्यांचे स्वातंत्र्य युद्ध छत्रपती _____ च्या हत्येनंतर सुरू झाले.
(शिवाजी, संभाजी, शाहू)
- (14) छत्रपती शाहूने मराठा राज्याची राजधानी _____ येथे केली.
(सातारा, कोल्हापूर, पुणे)
- (15) पानीपतची तिसरी लढाई (1761) _____ व मराठे यांच्यात झाली.
(नादीरशाह, अब्दाली, चंगेजखान)
- (16) ब्रिटीशांची भारतातील _____ ही पहिली वसाहत (फॅक्ट्री) होती.
(सुरत, विशाखापट्टणम, कलकत्ता)

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—III Examination
COSMETIC TECHNOLOGY
Paper—1

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.

1. Comment on the following properties in designing the cosmetic product :
 - (a) Solubility
 - (b) Particle size
 - (c) Oxidative reactions. 10
2. Define 'Surfactants'. Classify them as per HILB scale. Describe in detail the solubilizing agents with examples. 10
3. What are monophasic preparations ? Give the details of factors affecting on formulation. 10
4. Classify Hydrocolloids and give details of Natural hydrocolloid. 10
5. Describe the metal and plastic as materials used in packaging for cosmetics. 10
6. Write notes on any **two** (5 marks each) :
 - (a) Green packaging
 - (b) Use of Surfactants in Cosmetic industry
 - (c) Closures for cosmetic products
 - (d) Synthetic Hydrocolloid. 10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—III Examination
INSTRUMENTAL METHODS ANALYSIS

Paper—2

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.

1. Explain principle of chromatography and explain various types of paper chromatography. 10
2. Explain in detail principle and instrumentation of visible spectroscopy. 10
3. What is flame photometry ? Explain its principle and applications. 10
4. Explain in detail thin layer chromatography. 10
5. Describe spectrophotometric titration in detail. 10
6. Write notes on (any **TWO**) :
 - (a) Classification of photometric instrumental methods.
 - (b) Column chromatography.
 - (c) Electromagnetic spectra.
 - (d) Lambert-Beer's Law.

2×5=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—III Examination
COSMETIC ENGINEERING
Paper—3

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. (a) Define fluids and write important properties of fluids. 6
(b) Water is flowing through a pipe of inside diameter 50 mm; the volumetric flow rate of water is $0.0063 \text{ m}^3/\text{s}$. Calculate the mass flow rate of water. The density of water is 1000 kg/m^3 . 4
2. How the solids are conveyed ? Explain any two conveying systems in detail. 10
3. Explain the principles, working and important parts of a centrifugal pump with a labelled figure. Also discuss the classification of centrifugal pumps. 10
4. Discuss the role of orificemeter in fluid flow, principle and working with suitable figure. Obtain the suitable expression to calculate flow rate through it. Also discuss the method for determination of average velocity. 10
5. Name the various pipe joints and explain them with figure. What is pipe roughness ? How do you calculate the frictional losses in flow through pipe ? 10
6. Write short notes on (any **two**) :
(a) Pitot tube
(b) Reciprocating pump
(c) Manometers
(d) Diaphragm pumps.

5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-III Examination
COSMETIC CHEMISTRY
Paper-4

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Assume suitable data wherever necessary.
- (4) Diagrams and Chemical equations should be given wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

1. Explain in detail different clay minerals. Add a note on synthetic silicates. 10
2. Give classification of amino acid based on polarity and mention their uses in cosmetics. 10
3. Discuss solubility, precipitation, biuret reactions and uses of proteins. 10
4. Write short note on lock and key model and induced fit model of enzyme action. 10
5. How insoluble metallic soaps are manufactured ? 10
6. Write short notes on (any **TWO**) :—
 - (a) Silk Powder
 - (b) Application of Enzymes in Cosmetics
 - (c) Toxicity of Silicones
 - (d) Natural Silicates. 5×2

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—III Examination
DRUG AND COSMETIC LAWS

Paper—5

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. Explain prevention of cruelty to Animal Act. 10
2. Explain GMP. Discuss Schedule M-II for Cosmetics. 10
3. Explain various objectionable advertisements mentioned under Drug and Magic Remedies Act. 10
4. Discuss 'Cosmetics' as per D & C Act and write rules for manufacture of cosmetics as per D & C Act. 10
5. Explain in detail Bonded and Non-Bonded Laboratory for medicinal and toilet preparations. 10
6. Write short notes (any **TWO**) :
 - (a) Schedule S of D & C Act.
 - (b) Schedule Q of D & C Act.
 - (c) Labelling and packaging of cosmetics.
 - (d) Issue of Alcohol in Bonded Laboratory. 5×2=10

Faculty of Science and Technology
Bachelor of Cosmetic Technology Semester-III Examination
INTRODUCTORY PHARMACOLOGY AND TOXICOLOGY

Paper—6

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
 - (2) Solve any **FOUR** questions.
 - (3) Due credit will be given to neatness and adequate dimensions.
 - (4) Assume suitable data wherever necessary.
 - (5) Diagrams and chemical equations should be given wherever necessary.
 - (6) Illustrate your answers whenever necessary with the help of neat sketches.
 - (7) Use of non programmable calculator is permitted.
-
1. (a) Define Pharmacology. State and explain its branches with suitable examples. 5
 - (b) Explain the role of Pharmacology in Cosmetic Technology. 5
 2. What is MSDS ? Explain its scope, significance and various sections of MSDS during cosmetic material handling with suitable examples. 10
 3. What are general mechanisms of drug action ? Explain with suitable examples. 10
 4. What are different routes of drug administration ? Explain Topical route of drug administration with its advantages and disadvantages. 10
 5. What is drug disposition ? Explain various processes of drug absorption through cell membrane. 10
 6. Write notes on (any **two**) :
 - (a) Lipid Bilayer Cell Membrane
 - (b) Drug-Receptor Interaction
 - (c) Drug Metabolism
 - (d) Chemotherapy and Toxicology 2×5

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—IV Examination
COSMETIC TECHNOLOGY

Paper—1

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. Define Emulsions. Give their types and various tests used for their identification. 10
2. What is the importance of preservatives in cosmetics ? Explain the origin of contamination. 10
3. Write how an ideal face powder can be formulated describing the ingredients with properties. 10
4. What are ointments ? Classify the OINTMENT bases in detail with examples. 10
5. Define Incompatibility. Describe in detail physical incompatibility with examples. 10
6. Write short notes on (any **TWO**) :
 - (a) Flocculated and Non-Flocculated System
 - (b) Pastes
 - (c) Compact Powder
 - (d) Ideal characteristics of Preservative. 2×5=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—IV Examination

INSTRUMENTAL METHODS ANALYSIS

Paper—2

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data whenever necessary.
- (5) Diagrams and chemical equations should be given whenever necessary.
- (6) Illustrate your answers whenever necessary with the help of neat sketches.
- (7) Use of non programmable calculator is permitted.

1. (a) What are Raman Lines ? 2
- (b) Discuss the principle and instrumentation of Raman Spectrometer. 8
2. (a) Define :
 - (i) Specific optical rotation
 - (ii) Plane Polarized light. 4
- (b) Explain construction and working of a Polarimeter. 6
3. (a) Write a Nernst Equation. 2
- (b) Describe a pH meter. How is it standardized ? 8
4. Define refractive index and discuss the principle of Abbe's Refractometer. 10
5. (a) Explain the terms :
 - (i) Specific conductance.
 - (ii) Equivalent conductance. 4
- (b) Describe conductometric titration apparatus and application of this method. 6

6. Write short notes on (any **TWO**) :—

- (a) Types of Potentiometric titration.
- (b) Use of pH measurement in cosmetics.
- (c) Quinhydrone electrode.
- (d) Conductivity cell.

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-IV Examination
COSMETIC ENGINEERING
Paper-3

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **four** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. Write a note on Humidifiers in Cosmetics. 10
2. Differentiate between Filmwise and Dropwise Condensation. 10
3. Explain in detail about Material Balance. 10
4. Write in detail Finned Tube Heat Changers and classify Heat Exchangers. 10
5. Explain various laws of Radiation. 10
6. Write short notes on (any two) :
 - (a) Air Conditioner
 - (b) Fourie's Law
 - (c) Energy Balance
 - (d) Conduction thru plane wall. 5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-IV Examination

COSMETIC CHEMISTRY

Paper—4

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **four** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. Give detail classification of Lipids. 10
2. What are humectants ? Describe properties and uses of humectants in cosmetic formulations. 10
3. Write notes on (any two) : 2×5=10
 - (a) Vitamin A
 - (b) Vitamin D
 - (c) Vitamin B complex.
4. Explain in detail about Pearl and Pearl Essence. 10
5. Explain the role of Ion Exchange resin in Cosmetic Industry. 10
6. Write short notes on (any two) : 2×5=10
 - (a) Viscosity modifier
 - (b) Vitamin C
 - (c) Lanolin
 - (d) Waxes.

Faculty of Science & Technology
Bachelor of Cosmetic Technology (Semester-IV) Examination
DRUG & COSMETIC LAWS

Paper-5

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **four** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non programmable calculator is permitted.

1. Give composition and functions of Pharmacy Council of India. 10
2. What are the working and service conditions as per Shops and Establishments Act ? 10 ✓
3. Comment on various provisions made under the Factories Act in benefit of workers. 10 ✓
4. Define contract. Describe the rights and duties of a Principal and Agent. 10
5. Write a note on Sales Promotion Act. 10 ✓
6. Write notes on (any two) : 10
 - (i) Patent.
 - (ii) Weights and Measures Act.
 - (iii) State Pharmacy Council.
 - (iv) Penalties under the Factories Act.

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-IV Examination
INTRODUCTORY PHARMACOLOGY AND TOXICOLOGY
Paper-6

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **four** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. Explain the following terms with suitable examples (any **two**) :

~~(a)~~ Autocoids

~~(b)~~ Heavy Metal Antagonist

(c) H₂ Receptor Antagonist

(d) Ectoparasiticides.

10

2. What are topical drugs ? Discuss the pharmacology of the following topical drugs with suitable examples (any **two**) :

~~(a)~~ Demulcent and emollients

~~(b)~~ Astringents, antiperspirants and deodorants

(c) Keratolytics (Desquamating agents)

(d) Melanizers and Demelanizers.

10

~~3.~~ What is Histamine ? Explain synthesis, storage and metabolism of histamine and its pharmacological action in human body.

10

4. Discuss the Pharmacology of following cosmeceuticals in detail (any **two**) :
- (a) Antidandruff
 - (b) Antiacne/Antipimple
 - (c) Anti-aging and Anti-wrinkles. 5×2=10
5. Explain classification, properties, method of estimation of potency of local anti-infective agents. 10
6. Write notes on (any **two**) :
- (a) Symptoms and Management of Lead Poisoning
 - (b) Anti-fungal Agents
 - (c) H₁ Receptor Antagonists
 - (d) Sunscreen Agents. 5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-V Examination

PERFUMES

Paper-1

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

(1) All questions carry equal marks.

(2) Solve any **four** questions.

1. What are the differences between process of maceration and percolation ? 10
2. Draw and describe the soxhlet apparatus. 10
3. Explain the process of steam distillation for extraction of essential oils. Give its merits and demerits. 10
4. Write method of isolation and uses of peppermint or raspberry. 10
5. Discuss the various methods of manufacturing of ethanol. 10
6. Write a short note on (any **two**) :
 - (a) Linalool
 - (b) Rose
 - (c) Eugenol. 5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-V Examination

COSMETIC TECHNOLOGY

Paper-2

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **four** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Diagrams and chemical equations should be given wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

1. What are humectants ? Describe their ideal properties. Add a note on commonly used humectants in cosmetic formulations. 10
2. Explain face packs and face masks by giving special emphasis on earth based system. 10
3. Define soap. Add a note on manufacturing of soap. 10
4. Explain in detail various astringent and skin tonic preparations with emphasis on their formulations. 10
5. What are various skin creams ? Add a note on functions, properties and formulation of cleansing cream. 10
6. Write notes on :
 - (a) Choice of antioxidants
 - (b) Moisturizing cream.

2×5=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—V Examination

PRINCIPLES OF COSMECEUTICS

Paper—3

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.

1. (a) Classify the surfactants based on HLB Scale. 3
- (b) Describe wetting and spreading agents in detail. 7
2. (a) Derive the equation of spreading coefficient. 5
- (b) The surface tension of an organic liquid is 25 ergs/cm², the surface tension of water is 72.8 ergs/cm² and the interfacial tension between the two liquids is 30 ergs/cm² at 20°C. What is the work of cohesion ? Work of adhesion and spreading coefficient ? 5
3. Define suspensions and comment on :
 - Sedimentation parameters
 - Controlled flocculation. 10
4. Describe in detail the theories of emulsification. 10
5. Derive the Hildebrand-Wood-Scatchard equation. 10
6. Write short notes on any **TWO** :
 - (a) Non-ionic surfactants
 - (b) Zeta potential
 - (c) Difference between flocculation and deflocculation. 10

Faculty of Science and Technology
Bachelor of Cosmetic Technology Semester—V Examination
COSMETIC ENGINEERING

Paper—4

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry equal marks.
- (2) Answer any 4.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat diagrams.
- (7) Use of non programmable calculator is permitted.

1. Name the various size reduction equipments. Explain Grinders and Crushers used in cosmetic industries. 10
2. Explain disc filters and membrane filters. 10
3. Discuss the theory of size reduction and factors influencing the size reduction. 10
4. What are classifiers ? Explain its different types. 10
5. Explain the positive and negative pressures in manufacturing area. 10
6. Write short notes (any 2) : 10
 - (a) Cyclone separators
 - (b) Crushing Rolls
 - (c) Open and closed circuit grinding
 - (d) Filters aids.

5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—V Examination
BEAUTY CULTURE
Paper—5

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry equal marks.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Illustrate your answers wherever necessary with the help of neat sketches.

1. (1) Describe the structure of skin. 6
- (2) Write the main functions of the skin. 4
2. Write short notes on the following :
 - (1) Open Pores
 - (2) Black heads
 - (3) Freckles
 - (4) Acne. 10
3. What are benefits of Face Masks ? Describe about Setting Masks and Non-Setting Masks. 10
4. Describe in detail the facial treatment for dry and mature skin type. 10
5. Describe different essential oils with their properties and write a note on different carrier oils used in Aromatherapy. 10
6. Short notes on any **two** (5 marks each) :
 - (1) Benefits of the facial treatment
 - (2) Importance of Diet & Exercise
 - (3) Skin Types
 - (4) Importance of Patch Test in Skin Treatments. 5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-V Examination
PHARMACOLOGY AND INTERACTIONS
Paper—6

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry equal marks.
- (2) Solve any **FOUR** questions.
- (3) Diagrams and Chemical equations should be given wherever necessary.
- (4) Illustrate your answers wherever necessary with the help of neat sketches.

1. What is skin pigmentation and explain any two pigmentary and depigmentary agents. 10
2. Discuss disorders and treatment of teeth in detail. 10
3. Explain in detail disorders and treatment of skin. 10
4. Write in detail about structure of Nail and mention any three nail disorders. 10
5. Write notes on (any **TWO**) :—
 - (a) Structure of Hair
 - (b) Mouthwash
 - (c) Sebaceous glands
 - (d) Dentifrices and mouth washes. 5×2=10
6. Explain the any four disorders of sweatgland and their treatments. 10

MSP/KS/23/4050

Faculty of Science & Technology
Bachelor of Cosmetic Technology (Semester-VI) Examination
PERFUMES
Paper—1

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Assume suitable data wherever necessary.
- (4) Diagrams and chemical equations should be given wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

1. What are fixatives ? Classify fixatives on the basis of sources with examples. 10
2. Discuss building of perfumes along with selection of fixatives. 10
3. Give the basic reaction for esterification and write down the experimentation procedure for esterification. 10
4. Write down the method of synthesis of coumarin OR Benzyl benzoate with reaction and flow diagram. 10
5. Give synthetic method for preparation of vanillin or benzaldehyde. 10
6. Write short notes on (any **two**) :—
 - (i) Nitro Musk
 - (ii) Benzyl Acetate
 - (iii) Phenylethyl Alcohol. 5×2

MSP/KS/23/4051

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-VI Examination

COSMETIC TECHNOLOGY

Paper-2

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Assume suitable data wherever necessary.
- (4) Diagrams and Chemicals equations should be given wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

1. What are baby products ? Write a note on safety of baby cream. 10
2. Explain skin lighteners, with some commonly used skin lightening agents. 10
3. Write detail note on lipsticks with respect to function, properties and formula. 10
4. Write notes on (any **TWO**) :—
 - (a) Soap ingredients
 - (b) Bath salts
 - (c) Eye cosmetics. 5×2=10
5. What are protective creams ? Explain the formulation aspects of it. 10
6. Explain role of various ingredients used in formulating mascara. 10

MSP/KS/23/4052

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-VI Examination
PRINCIPLES OF COSMECEUTICS
Paper—3

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and chemical equations should be given wherever necessary.
- (6) Illustrate your answers whenever necessary with the help of neat sketches.
- (7) Use of non programmable calculator is permitted.

1. Explain in detail Organometallic complexes with examples. 10
2. Discuss electrical properties of colloids in detail. 10
3. Elaborate various types of flow behaviours, with graphs. 10
4. Write in detail any two methods of determining the particle size with diagrams. 10
5. Explain the concept of distribution of solute in immiscible liquids and its application in cosmetics. 10
6. Write short notes on (any **two**) :
 - (a) Angle of repose and its application
 - (b) Cone and plate viscometer
 - (c) Peptization. 5×2=10

Faculty of Science & Technology

Bachelor of Cosmetic Technology Semester-VI Examination

COSMETIC ENGINEERING

Paper—4

Time : Two Hours]

[Maximum Marks : 40

N.B. :— (1) All questions carry marks as indicated.

(2) Solve any **four** questions.

1. (a) Explain fractionating column used for distillation. 5
(b) Explain material balance for binary mixtures. 5
 2. Explain spray dryer and tray dryer in detail. 10
 3. (a) Explain prevention of swirling and vortex formation. 5
(b) Write a note on Turbines. 5
 4. (a) Explain the working of long tube vertical evaporator. 5
(b) What is the boiling point elevation of the solution and driving force for that transfer ? 5
- Data : Solution boils at a temp. of 380 K (107 °C) and boiling point of water at a pressure in the vapour space is 373 K (100 °C). Temp. of condensing steam is 399 K (126°C).
5. What is azeotrope ? Write a brief note on steam distillation. 10
 6. Write a short note on (any **two**) :
 - (a) Paddles
 - (b) Drum dryer
 - (c) Forced circulation evaporators.
 - (d) Falling rate period 10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—VI Examination
BEAUTY CULTURE

Paper—5

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Assume suitable data wherever necessary.
- (4) Diagrams and Chemical equations should be given wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

1. What is Pre-make-up skin care ? Also write down about complexion planning in make-up techniques. 10
2. Write in detail about Evening make-up and how will you create impressive eyes in evening make-up ? 10
3. With all technical points how will you create a perfect bride by applying bridal make-up ? 10
4. How will you correct different faulty eyes and nose by using corrective make-up ? 10
5. Write in detail structure of hairs and types of hairs with Hair Cycle. 10
6. Write short notes on any **TWO** :
 - (a) Application of false eyelashes.
 - (b) Different shapes of faces.
 - (c) Primer.
 - (d) Shampoo and conditioner for hairs. 5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-VI Examination

PHARMACOLOGY AND INTERACTIONS

Paper-6

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **four** questions.
- (3) Assume suitable data wherever necessary.
- (4) Diagrams and Chemical equations should be given wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

1. What is allergy ? Explain various types of hypersensitivity reactions. 10
2. Explain various disorders of feet and add a note on foot cosmetics. 10
3. What is dermatitis ? Explain irritant contact dermatitis. 10
4. What are various safety tests ? Which are carried out for different types of cosmetics as per BIS specification ? 10
5. Explain in detail Antibody, Antigen and acute toxic contact dermatitis. 10
6. Write notes on (any **two**) :
 - (a) Eye irritancy test for cosmetics
 - (b) Phototoxic contact dermatitis
 - (c) Atopic dermatitis
 - (d) Foot cosmetics. 2×5=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—VI Examination
COSMETIC ENGINEERING

Paper—4

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated. Solve any **four** questions.
 - (2) Due credit will be given to neatness and adequate dimensions.
 - (3) Assume suitable data wherever necessary.
 - (4) Diagrams and chemical equations should be given wherever necessary.
 - (5) Illustrate your answers wherever necessary with the help of neat sketches.
 - (6) Use of non-programmable calculator is permitted.
1. Discuss different types of impellers used for mixing of liquids with liquids. 10
 2. (a) Derive Rayleigh's equation for simple distillation. 5
(b) Explain in detail equilibrium distillation. 5
 3. How to increase economy of an evaporator ? Explain in detail. 10
 4. Write down principle, working and construction of spray dryer. Draw a neat sketch of it. 10
 5. What do you mean by Azeotropes ? What are the various methods of separation of azeotropic mixture ? 10
 6. Write short notes on (any two) : 5×2=10
 - (i) Ribbon blender
 - (ii) Calendria type evaporator
 - (iii) Tray dryer
 - (iv) Fractionation.

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—VI Examination
PERFUMES
Paper—1

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and chemical equations should be given wherever necessary.
- (6) Illustrate your answers whenever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

- 1/ What are fixatives ? Classify fixatives on the basis of sources with examples. 10
2. Write sources, uses and chemical composition of following :
 - (a) Civet
 - (b) Benzoin
 - (c) Sandalwood
 - (d) Diethyl Pthalate. 10
- 3/ Write down the method of synthesis of coumarin **OR** Benzyl benzoate with reaction and flow diagram. 10
- 4/ Write down the method of Synthesis of Musk ambrette **OR** Musk Xylene. 10
5. Explain manufacturing of Vanillin **OR** Benzaldehyde in detail. 10
- 6/ Write short notes on (any **TWO**) :—
 - (a) Manufacturing of Phenyl ethyl alcohol
 - (b) Building of perfumes
 - (c) Musk Ketone
 - (d) Lemon
 - (e) Cinnamon. 2×5=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—VI Examination
PHARMACOLOGY AND INTERACTIONS
Paper—6

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. Define Allergy, Antibody, Antigen & Hapten. Write note on Atopic dermatitis. 10
2. What is Allergic contact dermatitis ? Explain its immunological aspects. 10
3. What are disorders of feet ? Explain various active ingredients used in formulation of foot Cosmetics. 10
4. Explain principle, procedure, observations & Result of Draize Skin Irritation Test in rabbits. 10
5. Explain procedure & interpretation of result of patch test as per BIS. 10
6. Write notes on (any two) :
 - (a) Photoallergic and Phototoxic contact Dermatitis
 - (b) Safety evaluation of Cosmetics
 - (c) Type IV Hypersensitivity reaction
 - (d) Oral Toxicity test in Rats. 2×5

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-VI Examination

BEAUTY CULTURE

Paper—5

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data whenever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. What are different shapes of faces ? Explain professional ethics and beauticians' attitude to clients. 10
2. What is Corrective make-up for face shapes, eyes, lips and nose ? 10
3. What are complexion planning in make-up techniques and explain pre make-up skin care. 10
4. Explain in detail structure of Hair. Enlist types of Hair. 10
5. Write in detail about application of false eye lashes method and contraindications. 10
6. Write notes on any **two** :
 - (a) Bridal make-up
 - (b) General problems and care for hair
 - (c) Natural and chemical dyes
 - (d) Foundation. 5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—VI Examination

COSMETIC TECHNOLOGY

Paper—2

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

- ✓ 1. (a) What factors contribute to give skin its colour ? 3
 (b) Write a note on various skin lightening agents. 7
2. Explain skin problems in babies. Write a note on baby products. 10
3. Describe in detail about Spreading Oil and Dispersible Oil, also give formulation for each. 10
- ✓ 4. In which different forms can Eye Shadow be formulated ? Explain with examples. 10
- ✓ 5. Write a detailed note on Manufacture of Lipstick giving formulation. 10
- ✓ 6. Write short notes on any **TWO** :
 (1) Bath Salts
 (2) Safety aspect of products for Babies
 (3) Eyeliner
 (4) Hand Cleansers. 2×5=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-VI Examination
PRINCIPLES OF COSMECEUTICS
Paper—3

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **four** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data whenever necessary.
- (5) Diagrams and chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non programmable calculator is permitted.

1. Describe in detail the electrical properties of colloids. 10
2. (a) Write a note on Thixotropy.
- (b) A driving weight w of 450 g produced a bob velocity v of 350 rpm. The value of w_f was found to be 225 grams. The instrumental constant k_v is 52.000 and k_f is 20.0. What is the plastic viscosity and the yield value of the sample ? 5×2=10
3. (a) Explain the method of sedimentation to determine particle size.
- (b) A powdered material, density 2.7 is suspended in water at 20°C. What is the size of the largest particle that will settle without causing turbulence ? The viscosity of water at 20°C is 0.01 poise, or gm/cm sec. and the density is 1.0. 5×2=10
4. Explain how ionic dissociation and molecular association influence partitioning. 10
5. What are complexes ? Give the details of :
 - (a) Chelates
 - (b) Quinhydrone type
 - (c) Channel lattice type
 - (d) Clathrates. 10
6. Write short notes on any **two** :
 - (1) Optical properties of colloids
 - (2) Non-Newtonian liquids
 - (3) Importance of porosity in Micromeritics 10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—VIII Examination
HERBAL COSMETICS
Paper—5

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **four** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. Write biological source, chemical composition and components of citrus paradise. Write a detailed note on its application in cosmetic formulations. 10
2. Write down the composition and cosmeceutical uses of crocus sativers. Add a note on extraction of crocin from stigmas of crocus sativas. 10
3. Enlist all the methods used for extraction of herbal constituents. Write in detail any two methods. 10
4. Discuss in detail the incorporation of herbal actives in shampoo and hair tonic. 10
5. Write a note on (any two) :
 - (a) Solvents used for extraction of herbal actives
 - (b) Bhringraj
 - (c) Curry leaves. 2×5=10
6. Write in detail extraction process and incorporation of carrot in suitable formulation. Add a note on the constituents of carrot. 10

Faculty of Science and Technology
Bachelor of Cosmetic Technology Semester—VIII Examination
QUALITY ASSURANCE TECHNIQUES
Paper—4

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
 - (2) Solve any **four** questions.
1. On what basis Bacterias are classified ? Discuss in detail. 10
 2. Explain in detail Antimicrobial assay and chemical control. 10
 3. Explain principal methods of analysis to enumerate various types of organism. 10
 4. Efficacy testing of preservative. 10
 5. Explain study of environmental isolates and microbial analysis. 10
 6. Write short notes on any **two** : 5×2=10
 - (a) Streak plate and four plate method of isolation.
 - (b) Serial dilution techniques.
 - (c) Mechanism of cell injury.

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-VIII Examination

PLANT DESIGN

Paper-3

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated. Solve any four questions.
- (2) Due credit will be given to neatness and adequate dimensions.
- (3) Assume suitable data wherever necessary.
- (4) Diagrams and chemical equations should be given wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

1. Explain working and principle of Rotary Dryer. 10
2. What are the different types of heads generally used to cover the reactors in Cosmetic Industries ? 10
3. Derive an equation for power requirement in agitator. 10
4. Discuss the designing of storage vessel. 10
5. What are the various process hazards that occur in the Cosmetic Industries ? Explain. 10
6. Write short notes on (any two) :
 - (a) Jacket and coils for reaction vessel.
 - (b) Turbine agitator.
 - (c) Types of losses in storage vessel.
 - (d) Spray dryer.

5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-VIII Examination
COSMETIC TECHNOLOGY
Paper-2

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) Solve any **FOUR** questions.
- (2) Due credit will be given to neatness and adequate dimensions.
- (3) Assume suitable data wherever necessary.
- (4) Diagrams and Chemical equations should be given wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

1. Discuss ideal properties of Toothpaste. Write in detail about its formulation. 10
2. Classify foot preparation and explain it in detail. 10
3. Write in detail about manicure preparation with its formulation. 10
4. Classify shaving preparation and write in detail about lather shaving preparation with recent trends. 10
5. Write in detail about suncreening agent used in sunscreen preparation. 10
6. Write short notes (any **TWO**) :—
 - (i) E-viten concept
 - (ii) Mouthwashes
 - (iii) Dry shaving preparation
 - (iv) Foot powders.

5×2=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester—VIII Examination
PERFUMES AND COLOURS

Paper—1

Time—Two Hours]

[Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **FOUR** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and Chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. Define :
 - (a) Croma
 - (b) Light
 - (c) Hue
 - (d) Bleed
 - (e) Hiding Power.
2. Classify natural colours on the basis of their sources and properties. 10
3. Write in detail about preparation of colour solution and how it is incorporated in the hair care products ? 10
4. Define certified colours. Explain the details of relation of colours and emotions. 10
5. Discuss the methods for determination of colours. 10
6. Write short notes on (any **TWO**) :
 - (a) Colour matching of marketed products
 - (b) Schedule 2 of D & C Act
 - (c) Incorporation of colour in soap.

2×5=10

Faculty of Science & Technology
Bachelor of Cosmetic Technology Semester-VIII Examination
ORGANISATION AND MANAGEMENT OF INDUSTRIES
Paper-6

Time : Two Hours]

[Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve any **four** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Diagrams and chemical equations should be given wherever necessary.
- (6) Illustrate your answers wherever necessary with the help of neat sketches.
- (7) Use of non-programmable calculator is permitted.

1. Explain the role of Marketing Research in detail. 10
2. Explain plant location and layout consideration with special reference to production planning and control. 10
3. State the advantages and disadvantages of Small Scale Industries and Cottage Industries in India. 10
4. Explain in brief fundamentals of Business Organization and Management. 10
5. Explain distribution budgeting and control system. Write a note on consumer research of product. 10
6. Write short notes on (any **two**) :
 - (a) Consumer and Product Research
 - (b) Evaluation of Salesman's Performance
 - (c) Problems faced by Small Scale Industries
 - (d) Role of Sales Forecasting in Marketing Management. 5×2=10

Bachelor of Science (B.Sc.) Semester-IV Examination
BIOCHEMISTRY
(Biophysical and Biochemical Techniques)
Optional Paper—II

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) Draw well labelled diagrams wherever necessary.

(2) All questions are compulsory and carry equal marks.

1. Describe in detail the principle, technique and applications of Gel electrophoresis. 10

OR

(a) Give brief description of various types of detection methods in electrophoresis. 5

(b) Describe in brief the technique of High Voltage Electrophoresis. 5

2. Describe in detail the principle, technique and applications of isoelectric focussing. 10

OR

(a) Write a short note on ELISA. 5

(b) Write a short note on radioimmunoassay. 5

3. Write notes on :

(a) Liquid scintillation counter. 5

(b) Ionization chamber. 5

OR

Give detail account of GM counter. 10

4. Describe isolation of cell components using centrifugation. 10

OR

(a) Write a note on desktop centrifuge. 5

(b) Describe in brief rate zonal centrifugation. 5

5. Solve any ten :

(i) Name any one dye used for the detection of proteins in paper electrophoresis.

(ii) Name tracking dye used in gel electrophoresis.

(iii) What is the role of TEMED in polyacrylamide gel electrophoresis ?

(iv) What is the charge on glycine in the separating gel during SDS-PAGE ?

(v) Name the scientist who discovered the technique of isoelectric focussing.

- (vi) Give full form of RLS.
- (vii) Name any one isotope used in metabolic studies.
- (viii) Give one example of stable isotope.
- (ix) What is dead time in GM counter?
- (x) What is meant by Svedberg constant?
- (xi) Give relationship between R.C.F. and R.P.M.
- (xii) Define sedimentation coefficient.

B-11

Bachelor of Science (B.Sc.) Semester-V Examination

MOLECULAR BIOLOGY

Optional Paper—2

(Bio-Chemistry)

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw diagrams wherever necessary.

1. Describe the experimental design used to prove semiconservative nature of replication. 10

OR

Write notes on :

- (a) E.coli origin of replication. 5
 - (b) Termination of DNA replication in E.coli. 5
2. Describe the important properties of DNA Polymerase I. 10

OR

Write notes on :

- (a) Ames test. 5
 - (b) Base excision repair. 5
3. Discuss in detail major events of prokaryotic transcription initiation. 10

OR

Explain how DNA footprinting can help in the determination of length of the promoter. 10

4. Describe the Lac operon in detail. 10

OR

Discuss attenuation control of Trp operon. 10

5. Answer any **ten** of the following :

- (i) What is the full form of SSB proteins ? 1
- (ii) Why is replication also called semidiscontinuous ? 1

- (iii) Which enzyme is required for unwinding of dsDNA during replication ? 1
- (iv) What is meant by 'SOS' in SOS repair ? 1
- (v) Which activity of DNA polymerase is required for performing the function of proof reading ? 1
- (vi) What is the full form of NER ? 1
- (vii) Write the subunit composition of prokaryotic RNA polymerase holoenzyme. 1
- (viii) What is the role of ' σ ' factor ? 1
- (ix) Name the protein required for termination of transcription. 1
- (x) Name the co-repressor of Trp operon. 1
- (xi) Name the primer used by reverse transcriptase. 1
- (xii) Name any one inhibitor of prokaryotic transcription. 1

Bachelor of Science (B.Sc.) Semester-VI Examination

METABOLISM—II

Optional Paper—1

(Bio-Chemistry)

Time : Three Hours]

[Maximum Marks : 50

Note :—(1) All questions are compulsory and carry equal marks.

(2) Draw diagrams wherever necessary.

1. Give detail account of β -oxidation of saturated fatty acid. 10

OR

Give brief idea about :

- (a) Oxidation of odd carbon fatty acids. 5
- (b) Oxidation of fatty acids in peroxisomes. 5
2. Give detail account of fatty acid biosynthesis with respect to :
- (a) Transport of acetyl CoA into cytosol.
- (b) Conversion of acetyl CoA to malonyl CoA.
- (c) Fatty acyl CoA synthase complex reactions. 10

OR

Give detail account of biosynthesis of phospholipids. 10

3. Give detail account of Urea cycle. 10

OR

Describe the following :

- (a) Transamination 5
- (b) Transmethylation. 5
4. Give a detailed account of de novo synthesis of pyrimidine nucleotide. 10

OR

Describe the following :

- (a) Gout 5
- (b) The role of cyclic nucleotide in metabolism. 5

5. Solve any TEN :—

- (i) Write any one significance of HMP shunt.
- (ii) How many ATPs are formed on complete oxidation of stearic acid ?
- (iii) Name the components of a triglyceride.
- (iv) What is Ketogenesis ?
- (v) What is Ketosis ?
- (vi) What is Ketoacidosis ?
- (vii) Write an example of Ketogenic amino acid.
- (viii) Name the prosthetic group of enzymes involved in decarboxylation of amino acids.
- (ix) Name the carrier of ammonia present in muscles.
- (x) Write full form of PRPP.
- (xi) Name the end product of purine metabolism.
- (xii) Name the enzyme which converts uracil nucleotide to Thymine nucleotide. 1×10=10

RTM Nagpur University Examination Winter 2022
Kamla Nehru Mahavidyalaya Nagpur
B.Sc. Sem I Paper I
(BIOMOLECULES & HUMAN PHYSIOLOGY)

Time: Three Hours

[Maximum Marks: 50]

- N.B:- (1) All questions are compulsory and carry equal marks.
(2) Draw diagrams whatever necessary.

1. Explain the cyclic structure of monosaccharide's 10

OR

Explain important derivatives of monosaccharide's and also explain the mutarotation.

2. a) What is acid value? Explain it in detail. 5
b) Explain the classification of fatty acid in details. 5

OR

- a) What is saponification Number? Explain it in detail 5
b) Explain the rancidity of fats also mention the biological significance of fats. 5

3. Describe in detail digestion and absorption of carbohydrates. 10

OR

- a) Explain Neuromuscular Junction 5
b) Explain the digestion of protein 5

4. Describe cell membrane and also explain its membrane composition. 10

OR

Describe briefly:

- a) Na-K pump
b) Calcium Pump

5. Answer any ten of the following: 10

- i) What are monosaccharide's?
- ii) What is condensation reaction?
- iii) Name any one disaccharide.
- iv) What are unsaturated Fat?
- v) Draw the structure of phosphatidyl serine
- vi) What are cerebrosides?
- vii) Draw the structure of myosin
- viii) What is active transport?
- ix) Name any one enzyme of digestion
- x) What is amylase?
- xi) Draw the diagram of calcium pump.
- xii) What is lactase ?

Bachelor of Science (B.Sc.) Semester—I (C.B.S.) Examination
BIO-CHEMISTRY
(Microbiology & Virology)
Compulsory Paper—2

Time : Three Hours]

Maximum Marks : 50

Note :— (1) All questions are compulsory and carry equal marks.
(2) Draw well labelled diagrams wherever necessary.

1. Write a note on the following:—

(a) Concept of immunization.

5

(b) Spontaneous Generation theory.

5

OR

With a well labeled ray diagram explain the principle and working of fluorescence microscope in detail.

10

2. Describe in detail the Lysogenic cycle of viruses.

10

OR

Describe the principle and techniques of simple and differential staining with one suitable example.

10

3. Give a detailed account of cell wall structure of gram +ve and gram -ve bacteria.

10

OR

Write general account on Ribosome, flagella, fimbriae

10

4. Describe various phases of Bacterial growth curve and add a note on methods utilized for measurement of growth.

10

OR

Describe the following :—

(a) Chemostat and Dialysis

5

(b) Classification of microorganisms on the basis of hydrogen ion concentration.

5

Solve any **TEN** :—

- (i) What is resolving power of a microscope?
- (ii) What is focal length?
- (iii) Who is called as the father of microbiology?
- (iv) Name any one bacteriophage infecting E-coli.
- (v) What are temperate phages?
- (vi) Which manual is currently used for the classification of microorganisms?
- (vii) Define Plasmid.
- (viii) Which type of Ribosome is present bacterial cell?
- (ix) What is a capsule?
- (x) What are obligate anaerobes?
- (xi) What is synchronous culture?
- (xii) What are thermophiles?

1×10=10

Bachelor of Science (B.Sc.) Semester—I (C.B.S.) Examination
BIO-CHEMISTRY
(Microbiology & Virology)
Compulsory Paper—2

Time : Three Hours]

Maximum Marks : 50

Note :— (1) All questions are compulsory and carry equal marks.
(2) Draw well labelled diagrams wherever necessary.

1. Write a note on the following :—
(a) Fermentation. 5
(b) Spontaneous Generation theory. 5

OR

With a well labelled ray diagram explain the principle and working of Electron microscope in detail. 10

2. Describe in detail the Lytic cycle of viruses. 10

OR

Describe the principle and techniques of simple and differential staining with one suitable example. 10

3. Give a detailed account of cell wall structure of gram +ve and gram -ve bacteria. 10

OR

Write general account on Ribosome, flagella, fimbriae. 10

4. Describe various phases of Bacterial growth curve. 10

OR

Describe the following :—
(a) Turbidostat and Dialysis 5
(b) Classification of microorganisms on the basis of Temperature requirement. 5

Solve any **TEN** :—

- (i) What is resolving power of a microscope ?
- (ii) Give one application of electron microscopy?
- (iii) Who is called as the father of microbiology?
- (iv) Name any one bacteriophage infecting E-coli.
- (v) Define viruses?
- (vi) Which manual is currently used for the classification of microorganisms?
- (vii) Give any one difference between prokaryotic and eukaryotic cell.
- (viii) What is endospore?
- (ix) What is Episome ?
- (x) Define generation time?
- (xi) What is synchronous culture?
- (xii) Write any two methods utilized for measurement of growth.

1×10=10

M.Sc. Third Semester (Bio-Chemistry) (CBCS) NEP
Compulsory Paper-XI MBC3T10 Paper-III : Immunology

P. Pages : 1

Time : Three Hours



SKR/KW/24/10375

Max. Marks : 80

- Notes : 1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw diagrams wherever necessary.

1. Write a note on : 8
a) Phagocytosis. 8
b) Inflammation. 8

OR

c) Describe secondary lymphoid organs with a well labelled diagram. 8
d) TLR mediated pathways. 8
2. Write a note on : 8
a) Structure and function of MHC. 8
b) Phases of humoral immunity. 8

OR

c) ADCC 8
d) Delayed Hypersensitivity. 8
3. Describe in detail generation of antibody diversity. 16

OR

Write note on : 8
a) Ig Superfamily. 8
b) Cytokines & Chemokines. 8
4. Write note on : 8
a) Agglutination. 8
b) Cytotoxicity assay. 8

OR

Discuss in detail hybridoma technology. 16
5. Write short notes on : 4
a) PAMPs. 4
b) Factors affecting Antigenicity. 4
c) TCR diversity. 4
d) Abzymes. 4

M.Sc. Third Semester (Bio-Chemistry) (CBCS) NEP
MBC3T11(B) Elective-II Optional Paper-XII - Bio-Research Techniques
Paper-IV

P. Pages : 1

Time : Three Hours



SKR/KW/24/10377

Max. Marks : 80

- Notes : 1. All questions are compulsory and All question carry equal marks.
2. Draw diagrams wherever necessary.

1. Describe in detail, the principle and working of a flow cytometer. Draw well-labelled diagrams. 16
- OR**
- Write on:
- a) Generation of Scatter and Fluorescence. 8
 - b) Sorting Lasers and alignment. 8
2. Compare and contrast adherent and suspension cell culturing. 16
- OR**
- Write on:
- a) 3D cultures. 8
 - b) Cytotoxicity assay 8
3. Write on: 8
- a) Sequencing of DNA 8
 - b) Restriction Enzymes 8
- OR**
- c) DNA fingerprinting 8
 - d) RFLP. 8
4. Write on: 8
- a) RNA Hybridization 8
 - b) S1 Assay 8
- OR**
- c) Ribozyme Technology. 8
 - d) Northern Blotting. 8
5. Write on: 4x4
- a) Fluidics of a flow cytometer.
 - b) Methods of quantitation of cells in culture.
 - c) DNase foot printing
 - d) Si RNA technology.

Bachelor of Science (B.Sc.) Biochemistry Semester-I New Education Policy (NEP) Examination
BBC1T02 : MICROBIAL BIOCHEMISTRY

Paper-2

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory and carry equal marks.

(2) Draw diagrams wherever necessary.

1. Describe ray diagram, principle and application of phase contrast microscope. 16

OR

Write notes on :

- (a) Composition of capsule and slime layer 8
(b) Gram +ve cell wall. 8
2. Describe in detail the various methods used for the isolation of pure culture. 16

OR

- (a) Differentiate between selective and differential media. 8
(b) Classify the bacteria on the basis of temperature requirements. 8
3. Describe the factors influencing antimicrobial activity and write about mechanism of cell injury. 16

OR

Write notes on :

- (a) Describe any two methods of physical microbial control. 8
(b) Describe any two chemical methods of microbial control. 8
4. Describe the principle and technique of differential staining. 16

OR

Write short notes on :

- (a) Methods for the diagnosis of parasitic infections (any two). 4
(b) Widal test. 4
(c) General characteristics of viruses. 4
(d) Lysogeny. 4

(Contd.)

5. Solve any **EIGHT** of the following :

- ~~(i)~~ Write any two contributions of Louis Pasteur. *anthrax vaccine, pasteurization*
- (ii) What is resolving power and numerical aperture ?
- ~~(iii)~~ Write various arrangements of flagella in bacteria in brief.
- (iv) What is generation time ?
- (v) What is stationary phase of growth curve of bacteria ?
- (vi) What is viable cell count method ?
- ~~(vii)~~ What are disinfectants ?
- ~~(viii)~~ What is sterilization ? *It is a process in which microbes are killed by heat method.*
- ~~(ix)~~ What are antibiotics ? *Antibiotics help to destroy harmful bacteria inside our body.*
- ~~(x)~~ Define negative staining.
- (xi) Give names of two symmetry of viruses.
- (xii) What are lytic viruses ?

8×2=16

Master of Science (M.Sc.) Semester-II Choice Based Credit System (CBCS)
(Bio-Chemistry) Examination
IMMUNOLOGY

Paper-1

Paper-V

Time : Three Hours]

[Maximum Marks : 80

- Note :—** (1) All questions are compulsory.
(2) All questions carry equal marks.

1. Compare and contrast Innate and Adapted Immunity.

OR

Write on :

- (a) BCR
 - (b) Organization and rearrangement of TCR genes.
2. Describe in detail the maturation, activation and differentiation of B cells.

OR

Write on :

- (a) Clonal Selection Theory
 - (b) Cytokines and Chemokines
3. Describe in detail the similarities and differences in humoral and cell mediated immunity.

OR

Write on :

- (a) T and B cell interaction
- (b) Ag presentation.

4. Write on :

- (a) EIA
- (b) Immunofluorescence.

OR

- (c) HLA Typing
- (d) Leukocyte migration inhibition technique.

5. Write notes on :

- (a) Phagocytosis
- (b) Ig structure
- (c) Super Antigens
- (d) Abzymes.

**Master of Science (M.Sc.) Semester—IV Choice Based Credit System (CBCS)
(Biochemistry) Examination**

CORE (SUBJECT CENTRIC) : BIORESEARCH TECHNIQUES—II

Optional Paper—4

Paper—IV

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory and carry equal marks.

(2) Give diagrams wherever necessary.

1. (a) Describe any two applications of BiFc in biological sciences. 8
- (b) Describe yeast two hybrid screens. 8

OR

- (c) Describe principle and instrumentation of affinity electrophoresis. 8
- (d) Describe co-immunoprecipitation. 8
2. (a) What are amino acid analogs ? Describe the role of photoreactive amino acid analogs in crosslinking of protein complexes. 16

OR

- (b) Describe any two applications of quantitative immunoprecipitation. 3
- (c) Describe chemical cross linking. 8
3. (a) Describe dual polarisation interferometry. Explain any two applications. 16

OR

- (b) Explain DLS. 8
- (c) Explain Mechanism and any one application of surface plasmon resonance. 8
4. (a) Describe principle, assay method and any two applications of BRET. 16

OR

- (b) Explain any one web server used in protein-protein docking. 8
- (c) Explain principle and instrumentation of 2D-FT NMR spectroscopy. 8
5. Write short notes on :
 - (a) Phage display.
 - (b) Any one application of SPINE.
 - (c) Principle of Bio Layer interferometry.
 - (d) Fluorescence Polarisation. 4×4=16

Bachelor of Science (B.Sc.) Semester-II Examination
BOTANY PALAEOBOTANY, PTERIDOPHYTES, GYMNOSPERMS AND
SOIL ANALYSIS (New)

Optional Paper-1

Time : Three Hours]

[Maximum Marks : 50

- N.B. :-** (1) All questions are compulsory and carry equal marks.
 (2) Illustrate your answers with suitable diagram wherever necessary.

1. Write on :

5×2=10

- (a) Geological Time Scale
- (b) Compression and Patrifaction

OR

Write short notes on :

2.5×4=10

- (c) Glossopteris
- (d) Importance of fossil
- (e) Cast and mold
- (f) Impression

2. Write on :

5×2=10

- (a) Types of Pratostele
- (b) L.S. of sellaginella strobillus

OR

Write short notes on :

2.5×4=10

- (c) Classification of pteridophytes (outline)
- (d) T.S. stem of Rhynia
- (e) General characteristics of pteridophytes
- (f) T.S. Equisetum stem internode (diagram only)

3. Write on :

5×2=10

- (a) L.S. Male cone in cycas
- (b) T.S. Pinus needle

OR

Write short notes on :

2.5×4=10

- (c) Morphological characters of Gymnosperm
- (d) Cycadeoidea flower
- (e) L.S. of cycas ovule
- (f) L.S. of Male cone of Pinus (diagram only)

4. Write on :

5×2=10

- (a) Chemical properties of soil (any two)
- (b) Methods of soil sample collection

OR

Write short notes on :

2.5×4=10

- (c) Types of soil
- (d) Soil texture
- (e) Water holding capacity of soil
- (f) Soil colour

5. Write in **two or three** lines only (any **ten**) (Diagrams are not necessary.) :

10×1=10

- (a) Mesozoic era
- (b) Pseudofossil
- (c) Scutum
- (d) Ligule
- (e) Trabacular
- (f) Siphonostele
- (g) Bulbils
- (h) Transfusion Tissue
- (i) Ovuliferous scale
- (j) Sandy soil
- (k) Bulk density
- (l) WRC

Bachelor of Science (B.Sc.) Semester—II Examination
BOTANY (Morphology of Angiosperms and Floriculture) (New)

Optional Paper—2

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Illustrate your answers with suitable examples and diagrams wherever necessary.

1. Write on : 5×2=10
- (a) Modification of stem (any two).
- (b) Types of branching.

OR

Write short notes on : 2.5×4=10

- (c) Phyllode
- (d) Runnu and Stolon
- (e) Structure of typical leaf
- (f) Whorted Phyllotaxy.

2. Write on : 5×2=10
- (a) Fixation of anther
- (b) Aestivations of corolla.

OR

Write short notes on : 2.5×4=10

- (c) Hypanthodium
- (d) Hypogyny and Epigyny
- (e) Capitulum
- (f) Adhesive of Androecium.

3. Write on : 5×2=10
- (a) Aggregate fruits
- (b) Types of Placentation.

OR

Write short notes on : 2.5×4=10

- (c) Sorosis
- (d) Gynostegium
- (e) Pome
- (f) Parts of Gynoecium

4. Write on : 5×2=10
- (a) Methods of cultivations of aster
- (b) Common diseases and control measures of Gerbera and Carnation

OR

Write short notes on :

2.5×4=10

- (c) Scope of Floriculture
- (d) Methods of cultivation of Marigold
- (e) Disease control of Dahlia
- (f) Commercial aspects of Floriculture.

5. Write in **two to three** lines only (any **ten**). Diagrams are not necessary :

- (a) Tendril
- (b) Pneumatophore
- (c) Napiform
- (d) Gynandrophore
- (e) Corymb
- (f) Papilionaceous corolla
- (g) Lomentum
- (h) Simple fruit
- (i) Apocarpus
- (j) Floriculture
- (k) Fungicide
- (l) NPK.

1×10=10

**Bachelor of Science (B.Sc.) Semester-IV Examination
BOTANY-CELL BIOLOGY PLANT BREEDING EVOLUTION
AND SEED TECHNOLOGY (New)**

Optional Paper-I

Time : Three Hours]

[Maximum Marks : 50

N.B. :- (1) All questions are compulsory.

(2) Draw well labelled diagrams wherever necessary.

1. Write on :

5×2=10

- (a) Fluid Mosaic Model.
- (b) Structure of cell wall.

OR

Write short notes on :

2.5×4=10

- (c) Structure of typical plant cell (Diagram only)
- (d) Vacuole
- (e) Ribosome
- (f) Structure of Endoplasmic reticulum.

2. Write on :

5×2=10

- (a) Structure of Chloroplast
- (b) Mitosis

OR

Write short notes on :

2.5×4=10

- (c) Function of mitochondria
- (d) Sex chromosomes in *Melandrium*
- (e) Centromere
- (f) Structure of Nucleus

3. Write on :

5×2=10

- (a) Calculate mean and mode of the given data : 31, 35, 32, 33, 38, 40, 42, 41, 42, 39, 40
- (b) Miller's theory

OR

Write short notes on :

2.5×4=10

- (c) Clonal selection
- (d) Standard error
- (e) Objectives of plant breeding
- (f) Emasculation

5×2=10

Write on :

- (a) Methods of seed production
- (b) Methods for breaking seed dormancy

OR

2.5×4=10

Write short notes on :

- (c) Seed viability
- (d) Seed bank
- (e) Causes of seed dormancy
- (f) Structure of seed

5. Write in **two** or **three** lines. Diagrams are not necessary (any **ten**) :

1×10=10

- (a) Cell theory
- (b) Mesosome
- (c) Vesicle
- (d) Synapsis
- (e) Pellicle
- (f) Cristae
- (g) Standard deviation
- (h) Pure line
- (i) Neo-Darwinism
- (j) Genetic erosion
- (k) Ex-albuminous seed
- (l) Certified seed

Bachelor of Science (B.Sc.) Semester-IV Examination
BOTANY-Genetics, Molecular Biology and Plant Nursery (New)
Optional Paper-II

Time : Three Hours]

[Maximum Marks : 50

- N.B. :-** (1) All questions are compulsory and carry equal marks.
 (2) Draw well labelled diagram wherever necessary.

1. Write on : 5×2=10
 (a) Complementary factor (9:7)
 (b) Law of Independent assortment

OR

- Write short notes on : 2.5×4=10
 (c) Complete linkage
 (d) Incomplete dominance
 (e) Breakage and reunion theory
 (f) Law of segregation.

2. Write on : 5×2=10
 (a) Types of aneuploidy (any two)
 (b) Physical and chemical mutagens

OR

- Write short notes on : 2.5×4=10
 (c) Duplications
 (d) Spontaneous mutation
 (e) Excision repair
 (f) Pericentric inversion.

3. Write on : 5×2=10
 (a) Watson and Crick model of DNA
 (b) Transcription

OR

- Write short notes on : 2.5×4=10
 (c) Semi conservative method of DNA replication
 (d) Clover leaf model of RNA
 (e) Wobble hypothesis
 (f) Role of ribosome.

Write on :

5×2=10

- (a) Role and objective of the nursery
- (b) Different ways of preparation of nursery bed.

OR

Write short notes on :

2.5×4=10

- (c) Plant propagation by grafting
- (d) Air layering
- (e) Soil sterilization
- (f) Mulching

5. Write in two or three lines only (any ten) (Diagrams are not necessary).

10×1=10

- (a) Alleles
- (b) Genotype
- (c) Test cross
- (d) Autopolyploidy
- (e) Deficiency
- (f) Photoreactivation
- (g) Codon
- (h) Lac-operon
- (i) Cistron
- (j) Budding
- (k) Topiary
- (l) Stopping

Bachelor of Science (B.Sc.) Semester—VI Examination
BOTANY (Biochemistry, Biotechnology and Herbal Technology) (New)
Optional Paper-1

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. Write on : 5×2=10

- (a) Classification of enzymes
- (b) β -oxidation.

OR

Write short notes on : 2.5×4=10

- (c) Factors affecting enzyme activity
- (d) Glyoxylic acid cycle
- (e) Induced Fit Model
- (f) Competitive inhibitors.

2. Write on : 5×2=10

- (a) Methods of sterilization in tissue culture
- (b) Protoplast culture and its application.

OR

Write short notes on : 2.5×4=10

- (c) Advantage of micro propagation
- (d) MS medium
- (e) Anther culture
- (f) Application of plant tissue culture.

3. Write on : 5×2=10

- (a) Tools used in genetic engineering.
- (b) Structure and function of Ti plasmid.

OR

Write short notes on : 2.5×4=10

- (c) Restriction enzymes
- (d) Ri plasmid
- (e) c-DNA library
- (f) Role of Biotechnology in crop improvement.

4. Write on :

5×2=10

- (a) *Lawsonia alba* as a dye yielding herbal plant.
- (b) Cultivation, harvesting and utilization of *Withania Somnifera*

OR

Write short notes on :

2.5×4=10

- (c) Importance of herbal technology
- (d) Natural dyes
- (e) Cultivation of *Aloe vera*
- (f) Lavender oil.

5. Write **two** or **three** lines only (any ten). Diagrams are not necessary :

1×10=10

- (a) Holoenzyme
- (b) Inhibitors
- (c) Active site
- (d) Totipotency
- (e) Explants
- (f) Morphogenesis
- (g) Ligase
- (h) Vector
- (i) Genomic library
- (j) Drugs
- (k) Cosmetics
- (l) Coconut oil.

**Bachelor of Science (B.Sc.) Semester—VI Examination
BOTANY**

**Phytogeography Utilization of Plants, Techniques and Pharmacognosy New
Optional Paper—II**

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Illustrate your answers with suitable examples and diagrams wherever necessary.

1. Write on :

5×2=10

- (a) Conservation of Forest resources.
- (b) Agriculture pollution.

OR

Write short notes on :

2.5×4=10

- (c) Renewable resources.
- (d) Noise pollution
- (e) Factors for depedction of natural resources.
- (f) Name the phytogeographical regions of India.

2. Write on :

5×2=10

- (a) Morphology, utilization and chemical constituents of clove.
- (b) Describe different branches and applications of ethnobotany.

OR

Write short notes on :

2.5×4=10

- (c) Utilization of wheat
- (d) Chemical constituents and uses of coffee.
- (e) Uses of Rauwolfia serpentina
- (f) Utilization of Rubber.

3. Write on :

5×2=10

- (a) SEM principles and applications.
- (b) TLC (Thin layer chromatography)

OR

Write short notes on :

2.5×4=10

- (c) Applications of light microscopy
- (d) Electrophoresis.
- (e) Applications of centrifugation
- (f) Paper chromatography.

4. Write on :

5×2=10

- (a) Define pharmacognosy and explain scope of pharmacognosy.
- (b) Preparation and uses of drugs extracted from Linum usitatissimum and Elettaria Cardamomum.

OR

Write short notes on :

2.5×4=10

- (c) Drug adulteration
- (d) Phytochemical test of Alkaloids.
- (e) Coriandrum sativum
- (f) Biological testing of herbal drugs.

5. Write in **two to three** lines only (any **ten**) Diagrams are not necessary :

1×10=10

- (a) Decibel
- (b) Endemics
- (c) Agroforestry
- (d) Adhatoda vasica
- (e) Tribals
- (f) Ethnobotany
- (g) Rf value
- (h) Diaphragm
- (i) Phase contrast
- (j) Eugenia caryophyllus
- (k) Datura
- (l) Vinblastine

M.Sc. Second Semester (Botany) (C.B.C.S. New / NEP)
MBO2T01 Mandatory Paper-V : Cytology and Genetics

P. Pages : 1

Time : Three Hours



PRS/KS/24/10108

Max. Marks : 80

- Notes : 1. All questions are compulsory and carry equal marks.
2. Draw well labelled diagrams wherever necessary.

1. Explain Beadle and Tatum's experiment in Neurospora. 16
OR
Write notes on: 8x2
a) Pleiotropic genes =16
b) Leaf variegation in Mirabilis Jalapa
2. Describe various types of sex determination in plants. 16
OR
Write notes on: 8x2
a) Euchromatin and Heterochromatin =16
b) Polytenic chromosome.
3. Explain in detail Hardy Weinberg law and the factors that influence it. 16
OR
Write notes on: 8x2
a) Translocation tester sets. =16
b) Interchange heterozygosity in Oenothera
4. What is physical mutagens? Explain their types, mode and molecular basis of action. 16
OR
Write notes on: 8x2
a) Kernel colour in wheat =16
b) Paramutations in Maize
5. Write short notes on: 4x4 =16
a) Co-dominance
b) rRNA genes
c) Allopolyploidy
d) Callipyge sheep

M.Sc. Second Semester (Botany) (C.B.C.S. / New / NEP)
MBO2T02 Mandatory Paper-VI : Plant Physiology and Biochemistry

P. Pages : 1

Time : Three Hours



PRS/KS/24/10109

Max. Marks : 80

- Notes : 1. All questions are compulsory and carry equal marks.
2. Draw labelled diagrams wherever necessary.

1. Describe Stereoisomerism in linear and cyclic forms of monosaccharides. 16
- OR
- Write a note on 8x2
- a) Secondary structure of proteins.
b) Ramachandran Plot
2. Explain the process of Photophosphorylation in plants. 16
- OR
- Write notes on 8x2
- a) Glycolysis
b) Beta oxidation
3. Describe the biosynthesis and transport of Auxin in plants. 16
- OR
- Write notes on 8x2
- a) Responses mediated by Phytochromes.
b) Cryptochromes & Phototropins.
4. Write a note on synthesis of aromatic amino acids in plants. 16
- OR
- Write notes on 8x2
- a) Nitrate and ammonium assimilation
b) De Novo synthesis
5. Write short notes on 4x4
- a) Structure of ATP
b) CAM
c) Vernalization
d) Phenol

M.Sc. Second Semester (Botany) (C. B. C. S. / NEP)
Choose Any One MBO2T03 Elective-II Paper-VII : Cell Biology Paper-III

PRS/KS/24/10110

Max. Marks : 80

P. Pages : 1

Time : Three Hours



- Notes : 1. All questions are compulsory and carry equal marks.
2. Draw labelled diagrams wherever necessary.

1. Describe the structure and functions of secondary cell wall.

16

OR

8x2

Write notes on:

- a) ☒ Fluid Mosaic model
- b) ☐ Active transport

2. Describe the direct DNA repair mechanism.

16

OR

8x2

Write notes on:

- a) ☒ Eukaryotic DNA polymerases
- b) ☒ Griffith's experiment

3. Describe on ultrastructure and functions of endoplasmic reticulum
write notes on:

8x2

- a) ☐ Intermediate filaments
- b) ☐ Role of cytoskeleton in mitosis

4. Write a detailed note on Active defence mechanism.

16

OR

Write notes on:

16

- a) ☒ Effect of water and salt stress on plants.
- b) ☐ Scavenging ROS

5. Write short notes on -

8x2

- a) ☒ ABC transporters
- b) ☒ Nucleolus
- c) ☒ Structure of Golgi - complex
- d) ☐ R - Genes

M.Sc. Fourth Semester (Botany) (C.B.C.S.)
Compulsory Paper-I : Cell and Molecular Biology-II

P. Pages : 1
Time : Three Hours



PRS/KS/24/1641

Max. Marks : 80

- Notes : 1. All questions are compulsory and carry equal marks.
2. Draw well-labelled diagrams wherever necessary.

1. Enlist the types of RNA you have studied. Write in detail about the structure and function of each of them.

OR

Write short notes on:

- a) LSUs of ribosomes.
- b) α -helix

2. Write in details on the protein targeting to chloroplasts.

OR

Write short notes on:

- a) Gene Vs. Cistron
- b) Attenuation.

3. Describe in details the procedure adopted to map phage genome.

OR

Write short notes on:

- a) Mitochondrial genome
- b) RecA pathway.

4. Write in detail about principle, working and applications of confocal microscopy.

OR

Write short notes on:

- a) GPCRs
- b) CDKs

5. Write on:

- a) Initiation coder
- b) Repressible operons
- c) Site-specific recombination
- d) Cyclins

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PRS/KS/24/1641

M.Sc. Fourth Semester (Botany) (C.B.C.S.)
Compulsory Paper-II : Plant Biotechnology and Plant Breeding Paper-II

P. Pages : 1
 Time : Three Hours



PRS/KS/24/1642
 Max. Marks : 80

- Notes : 1. All questions are compulsory and carry equal marks.
 2. Draw labelled diagram wherever necessary.

1. Write in detail about the cloning vector employed for transgenic production. 16
 OR

Write notes on:

- a) Properties of ideal vector
- b) Screening of DNA libraries.

2. Describe in detail the genetic improvement of nitrogen fixers. 16
 OR

Write notes on:

- a) Protein Profiling
- b) Applications of DNA fingerprinting

3. What are protoplasts? Describe in detail the methods available to isolate the protoplast. 16
 OR

Write notes on:

- a) Application of callus culture
- b) Direct organogenesis

4. What is a database? Describe in detail the structure of a database and its uses. 16
 OR

Write notes on:

- a) Application of bioinformatics.
- b) Heterosis and inbreeding depression.

5. Write short notes on: 16
 a) Heat shock.
 b) PCR primers.
 c) Ovary culture.
 d) IUPAC symbols for nitrogen bases.

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M.Sc. Fourth Semester (Botany) (C.B.C.S.)
Optional Paper-III Core Elective-Molecular Biology and Plant Biotechnology-I
Paper-III

P. Pages : 1

Time : Three Hours



PRS/KS/24/1643

Max. Marks : 80

- Notes : 1. All questions are compulsory & carry equal marks.
2. Draw labelled diagrams wherever necessary.

1. Write an essay on expression vectors. Add a note on their application.

OR

Write notes on:

- a) Screenings of DNA libraries.
- b) Properties of ideal host.

2. Write in detail on Maxam-Gilbert method of DNA sequencing. Discuss why this method is less popular in present days.

OR

Write notes on:

- a) Bacterial transformation.
- b) Applications of DNA fingerprinting.

3. Describe in detail the PEG-mediated method of protoplast fusion. Add a note on applications of protoplast culture.

OR

Write notes on:

- a) Microspore culture.
- b) Direct organogenesis.

4. What is a database? Write an essay on types of database and their application.

OR

Write notes on:

- a) Use of mass selection in cross-pollinated crops.
- b) Back cross method.

5. Write short notes on:

- a) Uses of cDNA library.
- b) Applications of DNA synthesis.
- c) Cytokinin.
- d) Single letter symbols of amino acids.

Bachelor of Science (B.Sc.) Semester—I Examination

BOTANY VIRUSES PROKARYOTES ALGAE AND BIOFERTILIZERS (NEW)

Optional Paper—I

Time : Three Hours]

[Maximum Marks]

Note :—(1) All questions are compulsory and carry equal marks.
 (2) Draw well labelled diagrams wherever necessary.

1. Write on :

- (a) Lytic cycle in viruses.
- (b) Ultrastructure of bacterial cell.

OR

Write short notes on :

- (c) Structure of T_4 bacteriophage.
- (d) Nature of viruses.
- (e) Structure of *Mycoplasma*.
- (f) Economic importance of viruses.

2. Write on :

- (a) Ultrastructure of Cyanobacterial cell.
- (b) Classification of Algae proposed by F.E. Fritsch (1954).

OR

Write short notes on :

- (a) Reproduction in *Nostoc*.
- (d) Economic importance of cyanobacteria.
- (e) Structure of Heterocyst.
- (f) General characteristics of Algae

3. Write on :

- (a) Asexual reproduction in *Ectocarpus*.
- (b) Asexual reproduction in *Vaucheria* (any two)

OR

Write short notes on

- (a) Sex organs in *Fantheria*
- (b) *Ectocarpus* thallus
- (c) Nacule in *Chara*
- (d) Thallus structure of *Datrychoispermum*

4. Write on

- (a) Commercial production of *Rhizobium*
- (b) Scope and importance of Biofertilizers

OR

- (c) Commercial production of *Azotobacter*
- (d) Phosphate solubilizing bacteria
- (e) Commercial production of *Azolla*
- (f) Microbes used as Biofertilizers (any two)

5. Write in two or three lines only (any TEN). Diagrams are not necessary :

- (a) Binary fission
- (b) PPLO
- (c) Capsid
- (d) Trichome
- (e) Pyrenoid
- (f) Carrageenan
- (g) Ankylum star
- (h) Hapteron
- (i) Globule
- (j) Green manuring
- (k) Inoculum
- (l) Biofertilizer

Multicellular
aggregation

Bachelor of Science (B.Sc.) Semester-I Examination
BOTANY

(Fungi Plant Pathology, Lichen, Bryophyta and Mushroom Cultivation) (New)
Optional Paper—2

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.
(2) Draw well labelled diagrams wherever necessary.

1. Write notes on :

- (a) Uredial and Telial stages in *Puccinia*.
- (b) Economic importance of fungi.

5×2

OR

Write short notes on :

- (c) Asexual reproduction in *Albugo*
- (d) Classification of fungi Alexopolous (1996)
- (e) Reproduction in *Cercospora*
- (f) Sexual Reproduction in *Mucor*.

2½×4

2. Write notes on :

- (a) Red Rot of Sugarcane
- (b) Types of Lichens

5×2

OR

- (c) Citrus canker
- (d) V.S. of Lichen Apothecium (diagram only)
- (e) Economic importance of Lichen
- (f) Leaf curl of *Papaya*.

2½×4

3. Write notes on :

- (a) Anthrediphore of *Marchantia*
- (b) L.S. of *Funaria* sporophyte

5×2

OR

- (c) Economic importance of Bryophyta
- (d) L.S. of *Anthoceros* Sporophyte (Diagram only)
- (e) V.S. of *Marchantia* thallus
- (f) L.S. of Antherdial branch of *Funaria*.

2½×4

Write notes on :

- (a) Multiplication and bed preparation for Mushroom cultivation
- (b) Medicinal and Nutritional value of Mushrooms

OR

- (c) Paddy-straw bed preparation
- (d) Edible Mushroom *pleurotus bisporus*
- (e) Spawn preparation for Mushroom cultivation
- (f) Poisonous Mushroom

Write in two to three lines only :

Diagrams are not necessary (any ten) :

- (a) Coenocytic
- (b) Haustoria
- (c) Conidia
- (d) Symbiosis
- (e) Pathogen
- (f) Symptoms
- (g) Columella
- (h) Pseudoelaters
- (i) Scales
- (j) Pure culture
- (k) Sugarcane thrash
- (l) Gills

Master of Science (M.Sc.) Botany Semester-I (CBCS) (NEP) Examination

MBO1T01 : MICROBIOLOGY, ALGAE AND FUNGI

Paper-I

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. Give an account on ultrastructure of Bacteria and add a note on Bacteriophage.

OR

Write notes on :

- (a) Ultrastructure of Archea.
(b) Structure and life cycle of Retrovirus.

16

2. Write in detail about thallus organization in algae.

OR

Write notes on :

- (a) Fritch (1945) system of classification.
(b) Economic importance of algae.

16

3. Write on general account of Myxomycota.

OR

Write notes on :

- (a) Nutritional requirement of fungi.
(b) Heterokaryosis.

16

4. Give an account of Ascomycotina.

OR

Write notes on :

- (a) Bacterial blight of Paddy.
(b) Phyllactinia.

16

5. Write short notes on :

- (a) Spirulina
(b) Reserve food in algae
(c) Physarum
(d) Gummosis.

16

Master of Science (M.Sc.) Botany Semester-I (CBCS) New Education Policy Examination
MBOIT02 : BRYOPHYTES AND PTERIDOPHYTES

Paper-II

Time : Three Hours]

[Maximum Marks : 80

3. :— (1) All questions are compulsory and carry equal marks.
(2) Draw labelled diagrams wherever necessary.

Write a note on evolution of sporophytes in Bryophyta.

16

OR

Write notes on :

(a) *Porella*

8×2

(b) *Sphaerocarpus*.Write in detail about the general characters of Anthocerotopsida and add a note on the sporophyte of *Anthoceros*.

16

OR

Write notes on :

(a) Fossil Bryophytes

8×2

(b) *Takakia*.

16

3. Describe the evolution of stele.

OR

Write notes on :

(a) *Isoetes*

8×2

(b) *Psilotum*.

16

4. Describe the general characters of Marsileales and Salviniiales.

OR

Write notes on :

(a) Concept of Progymnospermopsida

8×2

(b) *Sphenophyllum*.

Write short notes on :

(a) Vegetative propagation in Bryophytes

(b) *Sphagnum* leaf(c) *Lepidophyllum*(d) *Callixylon hookeri*.

4×4

Master of Science (M.Sc.) Botany Semester-I (CBCS) New Education Policy Examination
MBO1T03 ELECTIVE-1(A) : PALAEOBOTANY AND GYMNOSPERMS

Paper-III

Time : Three Hours]

[Maximum Marks : 80

- N.B. :— (1) All questions are compulsory and carry equal marks.
(2) Draw well labelled diagrams wherever necessary.

1. Write in detail about different techniques for studying plant fossils.

OR

Write notes on :

- (a) Applied aspects of Paleobotany
(b) Nomenclature of fossil records.

16

2. Write in detail about Medullosaceae and its evolutionary tendencies.

OR

Write notes on :

- (a) Megasporophyll in Cycadeoidales
(b) Economic importance of Gymnosperms.

16

3. Give a general account and relationship of Cordaitales.

OR

Write notes on :

- (a) Fructification in Glossopteridales
(b) Reproduction in *Ginkgo*.

1

4. Describe the morphological nature of ovuliferous scale in *Pinus*.

OR

Write notes on :

- (a) Angiospermic characters of *Gnetum*
(b) *Welwitschia* inflorescence.

5. Write notes on :

- (a) Mesozoic era
(b) *Nilssomia*
(c) *Pentoxylon*
(d) General characters of Coniferales.

474

Master of Science (M.Sc.) Botany Semester-I (CBCS) New Education Policy Examination
MBOIT04 : RESEARCH METHODOLOGY

Paper-IV

Time : Three Hours]

[Maximum Marks : 80

- Note :—** (1) All questions are compulsory and carry equal marks.
(2) Draw labelled diagrams wherever necessary.

1. Briefly describe the different steps involved in Research process.

16

OR

Write notes on :

- (a) Objective of Research
(b) Difference between Null Hypothesis and Alternative Hypothesis.

8×2

2. Describe concept, types and uses of Experimental Research Design.

16

OR

Write notes on :

- (a) Dependent and Independent variables.
(b) Concept of measurement.

8×2

3. What do you mean by Sampling and explain its types.

16

OR

Write notes on :

- (a) Bivariate analysis with emphasis on Chi-square test.
(b) Distinguish between Systematic and Stratified sampling.

8×2

4. Describe Plagiarism and self plagiarism and mention software for detection of Plagiarism.

16

OR

Write notes on :

- (a) IPR and its types.
(b) Ethical issues related to publication.

8×2

5. Write short notes on :

- (a) Advantages of Research design
(b) Features of a good research
(c) Nominal measurement
(d) Impact factor of Journal.

16

Master of Science (M.Sc.) (Botany) Semester—III (CBCS) Examination
PLANT ECOLOGY AND CONSERVATION BIOLOGY
Compulsory Paper—I
Paper—I

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All the questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. Explain concept of Community & Continuum. 16

OR

Write on :

8×2=16

(a) Mechanism of ecological succession

(b) Climax concept.

2. Describe in detail the theories on energy flow pathways. 16

OR

Write on :

8×2=16

(a) Phosphorus cycle

(b) Mechanism of Litter fall & decomposition.

3. Explain concept of ecological management. Add a note on sustainable development. 16

OR

Write on :

8×2=16

(a) Ecosystem restoration

(b) Natural Ecological perturbations.

4. What are Coral reefs ? Describe types, add a note on artificial reefs. 16

OR

Write on :

8×2=16

(a) IUCN

(b) National Parks.

5. Write short notes on : 4×4=16

(a) Autecology

(b) Nutrient budget in forest

(c) Environmental Impact Assessment

(d) Mangroves

Master of Science (M.Sc.) Third Semester Choice Based Credit System (CBCS)

(Botany) Examination

ANGIOSPERMS-II

Compulsory Paper-2

Paper-II

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw diagrams wherever necessary.

(3) For family description vegetative and reproductive characters, economic importance and phylogeny expected.

1. Write on probable ancestors of angiosperms and discuss any three theories. 16

OR

Write notes on :

(a) Global pattern of Biodiversity

(b) IUCN categories of threat. 8×2

2. Write on typification and add a note on author citation. 16

OR

Write notes on :

(a) Effective and valid publication

(b) Salient features of ICBN.. 8×2

3. Explain Endemism Hotspots and Hottest Hotspots. 16

OR

Write notes on :

(a) Invasion and introduction

(b) Levels of biological diversity. 8×2

**Master of Science (M.Sc.) Semester-III Choice Based Credit System (CBCS)
(Botany) Examination**

ELECTIVE : MOLECULAR BIOLOGY AND PLANT BIOTECHNOLOGY-I

Optional Paper-3

Paper-III

Time : Three Hours]

[Maximum Marks : 80

- Note :—** (1) All questions are compulsory and carry equal marks.
(2) Draw well labelled diagrams wherever necessary.

1. Describe the process of construction of cDNA Library.

16

OR

Write short notes on :

(a) Immuno-precipitation

(b) DNA manipulating enzymes.

8×2

2. Describe the basic techniques of PCR and its application. Add a note on any two modifications of this technique.

16

OR

Write short notes on :

(a) pUC 19

(b) Transfection.

8×2

3. Define site directed mutagenesis. Explain PCR mediated site-directed mutagenesis.

16

OR

Write short notes on :

(a) Modification of enzyme specificity

(b) *In vitro* transcription.

8×2

4. Write on classification of proteins based on structure and sequence similarity.

16

OR

Write short notes on :

(a) Functional Genomics

(b) Pair wise alignment methods.

8×2

5. Write short notes on :

(a) Dot blot and Slot blot

(b) Fusion proteins

(c) Dpm I

(d) Phylogenetic trees.

4×4=16

Master of Science (M.Sc.) Semester-III Choice Based Credit System (CBCS)
(Botany) Examination

CORE (SUBJECT CENTRIC)-AESTHETIC BOTANY

Optional Paper-4

Paper-IV

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory and carry equal marks.
(2) Draw well labelled diagrams wherever necessary.

1. Describe in detail phytogeographical regions of India.

16

OR

Write short notes on :

- (a) Hotspots of the world
(b) Vegetations of world.

8×2

2. Describe in detail the various garden ornamentation.

16

OR

Write notes on :

- (a) Formal style of gardening
(b) Industrial gardening.

8×2

3. Write in detail Nursery Management.

16

OR

Write notes on :

- (a) Budding and Tissue culture
(b) Pest and disease management.

8×2

4. Write in detail about polyhouse technology.

16

OR

Write notes on :

- (a) Ornamental succulents and cacti
(b) Scope and objectives of floriculture.

8×2

5. Write notes on :

- (a) Cold deserts of the world
(b) Wall Fences
(c) Perennials
(d) Palms.

4×4

Bachelor of Science (B.Sc.) Semester—II Examination
ELECTRONICS (Advanced Digital Electronics) (New)
Optional Paper—2

Time : Three Hours]

[Maximum Marks : 50

Note :— (1) All questions are compulsory and carry equal marks.

(2) Draw neat and well labeled diagrams wherever necessary.

EITHER

1. (A) Draw the diagram and explain the working of TTL NAND gate. What is the role of Darlington pair in TTL NAND Gate. 4+1
- (B) Explain the comparison of TTL and CMOS. Write a note on Tristate logic. 3+2

OR

- (E) Draw the diagram and explain the working of CMOS NOR gate. State Scale of Integration. 4+1
- (F) Draw the diagram and explain the working of TTL NOR gate. Write a note on VLSI. 4+1

EITHER

2. (A) Draw the diagram and explain the working of the Decade counter. 5
- (B) Define Synchronous Counter. Explain the Construction and working of 4-bit Ring counter. 1+4

OR

- (E) Define Asynchronous Counter. Explain the Construction and working of MOD 5 counter. 1+4
- (F) Write a difference between Synchronous and Asynchronous counters. What are the applications of Counter ? 3+2

EITHER

3. (A) Draw the diagram and explain the working of 4 bit serial-in parallel-out shift register. 5
- (B) Explain Controlled Buffer Register. How is it different from the shift register ? 5

OR

- (E) Draw the diagram and explain the working of 4 bit parallel-in serial-out shift register. 5
- (F) Draw and explain the left shift register using DFF. 5

EITHER

4. (A) What is memory Hierarchy ? Explain the need of memory Hierarchy. 5
- (B) Compare SRAM and DRAM. 5

OR

- (E) Draw the diagram and explain diode matrix ROM. 5
- (F) List the different characteristics of the memory system. Explain them in brief. 5

5. Answer any **TEN** questions from the following :

1×10

- (i) What is cache memory ?
- (ii) State the different uses of ROM.
- (iii) Write a note on volatile memory.
- (iv) What is Register ?
- (v) Define Buffer Register.
- (vi) What are the use of serial-in parallel-out registers ?
- (vii) Define MOD counter.
- (viii) Draw the diagram of the 3 bit ring counter.
- (ix) What are the applications of the counter ?
- (x) Write a note on propagation delay.
- (xi) Define Logic Level.
- (xii) What are the advantages of CMOS over TTL ?

Bachelor of Science (B.Sc.) Semester-I Examination
ELECTRONICS (Fundamentals of Digital Electronics) (New)
Paper-2

Time : Three Hours]

[Maximum Marks : 50

- N.B. :—** (1) All questions are compulsory and carry equal marks.
 (2) Draw well labelled diagrams wherever necessary.

EITHER

1. (A) What is number system ? Define decimal, binary, octal and hexadecimal number system.

Do as directed :

(i) $(51)_{10} = (?)_8$

(ii) $(26)_{10} = (?)_2$

(iii) $(73)_{10} = (?)_{16}$

(iv) $(127)_8 = (?)_{10}$

(v) $(1010111)_2 = (?)_{10}$

5+5

OR

- (B) Explain the 8421 BCD code. State its advantages and disadvantages. What is Excess-3 code ?
 Why excess-3 code is called a self complementary code ?

5+5

EITHER

2. (A) Draw the logic symbol, truth table and logic equation of NOR and NAND gate. Construct AND and OR gate using NAND gate.

6+4

OR

- (B) State and prove De'Morgan's theorem. State and prove distributive law.

6+4

EITHER

3. (A) What is k-map ? Explain various terms related to k-map. What are its advantages ? Explain the SOP and POS terms in k-map with examples.

1+3+2+4

OR

- (B) Simplify the following logic functions using k-map. Draw the logic diagram for simplified equation :

$$f(A, B, C, D) = \sum m (1, 3, 5, 7, 8, 9, 10, 11, 15)$$

$$f(A, B, C, D) = \sum m (0, 1, 2, 3, 7, 8, 9, 11, 14, 15)$$

5+5

EITHER

4. (A) What is flip-flop ? What is positive and negative edge triggered flip flop ? Draw the circuit diagram and explain the working of JKMS flip-flop. 2+2+6

OR

- (B) Explain SRFF and DFF along with logic diagram and truth table. 10
5. Answer any **ten** :
- (a) Write the 1's complement of $(10011001)_2$.
 - (b) What is even and odd parity ?
 - (c) Convert $(1001)_2$ to grey code.
 - (d) Write the rule of OR laws.
 - (e) Write the boolean expression for XNOR gate.
 - (f) State duality theorem.
 - (g) What is pair and quad in k-map ?
 - (h) What is roll over in k-map ?
 - (i) What do you mean by mine term ?
 - (j) What is race around condition ?
 - (k) Draw the logic diagram of TFF.
 - (l) What is multivibrator ?
- 1×10=10

Bachelor of Science (B.Sc.) Semester-I Examination

ELECTRONICS : BASIC CIRCUIT COMPONENTS AND NETWORK ANALYSIS

Paper-I

Time : Three Hours]

[Maximum Marks : 50

N.B.:— (1) All questions are compulsory and carry equal marks.

(2) Draw neat and well labelled diagrams wherever necessary.

EITHER

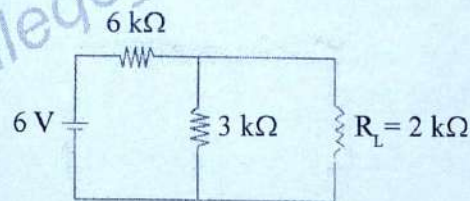
1. (A) Explain the resultant values of series and parallel combination of capacitors. Explain 4 Band colour coding scheme used in carbon resistors with example. 3+7

OR

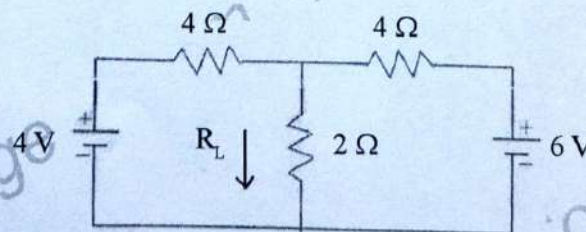
- (B) What is transformer ? What are the different types of transformer ? Explain in detail the working of transformer. State the uses of transformer. 1+2+5+2

EITHER

2. (A) State Norton's theorem and explain the method of calculating I_N and R_N for a Norton equivalent circuit with suitable example. Calculate the current through $R_L = 2K\Omega$ resistor using Thevenin theorem given below : 5+5

**OR**

- (B) State and explain KCL. State superposition theorem. Determine the value of current flowing through R_L using superposition theorem in the following network. 4+6



EITHER

3. (A) Explain Transient behavior of RL circuit in detail with suitable diagram and waveforms. 10

OR

- (B) Explain in brief AC circuits with Resistance, Inductance, capacitor and R, L and C in series.

2+2+2+4

EITHER

4. (A) Define Capacitive Transducer. Write the principle of operation of capacitive transducer. List the condition on which capacitance is varied. Explain the working of capacitive transducer on any two conditions.

1+3+1+5

OR

- (B) Explain Active and Passive transducers. Define Resistive transducer. Write working of resistive transducer. What is a potentiometer? How does a potentiometer work?

4+1+2+1+2

5. Solve any ten :

1×10=10

- (a) What is the unit of inductance?
- (b) What is the colour code of $33\text{K}\Omega \pm 5\%$ resistor?
- (c) Draw the diagram of mutual inductor.
- (d) What is the value of internal resistance of an ideal voltage source?
- (e) State Thevenin theorem.
- (f) At which condition maximum power transfer to load?
- (g) What is mean by peak to peak value?
- (h) Draw phaser diagram for opposite phase.
- (i) What is non sinusoidal AC waveforms.
- (j) What is Thermocouple?
- (k) What are advantages of thermistor?
- (l) What is meant by NTC?

Bachelor of Science (B.Sc.) Semester-III Examination

ELECTRONICS – ANALOG CIRCUITS (New)

Paper – 1

Time : Three Hours]

[Maximum Marks : 50

Note :— (1) All questions are compulsory and carry equal marks.

(2) Draw well-labeled diagram wherever necessary.

EITHER

1. (A) Explain the construction and working of a Centre-tapped full wave rectifier with Suitable circuit diagram. Draw its waveform.
- (B) What is a clipper ? Explain the working of a series positive clipper with positive bias along with input and output waveform. 5+5

OR

- (C) Explain the construction and working of a full wave bridge rectifier with Suitable circuit diagram. Draw its waveform.
- (D) Explain the construction and workings of a shunt capacitor filter with a suitable circuit diagram. Draw its waveform. 5+5

EITHER

2. (A) Draw the circuit diagram of voltage divider bias circuit and explain its operation.
- (B) Draw and explain h-parameter equivalent circuit of transistor in CE mode. 5+5

OR

- (C) Draw the circuit diagram of fixed base bias circuit and explain its operation.
- (D) Draw and explain open circuit test of two port network. 5+5

EITHER

3. (A) Write the difference between voltage and power amplifier.
- (B) Explain the construction and working of a transformer coupled class A power amplifier with suitable circuit diagram. 3+7

OR

- (C) Explain the class A and class B operations of power amplifier in brief, with suitable waveforms.
- (D) Explain the construction and working of a complementary symmetry class B Push Pull power amplifier with suitable circuit diagram. 4+6

EITHER

4. (A) Explain the operation of oscillatory (tank) circuit with neat diagram.
(B) Draw a circuit diagram of a RC Phase shift oscillator and explain its construction and working in detail. 3+7

OR

- (C) What is negative and positive feedback ? Write the advantages and disadvantages of negative feedback.
(D) Draw a circuit diagram of a Crystal oscillator and explain its construction and working in detail. 4+6
5. Answer any **ten** questions from the following : 1×10=10
- (A) What is clamper ?
(B) What is rectifier ?
(C) Define PIV.
(D) What is stability ?
(E) What is thermal runaway ?
(F) What is h parameter ?
(G) What is the maximum efficiency of a complementary symmetry class B push pull power amplifier ?
(H) What is the maximum efficiency of a transformer coupled class A power amplifier ?
(I) What is crossover distortion ?
(J) What is oscillator ?
(K) Write the formula for the calculation of frequency in case of Wien bridge oscillator.
(L) Name the feedback for operation of oscillator.

Bachelor of Science (B.Sc.) Semester-III Examination
ELECTRONICS-LINEAR INTEGRATED CIRCUITS (NEW)

Paper-2

Time : Three Hours]

[Maximum Marks : 50

- N.B. :— (1) All questions are compulsory and carry equal marks.
(2) Draw neat and well labelled diagram wherever necessary.

EITHER

1. (A) In what respect does a difference amplifier differ from dc amplifier ? Explain the working of the difference amplifier in differential mode and common mode. Also explain the necessity of dual power supply. 3+4+3

OR

- (B) Explain the Op-Amp parameters :

- (i) Input offset voltage
- (ii) Input offset current
- (iii) Input bias current
- (iv) Common mode rejection ratio
- (v) Slew rate.

10

EITHER

2. (A) Explain the working of Op-Amp as a subtractor. Derive the expression for its output. Explain how Op-Amp can be used as a buffer. 6+4

OR

- (B) Explain the working of Op-Amp as integrator. Derive the expression for its output. Explain the working of op amp as adder. 6+4

EITHER

3. (A) Draw block diagram and explain the working of IC-555. Explain the working of IC 555 as a monostable multivibrator. 5+5

OR

- (B) Explain the working of IC 555 as a Astable multivibrator. Explain use of Op-Amp as zero-crossing detector. 5+5

EITHER

4. (A) Explain in detail wide band reject filter and Narrow band reject filter. 5+5

OR

- (B) Explain the concept of sample and hold system. What is necessity of S/H circuit ? Explain basic sample and hold circuit system. What is advantage of sample and hold circuit ? 3+2+3+2

5. Solve any ten : 1×10=10

- (a) Explain any two ideal characteristics of Op-Amp.
- (b) Define slew rate.
- (c) Draw symbol of Op-Amp.
- (d) Draw output waveform of integrator. When a dc voltage is applied at input ?
- (e) In inverting amplifier if input is 3V and gain is 2, what would be the output ?
- (f) Explain the significance of the name virtual ground in Op-Amp. Circuit.
- (g) Draw pin diagram of IC 555.
- (h) Draw output waveform of PWM.
- (i) What are the applications of IC-555 ?
- (j) What is meant by band reject filter ?
- (k) What is narrow band reject filter ?
- (l) Draw frequency response graph of high pass filter.

Bachelor of Science (B.Sc.) Semester-III Examination
ELECTRONICS-LINEAR INTEGRATED CIRCUITS (NEW)

Paper-2

Time : Three Hours]

[Maximum Marks : 50

- N.B. :— (1) All questions are compulsory and carry equal marks.
(2) Draw neat and well labelled diagram wherever necessary.

EITHER

1. (A) In what respect does a difference amplifier differ from dc amplifier? Explain the working of the difference amplifier in differential mode and common mode. Also explain the necessity of dual power supply. 3+4+3

OR

- (B) Explain the Op-Amp parameters :

- (i) Input offset voltage
- (ii) Input offset current
- (iii) Input bias current
- (iv) Common mode rejection ratio
- (v) Slew rate.

10

EITHER

2. (A) Explain the working of Op-Amp as a subtractor. Derive the expression for its output. Explain how Op-Amp can be used as a buffer. 6+4

OR

- (B) Explain the working of Op-Amp as integrator. Derive the expression for its output. Explain the working of op amp as adder. 6+4

EITHER

3. (A) Draw block diagram and explain the working of IC-555. Explain the working of IC 555 as a monostable multivibrator. 5+5

OR

- (B) Explain the working of IC 555 as a Astable multivibrator. Explain use of Op-Amp as zero-crossing detector. 5+5

EITHER

4. (A) Explain in detail wide band reject filter and Narrow band reject filter. 5+5

OR

- (B) Explain the concept of sample and hold system. What is necessity of S/H circuit ? Explain basic sample and hold circuit system. What is advantage of sample and hold circuit ? 3+2+3+2
5. Solve any ten : 1×10=10
- (a) Explain any two ideal characteristics of Op-Amp.
 - (b) Define slew rate.
 - (c) Draw symbol of Op-Amp.
 - (d) Draw output waveform of integrator. When a dc voltage is applied at input ?
 - (e) In inverting amplifier if input is -3V and gain is 2, what would be the output ?
 - (f) Explain the significance of the name virtual ground in Op-Amp. Circuit.
 - (g) Draw pin diagram of IC 555.
 - (h) Draw output waveform of PWM.
 - (i) What are the applications of IC-555 ?
 - (j) What is meant by band reject filter ?
 - (k) What is narrow band reject filter ?
 - (l) Draw frequency response graph of high pass filter.

Bachelor of Science (B.Sc.) Semester-V Examination
ELECTRONICS-MODERN COMMUNICATION SYSTEMS (NEW)
Optional Paper-1

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

EITHER

1. (a) Explain the construction and working of PIN photo diode.
- (b) Explain the construction and working of LASER diode. 5+5

OR

- (c) Draw the block diagram of Optical Fiber communication system and explain each block in brief. 10

EITHER

2. (a) Explain FSK modulation method with waveform.
- (b) Explain basic principle of operation of PCM system. 5+5

OR

- (c) Draw the block diagram of Digital Communication system and explain the function of each block in brief. State the advantages of Digital Communication System. 8+2

EITHER

3. (a) Explain the need for satellite communication.
- (b) Explain one way and two-way satellite communication services. 5+5

OR

- (c) Draw the block diagram of GPS receiver and explain each block in brief. 10

EITHER

4. (a) Describe evolution of mobile communication.
- (b) What is Advance Mobile Phone System (AMPS) ? Explain its operation. 5+5

OR

- (c) Draw the block diagram of GSM Architecture and explain each functional unit in brief. 10

5. Solve any ten :

- (A) What is refractive index ?
- (B) Enlist the different modes of propagation of optical fiber.
- (C) Write a difference between spontaneous and stimulated emission.
- (D) What is baud rate ?
- (E) What is Cyclic Redundancy Check ?
- (F) State the application of PPM.
- (G) Enlist various types of satellites based on its altitude.
- (H) State the advantages of geosynchronous satellites.
- (I) What is transponder ?
- (J) What is the full form of CDMA ?
- (K) Enlist any two advantages of Cellular Telephone System.
- (L) What is 5G ?

1×10=10

Bachelor of Science (B.Sc.) Semester-V Examination
ELECTRONICS : INTRODUCTION TO MICROPROCESSOR

Paper – II

Time : Three Hours]

[Maximum Marks : 50

- N.B. :—** (1) All questions are compulsory and carry equal marks.
 (2) Draw well labeled diagrams wherever necessary.

EITHER

1. (a) Draw the block diagram of Intel 8085 Microprocessor. Explain each block in brief. 10

OR

- (b) Explain the need for Address and Data multiplexing and explain how demultiplexing of address and data bus is achieved with suitable diagram. 5+5

EITHER

2. (a) Describe following instruction, also mention bytes, flag affected and addressing mode. 10

- (1) LHLD address
- (2) STAX Rp
- (3) XRI data
- (4) RLC
- (5) ACI data.

OR

- (b) Explain various addressing modes of 8085 in detail with two examples for each. 10

EITHER

3. (a) What is subroutine ? State the advantages of subroutine.

Explain the following instructions related to subroutine :

- (i) CALL Address
- (ii) RET.

Write brief note on memory interfacing.

1+1+6+2

OR

- (b) What are conditional and unconditional jump instructions ? Explain instruction JNZ addr. with suitable example. What is stack ? Explain PUSH and POP instructions. 6+4

EITHER

4. (a) What is interfacing ? State the need for Data Transfer Scheme. List different types of Data Transfer Schemes. Explain interrupt driven data transfer scheme. Compare programmed data transfer scheme with DMA. 1+1+2+3+3

OR

- (b) What is a Programmable Peripheral Interface ? Draw the block diagram of PPI 8255. Explain the role of each block. 10
5. Solve any ten : 1×10=10
- (A) State the function of PC in 8085 microprocessor.
 - (B) Define machine cycle.
 - (C) State the function of $\overline{IO}/\overline{M}$ Pin of 8085 microprocessor.
 - (D) Enlist various groups of instructions of 8085 microprocessor.
 - (E) Mention the difference between SUB A and CMP A instruction.
 - (F) How can one reorganize immediate addressing mode from instruction ?
 - (G) Write any two branch control instructions.
 - (H) What is difference between Call and Jump instruction ?
 - (I) How do we initialize stack in 8085 microprocessor ?
 - (J) What is difference between software and hardware interrupts ?
 - (K) What is the use of \overline{INTA} pin ?
 - (L) Mention only one difference between synchronous and asynchronous data transfer.

Bachelor of Science (B.Sc.) Semester—III Examination

ELECTRONICS : ANALOG CIRCUITS

Optional Paper—I

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labeled diagrams wherever necessary.

EITHER

1. (A) Explain construction and working of positive clamper with its input and output waveforms. Explain construction and working of positive clamper with positive reference voltage and positive clamper with negative reference voltage along with its input and output waveforms. 4+3+3

OR

- (B) Explain construction and working of half wave rectifier along with input and output waveforms. State advantages, disadvantages and applications of half wave rectifier. 4+6

EITHER

2. (A) Define stability. State the different factors that affect the stability of transistor. Derive an expression for stability factor of transistor, in CE mode. 3+7

OR

- (B) Derive an expression for input impedance and output impedance in terms of h-parameters for CE mode of transistor. 5+5

EITHER

3. (A) Draw and explain the circuit diagram of class B power amplifier along with input and output waveforms. 5+5

OR

- (B) Explain construction and working of transformer coupled Class A power amplifier. Derive an expression for efficiency of Class A power amplifier. 5+5

EITHER

4. (A) Draw the block diagram of feedback amplifier and explain each block in brief. Discuss the properties of negative feedback amplifier. 6+4

OR

- (B) Explain construction and working of RC phase shift oscillator. State its advantages, disadvantages and applications. 7+3

5. Answer any ten questions :

- (A) State different types of clipper.
- (B) Define rectifier efficiency.
- (C) Define peak inverse voltage of full wave rectifier.
- (D) What is thermal runaway ?
- (E) State different methods of biasing of transistor.
- (F) State one limitation of h-parameter.
- (G) What is power transistor ?
- (H) How much is the efficiency of class B power amplifier ?
- (I) State two applications of class C power amplifier.
- (J) State Barkhausen criterion for oscillation.
- (K) Give a formula for frequency of oscillation for wein bridge oscillator.
- (L) State two advantages of crystal oscillator.

10×1

Bachelor of Science (B.Sc.) Semester—I Examination
ELECTRONICS (Fundamentals of Digital Electronics)
Optional Paper – 2

Time : Three Hours]

[Maximum Marks : 50

Note :— (1) All questions are compulsory and carry equal marks.

(2) Draw labeled diagrams wherever it is necessary.

EITHER

1. (A) Explain the 1's complement and 2's complement method of subtraction of binary numbers using suitable example. How negative numbers are represented in the binary number system ? 6+4

OR

- (B) What are codes ? What are BCD codes ? What are the different unweighted codes ? Explain Excess-3 codes in detail. 1+4+1+4

EITHER

2. (A) What is Boolean algebra ? What are logic gates ? Explain all the basic logic gates. Realize all the basic gates using NOR and NAND gates. 1+1+3+5

OR

- (B) State and prove associative and distributive laws of Boolean algebra. State and prove De' Morgan's laws. List all the OR Laws. 4+4+2

EITHER

3. (A) What is K-map ? What are its advantages ? Explain the different terms associated with K-map. Solve the following using K-map : 2+1+3+4

$$F(A,B) = \sum m(0,2,3)$$

OR

- (B) What is Multiplexer ? Explain the design and working of 4 : 1 Multiplexer using logic gates. What are the advantages and applications of Multiplexers ? 2+4+2+2

EITHER

4. (A) What is Flip-flop ? What are the uses of Flip-flop ? List the different types of Flip-flop. Explain the construction and working of clocked RSFF with preset and clear inputs using NAND gates. 2+2+2+4

OR

- (B) What is racearound condition ? Sketch and explain the construction and working of JK master slave Flip-flop using NAND gate. How the racearound condition is removed in this Flop-flop? 1+4+4+1

5. Attempt any ten :

1×10=10

- (a) Compute : $(DAD)_{16} = (?)_2$
- (b) What is the base of Octal number system ?
- (c) Convert $(55)_{10}$ to the BCD code.
- (d) Draw the truth table of XNOR gate.
- (e) Draw the symbol of XOR gate.
- (f) Solve the following Boolean expression :
 $A + AB = ?$
- (g) What is meant by SOP ?
- (h) Draw the logic circuit of Half adder.
- (i) List the types and number of gates required to design Half subtractor.
- (j) Draw a logic diagram of basic NAND latch.
- (k) What are the different types of clocks used for triggering of Flip-flop ?
- (l) What is meant by propagation delay in Flip-flop ?

**Bachelor of Science (B.Sc.) Semester—III Examination
ELECTRONICS : LINEAR INTEGRATED CIRCUITS**

Optional Paper—II

Time : Three Hours]

[Maximum Marks : 50

- N.B. :—** (1) All questions are compulsory.
(2) All questions carry equal marks.
(3) Draw neat diagrams wherever necessary.

EITHER

1. (A) What is OP-AMP ? Draw a well labelled block diagram of OP-AMP and explain the function of each block.

Define the following parameters of OP-AMP :

- (i) Open loop gain
- (ii) Closed loop gain
- (iii) CMRR
- (iv) Slew rate

1+5+4=10

OR

- (B) What is differential amplifier ? State its advantages.

Draw a diagram of differential amplifier and explain its working in brief. Also derive the expression for its output voltage (V_o).

2+5+3=10

EITHER

2. (A) Explain the working of OP-AMP as an Adder circuit with suitable diagram. Also explain its use as a Non-Inverting amplifier and averaging amplifier.

4+6=10

OR

- (B) Explain OP-AMP as inverting amplifier and obtain the expression for its voltage gain.

Describe the application of OP-AMP as a differentiator circuit.

5+5=10

EITHER

3. (A) Explain the use of IC 555 as a monostable multivibrator. Derive the relation for pulse width.

List the general features of IC 555.

6+2+2=10

OR

- (B) Draw the block diagram of IC 555 and explain its working.

Explain in brief the use of IC 555 as pulse width modulator (PWM).

6+4=10

EITHER

4. (A) Explain the working of first order Butterworth low pass filter with suitable diagram.

Derive the relation between gain and high cut-off frequency of first order Butterworth low pass filter.

4+6=10

OR

- (B) What is signal conditioning ? Explain its necessity.

List the various important features of signal conditioning circuit and explain each of them in brief.

1+3+6=10

5. Solve any ten :

- (a) What is single ended output mode ?
- (b) State any two methods for reducing drift in differential amplifier.
- (c) List the advantages of OP-AMP over basic amplifier.
- (d) What is sign changer ?
- (e) State the expression for output voltage of 3-input adder circuit.
- (f) Draw the circuit diagram for OP-AMP as a subtractor.
- (g) What is zero-crossing detector ?
- (h) Draw the circuit diagram for OP-AMP as a Schmitt Trigger.
- (i) Define the term Duty Cycle.
- (j) What is active filter ?
- (k) What is Band-pass filter ?
- (l) Write any two sources of errors in sample and hold circuit.

10×1=10

Bachelor of Science B.Sc. Semester-V Examination
ELECTRONICS-MODERN COMMUNICATION SYSTEMS (NEW)
Optional Paper-1

Time : Three Hours]

[Maximum Marks : 50

- N.B. :-** (1) All the questions are compulsory and carry equal marks.
 (2) Draw neat diagrams wherever necessary.

EITHER

1. (A) What is photo detector ? Explain the construction and working of PIN diode and Avalanche Photodiode detectors used in optical communication system. 2+8

OR

- (B) What is fiber optic communication ? State and explain the properties of fiber optic cable. Draw the block diagram of fiber optic communication system and describe the function of each block. 4+6

EITHER

2. (A) Draw the block diagram of digital pulse code modulation system and explain the function of each block. State advantages of digital modulation. 8+2

OR

- (B) What is digital modulation techniques? Explain the process of amplitude and frequency shift keying with suitable waveforms. 2+8

EITHER

3. (A) What is need for satellite communication ? Explain satellite telephone system using LEO and MEO satellite communication. 2+8

OR

- (B) Explain geostationary satellite concept and state its uses. Enlist the features of low Earth orbit satellite and its applications. 6+4

EITHER

4. (A) What is mobile radio communication ? Draw the block diagram of mobile communication system and state the function of each block. Describe CDMA system in mobile communication. 6+4

OR

- (B) What is GSM standard in mobile communication ? Explain the need for GSM and its different functional units. 4+6

5. Solve any ten :

- (A) What is LASER ?
- (B) Enlist any two optical sources.
- (C) State the types of FOC cable.
- (D) What is PSK ?
- (E) State the difference between error detection and correction.
- (F) What is data coding ?
- (G) What is transponder in satellite communication ?
- (H) How much is height of geostationary satellite from earth ?
- (I) What does INTELSAT stand for ?
- (J) What is CDMA technology ?
- (K) State any two advantages of cellular telephone system.
- (L) How is CDMA better than GSM ?

10×1=10

Bachelor of Science B.Sc. Semester-V Examination
ELECTRONICS-MODERN COMMUNICATION SYSTEMS (NEW)
Optional Paper-I

Time : Three Hours]

[Maximum Marks : 50

- N.B. :- (1) All the questions are compulsory and carry equal marks.
(2) Draw neat diagrams wherever necessary.

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10×1=10

Bachelor of Science (B.Sc.) Semester-I Examination
BIOTECHNOLOGY
(Macromolecules)
Optional Paper—2.

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.
 (2) Draw diagrams wherever necessary.

1. Explain Maxam and Gilbert DNA sequencing method. 10

OR

Write short notes on :—

- (a) Different forms of DNA 5
 (b) Structure of tRNA 5
 2. Write in detail Eukaryotic Gene Structure. 10

OR

Write notes on :—

- (a) Structure of Nucleosome 5
 (b) C-Value and C-Value Paradox 5
 3. Give classification of amino acid based on polarity and nutrition. 10

OR

Write short notes on :—

- (a) N terminal analysis reaction 5
 (b) Write physico chemical properties of amino acids. 5
 4. Write a note on :
 (a) α -helix & β -sheet of protein. 5
 (b) Forces stabilizing tertiary structure of proteins. 5

OR

- (a) Write a note on oligomeric proteins 5
 (b) Describe structure of myoglobin. 5

5. (i) What is nucleoside ?
(ii) What is Chargaff's Rule
(iii) What is base stacking ?
(iv) What is role of histone ?
(v) What is telomere ?
(vi) What is Introns ?
(vii) What is cot curve ?
(viii) Name any two Basic amino acids.
(ix) What is meant by renaturation of proteins ?
(x) What is motif ?
(xi) Define peptide bond.
(xii) Give the example of quaternary structure of protein.

1×10

Bachelor of Science (B.Sc.) Semester-I Examination
BIOTECHNOLOGY (Macromolecules)
Optional Paper—2

Time : Three Hours]

[Maximum Marks : 50

- N.B. :—(1) All questions are compulsory and carry equal marks.
 (2) Draw diagrams wherever necessary.

1. Describe how non-covalent forces are involved in the stabilization of DNA structure with special reference to hydrogen bonds, base stacking and hydrophobic interactions. 10

OR

- (a) Compare the properties of A, B and Z form of DNA. 5
 (b) Write note on the structure of t-RNA. 5
2. Describe the packaging of DNA into chromosomes. 10

OR

Write short notes on :

- (a) Split genes 2½
 (b) Cot curves 2½
 (c) C-value paradox 2½
 (d) Telomere 2½
3. Explain how the primary structure of proteins can be determined. 10

OR

- (a) Write a note on how amino acids would react with Edman's and Sanger's reagents. 5
 (b) Write a note on "titration curve of basic amino acids". 5
4. Write short notes on :

- (a) α -Helix 2½
 (b) Myoglobin 2½
 (c) Protein denaturation 2½
 (d) β -turn 2½

OR

Write short notes on :

- (e) Arrangement of H-bonds in parallel and anti-parallel β -sheets 2½
 (f) Forces stabilizing tertiary structure of proteins 2½

(g) Oligomeric proteins

2½

(h) Concept of domains

2½

5. Solve any ten :

(i) Name the sugar used to form a nucleotide of DNA. - Deoxyribose.

(ii) Which form of DNA is usually found in a left-handed configuration? - Z DNA

(iii) What is Chargaff's rule? ✓

(iv) Name the histone that binds to the linker DNA. → H1.

(v) Who coined the term "chromosome"?

(vi) Write any one function of centromere.

○ (vii) Which amino acid is known to destabilize an α -helix? Proline.

(viii) What are endopeptidases? trypsin.

(ix) Name any one essential amino acid. leucine.

(x) Name one protein that has all the four levels of structural organization. → haemoglobin

(xi) Name an amino acid that you will frequently find in a β -turn. ~~Proline~~ ~~haemoglobin~~

○ (xii) What is the role of mercapto-ethanol in protein denaturation? → cysteine $1 \times 10 = 10$
on

Bachelor of Science (B.Sc.) Semester—I Examination
BIO-TECHNOLOGY (Microbiology)
Optional Paper—I

Time : Three Hours]

[Maximum Marks : 50

Note :—(1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. Discuss the principle, construction and applications of transmission electron Microscope. 10

OR

Give the contribution of Louis Pasteur in the field of Microbiology. 10

2. (a) Differentiate between gram positive and gram negative cell wall.

(b) Draw a well labelled diagram of typical bacterial cell.

(c) Write a note on structure of an Acid fast cell wall.

(d) Write a note on commonly observed shapes in Bacteria.

4 × 2½ = 10

OR

(e) Write a note on F plasmids.

(f) Draw a well labelled diagram of endospore structure.

(g) Write a note on arrangement of bacterial flagella.

(h) Write a note on bacterial capsules.

4 × 2½ = 10

3. (a) Explain lysogenic cycle of viral replication. 5

(b) Write a note on viral symmetry. 5

OR

(c) Describe the concept of distinct archaea groups. 5

(d) Write a brief account on Bergey's Manual. 5

4. (a) Define Nutrition. How can bacteria be classified on the basis of Nutritional requirements ?

(b) Explain the various components of non-synthetic medium. 5

OR

(c) Explain with one example :

(i) Enrichment Media

(ii) Differential Media. 5

(d) What are Micro-nutrients and Macro-nutrients ? Give its examples. 5

5. Solve any TEN :

- (1) Name any two Gram Negative Bacteria. ✓
- (2) Define resolving power of Microscope. ✓
- (3) Write the function of Chromogen. ✓
- (4) Why oil is used in oil immersion objective ? ✓
- (5) What is fimbriae ? (Function of fimbriae). ✓
- (6) Name any two capsule forming bacteria. ✓
- (7) Define Vision. ✓
- (8) Give any two examples of selective media. ✓
- (9) Define Synthetic media. ✓
- (10) Name any two enriched media. ✓
- (11) Give any one difference between bacterial and archaeal cell membrane. ✓
- (12) Name the symmetries of viral capsids. ✓

College_Exam_116

College_Exam_116

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Bachelor of Science (B.Sc.) Semester—II Examination
BIOTECHNOLOGY (Microbiology and Cell Biology)
Optional Paper—1

Time : Three Hours]

[Maximum Marks : 50

Note :—(1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. What is microbial growth ? Explain different phases of bacterial growth curve. 10

OR

(a) Differentiate between chemostat and turbidostat. 5

(b) Describe synchronous cultures. 5

2. Describe various chemicals used for microbial control. 10

OR

Write notes on :

(a) Moist heat as a method of sterilization. 5

(b) Antibiotics affecting protein synthesis. 5

3. Give structural and functional details of nucleus. 10

OR

(a) Describe the structure of RER. (Rough Endoplasmic Reticulum) 5

(b) Write a note on peroxisomes. 5

4. Explain various stages of mitosis with suitable diagrams. 10

OR

Write a note on :

(a) Proteins of muscles. 5

(b) Neuromuscular junction. 5

5. Solve any ten :

(i) Define Generation time. -

(ii) Define Psychrophiles

(iii) Name any one method for maintenance of pure culture. -

(iv) Define sterilization. -

(v) What kind of damage UV radiations cause to DNA ? -

(vi) Give one example of antiseptic. -

(vii) What is function of glyoxisomes ? -

(viii) Give one role of vacuoles. -

(ix) What are lysosomes ? -

(x) Why meiosis I is known as reductive division ? -

(xi) What is node of Ranvier ? -

(xii) Name any one neurotransmitter. -

1×10=10

Bachelor of Science (B.Sc.) Semester-II Examination
BIOTECHNOLOGY (Cell Constituents & Enzymology)
Optional Paper-2

[Maximum Marks : 50]

Time : Three Hours]

Note :- (1) All questions are compulsory and carry equal marks.
(2) Draw diagrams wherever necessary.

1. Define Homopolysaccharides, and describe in detail chemical structure of starch and glycogen. 10

OR

(a) Describe classification of carbohydrates. 5

(b) Describe and draw chemical structure of Maltose and Lactose. 5

2. Describe the structure of:

(a) Lecithin 2½

(b) Triglycerides 2½

(c) Sphingomyelin 2½

(d) Cerebroside 2½

OR

(i) Describe in detail classification of Lipids. 5

(ii) Write a note on Iodine and saponification value of fats. 5

3. Describe in detail :

(a) Isoenzymes with Lactate Dehydrogenase as example. 5

(b) Multienzymes with Pyruvate Dehydrogenase as example. 5

OR

Discuss in detail classification and nomenclature of enzymes with examples and elaborate E.C. number. 10

4. Derive Michaelis-Menten equation. 10

OR

Write notes on :

(a) Effect of pH on enzyme activity. 5

(b) Competitive inhibition. 5

5. Solve any 10 of the following :

- (i) Name one heteropolysaccharide. Chondroitin
- (ii) Define anomers. C1 C6 anom
- (iii) Glucose and Galactose are epimers of each other at carbon number C4.
- (iv) Name any one essential fatty acid. ω -3-FAA
- (v) What are unsaturated fatty acids? which has = bond
- (vi) What is isoprene rule? isoprene - which are only 5 carbon
- (vii) Name one allosteric enzyme. Hexokinase
- (viii) Define active site. Region where H_2O bind
- (ix) What is temperature quotient? Q_{10}
- (x) Define Holoenzyme complete composition of enzyme
- (xi) What is K_m ? M.M. constant
- (xii) What is meant by irreversible inhibition?

Bachelor of Science (B.Sc.) Semester—III Examination
BIOTECHNOLOGY (METABOLISM)
Optional Paper—I

Time : Three Hours]

[Maximum Marks : 50

Note :—(1) All questions are compulsory.
 (2) All questions carry equal marks.

1. Describe Gluconeogenesis in detail. 10

OR

Explain glycolysis and its regulation in detail. 10

2. (a) Describe the chemical reaction catalyzed by pyruvate dehydrogenase complex. 2½

(b) Discuss the reaction catalyzed by citrate synthase. 2½

(c) Write a note on Chemiosmotic theory. 2½

(d) Draw the structure of Mitochondria. 2½

OR

(e) What is oxidative phosphorylation ? 5

(f) Write a note on Regulation of TCA. 5

3. Describe Urea Cycle in detail. 10

OR

(a) Explain oxidative and non-oxidative deamination of amino acids. 5

(b) Explain decarboxylation reaction. 5

4. Describe the β -oxidation of fatty acids. 10

OR

Describe the fatty acid synthase complex in detail. 10

5. Solve any TEN :

(1) What is redox potential ?

(2) Define entropy.

(3) Give any two inhibitors of Glycolysis.

(4) What is anaplerosis ?

(5) Name the vitamin associated with TCA cycle.

(6) How many ATPs are formed in TCA cycle ?

(7) Write the chemical structure of AMP.

(8) What is meant by salvage pathway ?

(9) What is transmethylation ?

(10) Name two Ketone bodies.

(11) Give the role of Carnitine in lipid metabolism.

(12) What is Ketoacidosis ?

1×10=10

Bachelor of Science (B.Sc.) Semester-I Examination
FUNDAMENTALS OF ENVIRONMENTAL SCIENCE
Optional Paper-1

Time : Three Hours]

[Maximum Marks : 50

1. What are the four components of the Environment ? Explain them in detail. 10

OR

- (a) Why is the subject of Environmental Science multidisciplinary in nature ? 5
 (b) Explain the objectives of Environmental Education. 5

2. What is Acid Rain ? Explain the control measures implemented to prevent Acid Rain. 10

OR

- (a) Explain the effects of Greenhouse gases. 5
 (b) What is Smog ? Write a note on Photochemical Smog. 5

3. Name the physical properties of water. Explain viscosity and salinity. 10

OR

- (a) Explain the phenomenon of Heat Conduction in water. 5
 (b) How is the conductivity of water measured ? 5

4. Explain the physical properties of soil – Porosity, Texture, Soil Air, Soil Water. 10

OR

- (a) Write a note on 'Different types of soil'. 5
 (b) Write short note on composition of soil. 5

5. Answer in **one-two** sentences each (any **ten**) :

- (1) What is Lithosphere ?
- (2) State any two principles of Environmental Education.
- (3) When is World Earth Day celebrated ?
- (4) Name any two forms of Precipitation.
- (5) What is Dobson unit ?
- (6) What is the percentage of Oxygen (O_2) in the atmosphere ?
- (7) What is a Solvent ?
- (8) Which instrument is used to measure pH of water ?
- (9) Define the term 'Specific Heat' of water.
- (10) What is the role of Potassium in soil ?
- (11) Name the Soil Horizons.
- (12) Which living organisms are present in soil ? 10

Bachelor of Science (B.Sc.) Semester-II (New) Examination
ENVIRONMENTAL SCIENCE
(Biodiversity Conservation & Environmental Management)
Optional Paper-2

Time : Three Hours]

[Maximum Marks : 50

Note :—(1) All questions are compulsory and carry equal marks.
 (2) Illustrate your answers with suitable examples.

1. What are minor forest products and give at least five examples with its significance. 10

OR

- (a) Explain main causes and adverse effects of deforestation. 5

- (b) What is dam ? Discuss the effects of dam on the forest. 5

2. Write an account of values of biodiversity. Discuss various threats leading to loss of biodiversity. 10

OR

- (a) Write the objectives and salient features of Bio-diversity Act, 2002. 5

- (b) Briefly discuss biogeographical classification of India. 5

3. What are biosphere reserves ? Discuss biosphere reserves of India and their aims. 10

OR

- (a) Discuss the categories of threatened species of wildlife in India. 5

- (b) Explain the causes of man-animal conflicts. 5

4. Discuss about objectives, components, principles and importance of Environmental Management. 10

OR

- (a) Write an explanatory note on "Preventive Environmental Policy (PEP)". 5

- (b) Discuss in detail the role of Bishnoi community in Environmental Protection. 5

5. Solve any **TEN** :—

- (a) What do you understand by ethnobotany ?

- (b) What is afforestation ?

- (c) What are objectives of social forestry ?

- (d) Which organization publishes the Red Data Book ?

- (e) What is the full form of CITES ?

- (f) Write in brief about gene bank.

- (g) What is entomology ?

- (h) Write about vulnerable species.

- (i) What is the logo of WWF ?

- (j) What do you mean by SDG ?

- (k) Define sustainable development.

- (l) What is the role of NGO's in environmental protection at local level ? 1×10=10

Master of Science (M.Sc.) Semester—I Choice Based Credit System (CBCS)
(Environmental Science) Examination
ENVIRONMENTAL CHEMISTRY

Paper-I

Paper-I

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks

(2) Illustrate your answer with suitable examples and diagrams

- 1 Explain in detail the measurement of temperature, volume, density and viscosity of solution with their significance in environmental chemistry 16

OR

- (a) Explain the principle of colloidal chemistry. Write their application in environmental chemistry 8
- (b) Describe the types of chemical reaction used in environmental chemistry 8
- 2 Discuss about the principle and application of green chemistry 16

OR

- (a) Explain the composition and characteristics of ocean water 8
- (b) Explain the basic concept and importance of environmental chemistry 8
- 3 What is soil pollution? Write the sources, consequences and control measures of soil pollution 16

OR

- (a) Discuss about physico-chemical properties of soil 8
- (b) What is biofertilizer? Write their significance in soil fertility. Add a note on C : N ratio 8
- 4 Describe the characteristics and treatment of industrial waste with respect to textile industry 16

OR

- (a) Write the classification of industries based on environmental impacts 8
- (b) Explain about the protection of surface water from industrial waste 8

(Contd.)

5. (a) Write short note on Stoichiometry
(b) Explain solubility product and solubility of gases in water
(c) Write short note on soil reaction
(d) Write characteristics of sugar industry waste

4×4=16

OR

- (e) Write principle of oxidation and reduction
(f) Explain the structure of water and water balance
(g) Write short note on properties of humus
(h) Write short note on characteristics of dairy industry waste water

4×4=16

**Master of Science (M.Sc.) Semester—I Choice Based Credit System (CBCS)
(Environmental Science) Examination**

ENVIRONMENTAL BIOLOGY, MICROBIOLOGY AND BIOTECHNOLOGY

Paper-3

Paper-III

Time Three Hours]

[Maximum Marks 80

Note :—(1) All questions are compulsory and carry equal marks

(2) Illustrate your answers with well labelled diagram

- 1 Define population ecology. Explain the characteristics population. Add a note on population growth curve. 16

OR

- (a) What is ecology ? Describe the branches of ecology in detail 8
- (b) Define community ecology. Give an account on the community structure. Add a note on ecological indicators. 8
- 2 Define chemical toxicity stating its principle. Explain the biochemical effects of pesticides and cyanides. 16

OR

- (a) Describe the factors influencing toxicity. Add a note on biotransformation and bioconcentration. 8
- (b) Explain about the Plastic Waste Management Rules 2016. Add a note on pollution generated due to burning of plastic waste. 8
- 3 Describe the types of culture. Elaborate on techniques used for enrichment of culture. 16

OR

- (a) Give the classification of micro-organisms. Explain about the role of microbes in sewage. 8
- (b) Explain the scope of biotechnology and biotechnological approach of environmental pollution. 8
- 4 Describe the scope of biotechnology in pollution control. Add a note on In-situ and Ex-situ bioremediation. 16

OR

- (a) Explain about biological data acquisition in detail. Elaborate on Protein sequence. 8
- (b) Give an account on Genome annotation and gene prediction. 8

5. (a) Describe commensalism with suitable example.
(b) Write a note on biomagnification.
(c) Explain about the maintenance and preservation of microbial culture.
(d) Write a brief note on phyto-remediation.

4 × 4 = 16

OR

- (e) What are Ecotypes ? Give its significance.
(f) Explain Dose-Response relationship with suitable examples.
(g) Write a note on sterilization and disinfection techniques of microbial culture.
(h) Explain Biodiversity informatics and metagenomics in brief.

4 × 4 = 16

**Master of Science (M.Sc.) Semester—I Choice Based Credit System (CBCS)
(Environmental Science) Examination
ENVIRONMENTAL BIOLOGY, MICROBIOLOGY AND BIOTECHNOLOGY**

Paper-3

Paper-III

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory and carry equal marks

(2) Illustrate your answers with well labelled diagram.

1. Define population ecology. Explain the characteristics population. Add a note on population growth curve. 16

OR

- (a) What is ecology ? Describe the branches of ecology in detail. 8
- (b) Define community ecology. Give an account on the community structure. Add a note on ecological indicators. 8
2. Define chemical toxicity stating its principle. Explain the biochemical effects of pesticides and cyanides. 16

OR

- (a) Describe the factors influencing toxicity. Add a note on biotransformation and bioconcentration. 8
- (b) Explain about the Plastic Waste Management Rules 2016. Add a note on pollution generated due to burning of plastic waste. 8
3. Describe the types of culture. Elaborate on techniques used for enrichment of culture. 16

OR

- (a) Give the classification of micro-organisms. Explain about the role of microbes in sewage. 8
- (b) Explain the scope of biotechnology and biotechnological approach of environmental pollution. 8
4. Describe the scope of biotechnology in pollution control. Add a note on In-situ and Ex-situ bioremediation. 16

OR

- (a) Explain about biological data acquisition in detail. Elaborate on Protein sequence. 8
- (b) Give an account on Genome annotation and gene prediction. 8

- 5 (a) Describe commensalism with suitable example
(b) Write a note on biomagnification
(c) Explain about the maintenance and preservation of microbial culture
(d) Write a brief note on phyto-remediation.

4 × 4 = 16

OR

- (e) What are Ecotypes ? Give its significance.
(f) Explain Dose-Response relationship with suitable examples
(g) Write a note on sterilization and disinfection techniques of microbial culture
(h) Explain Biodiversity informatics and metagenomics in brief.

4 × 4 = 16

**Master of Science (M.Sc.) Semester-II Choice Based Credit System (CBCS)
(Environmental Science) Examination
ENVIRONMENTAL ECOSYSTEM AND BIODIVERSITY**

Paper—I

Paper—V

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. What is Ecosystem ? What are components of ecosystem ? Discuss in detail energy flow and energy dynamics of ecosystem. 16

OR

- (a) What is a biogeochemical cycle ? Explain Carbon and Nitrogen cycle in detail. 8
(b) What is productivity ? Discuss the productivity of different ecosystems. 8
2. Explain about the provisions of Wildlife Protection Act 1972. Add a note on illegal Wildlife Trade and Wildlife Protection Rules 1995. 16

OR

- (a) Define biome. Describe the biomes in India with example of any 2 biomes. 8
(b) What is conservation of wildlife ? Describe the importance of conservation and the reason for extinction of wildlife. 8
3. What are the methods of Wildlife conservation ? Explain Project Tiger and Project Elephant. 16

OR

- (a) Explain the biogeographic classification of India. 8
(b) Describe the IUCN categories. Add an informative note on Red Data Book. 8
4. Explain in detail biodiversity conservation strategies. 16

OR

- (a) Describe conservation and management of mangroves and coral reefs. 8
(b) Write in detail on Biodiversity Act, 2002. 8
5. Each question carries 4 marks :
- (a) Write an informative note on food chain.
(b) Write briefly on hotspot of biodiversity in India.
(c) Explain about the co-relation between biodiversity and ecosystem services.
(d) Write an informative note on RAMSAR sites.
(e) Explain sulphur cycle.
(f) Write a note on National forest policy.
(g) Write a note on Invasive alien species.
(h) What are Integrated Protected Area Systems ? 4×4=16

**Master of Science (M.Sc.) Semester-II Choice Based Credit System (CBCS)
(Environmental Science) Examination
ANALYTICAL TECHNIQUES FOR ENVIRONMENTAL MONITORING**

**Paper—4
Paper—VIII**

Time : Three Hours]

[Maximum Marks : 80

- N.B. :—** (1) All questions are compulsory and carry equal marks.
(2) Illustrate your answer with well labelled diagram.

1. Explain liquid chromatography highlighting the choice of solvents and stationary phases. Add a note on thin layer chromatography. 16

OR

- (a) Describe about HPLC technique stating its principle and working. 8
(b) Explain gas chromatography. Discuss the advantages of Gas Chromatography coupled with Mass Spectrometry (GC-MS) 8
2. Define Absorption spectrophotometry. Explain the principle, working and application of UV-visible spectrophotometer. 16

OR

- (a) Explain the principle and working of Atomic Absorption Spectroscopy with the help of well labeled diagram. 8
(b) Explain the working of Nephelometer. Also add a note on its application. 8
3. What are ion selective electrodes ? How are they classified ? Explain their importance in monitoring water quality. 16

OR

- (a) What is speciation ? Why is it needed ? Explain the speciation of mercury in the water system. 8
(b) Explain Anodic stripping Voltammetry in environmental measurements. 8
4. Explain in detail about the working of Inductively Coupled Plasma Spectroscopy (ICP). Illustrate it with well labelled diagram. 16

OR

- (a) Explain working and principle of molecular mass spectrometry. 8
(b) Write an informative note on Neutron activation analysis and X-ray diffraction. 8

- 5 (a) Write informative note on paper chromatography
(b) Write an informative note on IR spectrophotometer
(c) Discuss briefly on the types of electro-chemical techniques
(d) Write an informative note on isotope dilution analysis

4 × 4 = 16

OR

- (e) Write an informative note on R_f value
(f) Explain about the working and application of conductivity meter
(g) Write an informative note on Redox potential measurement
(h) What is radiochemical analysis ?

4 × 4 = 16

Master of Science (M.Sc.) Semester-I (Choice Based Credit System) (CBCS)

(Environmental Science) Examination

ENVIRONMENTAL BIOLOGY, MICROBIOLOGY AND BIOTECHNOLOGY

Paper-3

Paper—III

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Illustrate your answers with well labelled diagram.

1. Give an account on community ecology. Explain in detail the community structure. Add a note on ecological equivalent. 16

OR

- (a) Describe scope of ecology, its application and significance of ecology. Comment on Negative, interspecific relationship. 8
- (b) Discuss about the characteristics of population. 8
2. What is environmental toxicity ? State the factors influencing toxicity. Explain dose-effect and dose response relationship with examples. 16

OR

- (a) Explain the biochemical effects of Arsenic and Cadmium. 8
- (b) Discuss about the pollutants generated due to burning of solid waste and plastic. 8
3. What is the scope of environmental microbiology ? Give the classification of micro-organisms and discuss about the role of microbes in sewage. 16

OR

- (a) Describe the types of culture. Explain the method of pure culture preparation maintenance and preservation. 8
- (b) Explain the basics and scope of environmental biotechnology. Also comment on the approach of environmental pollution. 8

Master of Science (M.Sc.) Semester—I Choice Based Credit System (CBCS)

(Environmental Science) Examination

ENVIRONMENTAL CHEMISTRY

Paper—1

Paper—I

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Illustrate your answer with suitable examples and diagrams.

1. Explain about Saturated and Unsaturated hydrocarbon. Write their significance in Environmental Chemistry. 16

OR

- (a) What is Gibb's energy ? Write the relation between Gibb's energy and chemical potential. 8
 (b) What is mole concept, molarity and molality ? Write their application in Environmental Chemistry. 8
 2. Explain the basic concept, definition and importance of Environmental Chemistry. 16

OR

- (a) What is green chemistry ? Write the basic principle and importance of green chemistry. 8
 (b) What is biopolymer ? Write their significance in green chemistry. 8
 3. Describe the physico-chemical properties of soil with appropriate example. 16

OR

- (a) Explain the major nutrients of soil. Write their significance in soil chemistry. 8
 (b) What is bioremediation and restoration of contaminated soil ? 8
 4. Give an account on the characterization and treatment of industrial waste with respect to paper and pulp industry. 16

OR

- (a) Explain classification of industries based on environmental impacts. 8
 (b) Explain the different criteria for the site selection for sugar industry. 8
 5. (a) Write short note on adsorption and absorption. 4
 (b) Explain characteristics of ocean water. 4
 (c) Write a short note on biofertilizers. 4
 (d) Write the characteristics of dairy waste water. 4

OR

- (a) Write short note on carbonate and bicarbonate system. 4
 (b) Write short notes on Composition of ocean water. 4
 (c) Write short note on soil erosion. 4
 (d) Write short note on characteristics of tannery waste. 4

**Master of Science (M.Sc.) Semester-II Choice Based Credit System (CBCS)
(Environmental Science) Examination**

ENVIRONMENTAL ECOSYSTEM AND BIODIVERSITY

Paper-1

Paper-V

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Illustrate your answer with suitable examples and diagrams.

1. What do you mean by Biogeochemical cycle ? Explain how does nitrogen cycle operate in nature. 16

OR

- (a) Define Productivity. Explain in detail the measurement of Gross Primary Production. 8
(b) How does the trophic level can be represented along with ecological pyramid ? 8
2. Define Biomes. Discuss different types of Biomes along with their characteristics features. 16

OR

- (a) Give the board classification of the forest along with its significance. 8
(b) Discuss the salient features of the National Forest Policy. 8
3. What is meant by alpha and gamma richness ? Discuss, giving its example. 16

OR

- (a) What are the major causes of Man and Wildlife conflicts ? Discuss the remedial steps. 8
(b) Discuss the methods of Wildlife conservation. 8
4. Describe in detail about in-situ conservation with references to National Park. 16

OR

- (a) Discuss the RAMSAR sites with references to wetland conservation. 8
(b) Write a note on convention on Biological Diversity. 8
5. (a) What are the biotic and abiotic compoent ?
(b) How many animals are Endangered ? List them.
(c) Explain the efforts taken towards conservation of the Project Tiger.
(d) Explain the Marine/Coastal wetland with respect to RAMSAR site.

OR

- (e) What is sedimentary cycle ? Explain phosphorous cycle in detail.
(f) Write the characteristics features of grassland Biomes.
(g) Discuss the method for monitoring Biodiversity.
(h) Write a note on Protected Area of Biodiversity.

4×4=16

**Master of Science (M.Sc.) Semester-II Choice Based Credit System
(CBCS) (Environmental Science) Examination
ENVIRONMENTAL SAMPLING AND RESEARCH METHODOLOGY**

**Paper—3
Paper—VII**

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Illustrate your answer with suitable example and diagram.

1. Discuss air sampling and its objective in detail. Describe filtration and impingement method of air sampling. 16

OR

- (a) Explain the significance of selection of sampling location in air sampling. 8
 (b) Discuss operation, application and significance of dust fall jar with diagram. 8
2. Describe the classification of water quality parameters in detail. 16

OR

- (a) Explain in brief types of water sample. 8
 (b) Discuss BOD with its significance in detail. 8
3. Illustrate the methods of collection and handling soil and solid waste sample. 16

OR

- (a) Describe the physical, chemical and biological properties of solid waste. 8
 (b) Write any two methods of solid waste treatment. 8
4. Discuss nature, types and importance of error. Add a note on confidence limit. 16

OR

- (a) Write the method to estimate standard deviation. 8
 (b) Explain data collection and data representation in context with research methodology. 8

5. (a) What is SPM and RSPM ? Write a note on its harmful effects.
 (b) Explain the methods to determine hardness and TDS in water sample.
 (c) Give an account on objective of solid waste sampling.
 (d) Explain the term mean and median with suitable examples.

OR

- (e) What are the merits of high volume sampler ?
 (f) Discuss the physical parameters of water to be analyzed on the spot along with their significance.
 (g) Write a short note on Swachh Bharat Abhiyan.
 (h) Distinguish between precision and accuracy. 4×4=16

Master of Science (M.Sc.) Semester—II Choice Based Credit System (CBCS)

(Environmental Science) Examination

NATURAL RESOURCES MANAGEMENT

Paper—2

Paper—VI

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions carry equal marks.

(2) All questions are compulsory.

1. Explain in detail solar energy and wind energy. Also write on the energy generation from both sources of energy. 16

OR

- (a) Write in detail about fossil fuels (coal, natural gas and petroleum oil) as a conventional sources of energy. 8
- (b) Explain in detail about mechanism of generation of electricity using biomass. 8
2. What is soil erosion. Discuss about the types, effects and control measures of soil. 16

OR

- (a) Describe in detail about mineral resources. Add a note on its conservation. 8
- (b) Explain the methods of energy conservation and barriers to energy conservation. 8
3. Discuss about the available water resources on earth in detail. Add a note on uses of water for agriculture and energy generation. 16

OR

- (a) What do you mean by World Food Problem ? Add a note on effects of modern agriculture. 8
- (b) Explain in detail rain water harvesting. Add a note on its types and need. 8
4. What are marine resources ? Explain the production, status, dependence on fish resource. Add a note on issues and challenges for resource supply. 16

OR

- (a) Explain about the minor forest products. Add a note on significance of forest. 8
- (b) Explain about Joint Forest Management. 8
5. Solve the following questions (Each question carry FOUR marks) :
- (a) Write an informative note on Ocean energy.
- (b) Explain the detrimental effects of soil pollutant.
- (c) What effects of modern agriculture and use of pesticides ?
- (d) Write note on salient features of Forest Act.

OR

- (e) Explain Magneto-Hydrodynamic Power (MHD).
- (f) Write an informative note on integrated resource management strategy.
- (g) Discuss the steps involved in watershed management.
- (h) Write a note on silviculture.

4×4=16

**Master of Science (M.Sc.) Semester—III (Choice Based Credit System) (CBCS)
(Environmental Science) Examination**

BIOLOGICAL PROCESS IN WASTEWATER TREATMENT

Compulsory Paper-2

Paper—II

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagram wherever necessary.

1. What are media based anaerobic digesters? Discuss concept, theory and types with suitable examples. 16

OR

- (A) Discuss configuration and operation of Continuous Stirred Tank Reactor (CSTR). 8
(B) Hydraulic Retention Time is a very important design parameter for anaerobic digesters - explain with examples. 8

2. Discuss theory, operation, advantages and disadvantages of Trickling Filter. 16

OR

- (A) Activated Sludge Process is the most preferred aerobic treatment - explain why. 8
(B) F/M Ratio and MLSS plays important role in design of activated sludge process - explain with examples. 8

3. Explain the treatment scheme based on biological treatment for treating waste water from textile industry. 16

OR

- (A) Write an informative note on cost economics of biological treatment. 8
(B) BOD and COD of waste water plays important role in selecting treatment technology - explain with examples. 8

4. Discuss in detail maintenance of screen skimming tank, primary clarifiers, aeration tank and filters. 16

OR

- (A) Write a note on trouble shooting parameters and their control. 8
(B) Highlight the importance of operation and maintenance manual. 8

5. Write short notes on :

- (A) Anaerobic Hybrid Digesters
(B) Aerobic Biotowers
(C) Payback period of waste water treatment plant
(D) Role and duties of ETP incharge.

OR

- (E) Advantages and disadvantages of UASB Reactors
(F) Sludge Volume Index
(G) Capital cost and operational cost
(H) Reports and documentation as required during commissioning.

4×4=16

**Master of Science (M.Sc.) Semester—III Choice Based Credit System (CBCS)
(Environmental Science) Examination**

ADVANCED WATER AND WASTE WATER TREATMENT

CORE (SUBJECT CENTRIC)

Optional Paper-4

Paper-IV

Time : Three Hours]

[Maximum Marks : 80

N.B. : (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagram wherever necessary.

1. Discuss the concept and need of Zero Liquid Discharge. Add an informative note on ZLD case study for a textile industry. 16

OR

- (a) Explain the concept of CETP. Highlight the advantages and disadvantages of CETP. 8
- (b) Industries need to give advance treatment to their wastewater. Explain why ? 8
2. What are desalination plants ? Explain its design and operation of modern desalination plants highlighting their advantages and disadvantages. 16

OR

- (a) Describe the membrane filtration technology. 8
- (b) Discuss about the statutory guidelines of drinking water. 8
3. What are Multi Effect Evaporators ? Explain the design, operation and working of Multi Effect Evaporators stating its advantages and disadvantages. 16

OR

- (a) What is Reverse Osmosis ? Write an informative note on maintenance of RO. 8
- (b) Discuss about the Automation in wastewater treatment plant. Also mention its advantages. 8
4. Discuss the concept of centralized and decentralized STP's. What are the factors affecting decision making ? Add a note on cost economics of centralized & decentralized STP's. 16

OR

- (a) Explain the factors affecting cost economics of ZLD & CETP plants. 8
- (b) Reverse Osmosis as a tool for water sustainability. Explain. 8

Master of Science (M.Sc.) Semester—III Choice Based Credit System (CBCS)

(Environmental Science) Examination

ELECTIVE-WATER AND WATER TREATMENT

Optional Paper-3

Paper-III

Time : Three Hours]

[Maximum Marks : 80

N.B. : (1) All questions are compulsory and carry equal marks.

(2) Illustrate your answer with suitable examples and diagram.

1. What are the objectives and principles of water treatment. Write in detail about various parameters taken into consideration while treating water for drinking purpose. 16

OR

- (a) Explain in detail methods used for the removal of taste and odour for water treatment. 8
- (b) What are the primary water treatment methods ? 8
2. Explain in detail the processes involved in disinfection. 16

OR

- (a) What is break point chlorination and their role in treating water. 8
- (b) Discuss principle, working and significance of slow sand filter. 8
3. What are the sources of occurrence of Iron and Manganese in water ? Describe in detail process for removal of Iron and Manganese. 16

OR

- (a) Explain Nalgonda Technique for defluoridation. 8
- (b) What is hardness and its bad effect on water treatment ? Explain in detail about need for water softening. 8
4. What is mineral water ? Explain various drinking water standards and requirements for packaged drinking water. 16

OR

- (a) Discuss reverse osmosis in detail. 8
- (b) Explain various methods for the removal of colour, odour and taste. 8

Master of Science (M.Sc.) Third Semester Choice Based Credit System (CBCS)
(Environmental Science) Examination

PHYSICO-CHEMICAL TREATMENT OF WATER & WASTE WATER

Compulsory Paper-1

Paper-I

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Illustrate your answer with suitable examples and diagrams.

1. Explain objectives of waste water treatment. Discuss characteristics of waste water generated sources from dairy and pharmaceutical industry. 16

OR

- (a) Describe sources of sewage. Explain the factor affecting sewage generation. 8
(b) Explain about chemical characteristics of sewage. Add a note on its sources. 8
2. What are dewatering of units ? Write various types and factor affecting of dewatering units. 16

OR

- (a) Describe system of collection in waste water collection. 8
(b) Discuss operation of decanter and filter press in sludge generation. Write advantages and disadvantages of decanter and filter press. 8
3. Explain chemical and biological method of waste water treatment. Add a treatment flow sheet. 16

OR

- (a) Explain in detail physical method of waste water treatment. 8
(b) What are piping and instrumentation diagrams. Write their significance in waste water treatment. 8
4. Explain design, principle and function of primary clarifier and equalization tank. 16

OR

- (a) Describe types of filter media used in advanced waste water treatment. 8
(b) Explain optimum dose of coagulants in chemical waste water treatment. Add a note on types of coagulants. 8

Master of Arts (M.A.) (Marathi) (Part-II) Semester-III (CBCS)

(NEP) Examination

304 (A) : WANGMAYIN CHALVALI

Paper-4

देळ : 3 तास]

[एकूण गुण : 80

सूचना :— सर्व प्रश्नांना समान गुण आहेत.

1. मराठीतील वाङ्मयीन चळवळीची संकल्पना व स्वरूप स्पष्ट करा.

किंवा

प्राचीन काळातील मराठीतील वाङ्मयीन चळवळीची वाटचाल कशी होती ते स्पष्ट करा.

2. अर्वाचीन काळातील वाङ्मयीन चळवळीची संकल्पना व स्वरूपाचे सविस्तर विवेचन करा.

किंवा

अर्वाचीन वाङ्मयीन चळवळीची सामाजिक पार्श्वभूमी कशी होती ते साधार स्पष्ट करा.

3. नवसाहित्य चळवळीचे स्वरूप स्पष्ट करून तिचे वैशिष्ट्ये साधार स्पष्ट करा.

किंवा

ग्रामीण साहित्य चळवळीची संकल्पना, स्वरूप आणि वैशिष्ट्ये सविस्तरपणे विशद करा.

4. कामगार साहित्य चळवळीचे स्वरूप व वैशिष्ट्ये सांगा.

किंवा

मराठीतील मुस्लिम साहित्य चळवळीचे स्वरूप सविस्तर स्पष्ट करा.

5. पुढील सर्व विषयांवर टिपणे लिहा :

(अ) नाथ संप्रदाय

(ब) मराठीतील पहिले वृत्तपत्र 'दर्पण'

(क) आंबेडकरवादी साहित्य चळवळ

(ड) आदिवासी साहित्य चळवळ.

Master of Arts (M.A.) (Marathi) (Part-II) Semester-III (CBCS)

(NEP) Examination

304 (A) : WANGMAYIN CHALVALI

Paper-4

वेळ : 3 तास]

[एकूण गुण : 80

सूचना :— सर्व प्रश्नांना समान गुण आहेत.

1. मराठीतील वाङ्मयीन चळवळीची संकल्पना व स्वरूप स्पष्ट करा.

किंवा

प्राचीन काळातील मराठीतील वाङ्मयीन चळवळीची वाटचाल कशी होती ते स्पष्ट करा.

2. अर्वाचीन काळातील वाङ्मयीन चळवळीची संकल्पना व स्वरूपाचे सविस्तर विवेचन करा.

किंवा

अर्वाचीन वाङ्मयीन चळवळीची सामाजिक पार्श्वभूमी कशी होती ते साधार स्पष्ट करा.

3. नवसाहित्य चळवळीचे स्वरूप स्पष्ट करून तिचे वैशिष्ट्ये साधार स्पष्ट करा.

किंवा

ग्रामीण साहित्य चळवळीची संकल्पना, स्वरूप आणि वैशिष्ट्ये सविस्तरपणे विशद करा.

4. कामगार साहित्य चळवळीचे स्वरूप व वैशिष्ट्ये सांगा.

किंवा

मराठीतील मुस्लिम साहित्य चळवळीचे स्वरूप सविस्तर स्पष्ट करा.

5. पुढील सर्व विषयांवर टिपणे लिहा :

(अ) नाथ संप्रदाय

(ब) मराठीतील पहिले वृत्तपत्र 'दर्पण'

(क) आंबेडकरवादी साहित्य चळवळ

(ड) आदिवासी साहित्य चळवळ.

RASHTRASANTUKADOLJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
EXAMINATION OF FIRST SEMESTER MASTER OF LIBRARY AND
INFORMATION SCIENCE - WINTER 2022

MLISc 1st Year – Semester 1st (CBCS)

Centre- Dept. of Library and Information Science, Kamla Nehru Mahavidyalaya, Nagpur.

Subject- Classification Practice (Part I)

Date : _____ Time: 2½ Hrs _____ Marks: 80 _____

Students Name : _____

Roll No. : _____

(4 x 2 = 8)

Q.1 Attempt any Two Example.

- 1.1] Electronic Spreadsheet
- 1.2] Color Photography
- 1.3] Scholarship in Economics

(6 x 3 = 18)

Q.2 Attempt any Three Example.

- 2.1] Bibliography work in U. P.
- 2.2] Portuguese Letters
- 2.3] Encyclopedia of Law
- 2.4] Agricultural Libraries

(8 x 3 = 24)

Q.3 Attempt any Three Example.

- 3.1] Political condition in Bangladesh
- 3.2] Collection of Epic Poetry
- 3.3] Philosophy and Theory of Computer Science
- 3.4] Foreign relation between India and UK


(10 x 3 = 30)

Q.4 Attempt any Three Example.

- 4.1] Tamil radio Drama of Goa
- 4.2] Workshop on Social Problem
- 4.3] Exchange rate of currencies between India and US
- 4.4] Workers Strikes in Textiles Industry
- 4.5] Collection of Rajasthani Science Fiction about plot

External Examiner

Internal Examiner


Principal
Kamla Nehru Mahavidyalaya
Sakkardara Chowk, Nagpur.

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FIRST SEMESTER MASTER OF LIBRARY AND INFORMATION SCIENCE
EXAMINATION WINTER 2022

Centre- Dept. of Library and Information Science, Kamla Nehru Mahavidyalaya, Nagpur.
Time: 2½ Hrs **Subject-** Cataloguing Practice (Part I) **Marks:** 80

Note: i) Cataloguing the following titles according to AACR - II
ii) Attempt any five titles and make relevant added entries.
iii) All titles carry equal marks.

Title No. 1

EDUCATION FOR DEMOCRACY

By

J. I. Cohen & R. M. W. Travers

Call No.- 378/

Accession No.- 378877

Pages- xxii, 313

Size- 28 cm.

ISBN- 978-81-7625-928-6 **Year :** 2001

Note- Prophets of Education Continuing Series No.28

Title No. 2

INSECT ECOLOGY

Behaviour, Population and Communication

By

P.W. Price, R.F. Denno, D.L. Finke and I. Kaplan

Cambridge University Press, New York, 2011

Call No.- 595.717/

Accession No.- 379608

Pages- xiii, 800

Size- 28cm.

ISBN- 978-1-107-67097-6

Bibliography on page no. 764-799

Title No. 3

THE LEAVES OF RACE

By

Michal Field

Dodd, Mead & Company, New York, 1958

Call No.- 823/

Accession No.- 2229

Pages- xi, 285

Size- 21 cm

Note: Michal Field is a pseudonym of two persons Katherine H. and Edith Emma Cooper

Title No. 4

A REVIEW OF ADULT EDUCATION

By

Ministry of Education

Government of India

Manager of Publication 2000

Call No.- 374/

Accession No.- 5436

Pages- xi, 285

Size- 21 cm



Principal

Kamla Nehru Mahavidyalaya
Sakkardara Chowk, Nagpur.

Title No. 5

HANDBOOK OF LIBRARY TRAINING PRACTICE

Edited by

Ray Prytherch

Jaico Publishing House, Bombay, 1996

Call No.- 023.802/

Accession No.- 356544 Size- 24 cm Pages-224

ISBN-81-7224-512-2

Content: 1. Customer care training by Beryl Morris. P. 2-16.

2. Training for Library work in Britain by Margaret Kendall. P. 17-49.

Title No. 6

CATALOGUING AND INDEXING

Challenges and Solutions

Edited by

Joyce McIntosh

Apple Academic Press Inc., Canada, 2011

Call No.- 025.3/

Accession No.- 350214 Pages- x, 355 Size-30 cm

ISBN- 978-1-926692-0

Title No. 7

SUBHMANGAL

By

Vikram Sheth

Translated by

Arun Sadhu

Rajhans Prakashan,

Pune, 1995

Call No. - 891.463

Pages - ixv, 424

Acc. No. - 6161

Size - 24.5 cm

Title No. 8

INDEXING CONCEPT AND METHODS

By

Harold Borko & Charles L. Bernier

Academic Press, London, Newyork, San Francisco

Year 2005

Call No.- 025.15/

Accession No.- 4451

Pages- x, 261

Size-30 cm.

ISBN-0-12-118660-1

Note- Library and Information Science Series No.28 by Robert J. Shaw

RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
PRACTICAL EXAMINATION OF MASTER OF LIBRARY & INFORMATION SCIENCE

KAMLA NEHARU MAHAVIDYALAYA, NAGPUR
DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

MLISc – 1st Year – Ist Semester (CBCS)
Session - 2022 - 2023 (winter)
IP3 - Information Technology Applications (Part-I)

Date - 01/03/2023

Marks - 20

Time - 09.30 to 10.00

Name of Student: _____ Roll No: _____

Q. 1 Select the correct option. (6mark)

A) What is the smallest unit of the information?

A. A bit

B. A byte

C. A block

D. A nibble

B) Which of the following components of a computer system?

A. CPU, CD-ROM, Mouse, Keyboard, Sound card

B. Memory, Video card, Monitor, Software, Hardware

C. Modem, Keyboard, Word Processor, Printer, Screen

D. CPU, Memory, System bus, Input, Output

C) The central processing unit is located in the

A. Hard disk

B. System unit

C. Memory unit

D. Monitor

D) Which of the following is an output device?

A. Keyboard

B. Mouse

C. Light pen

D. VDU

E) Which of the following programs enables you to calculate numbers related to rows and columns?

A. Window program

B. Spreadsheet program

C. Graphics program

D. Word program

F) Which of the following is known as the father of computers?

A. Dennis Ritchie

B. Napier

C. Charles Babbage

D. Alan Turing

*

Q.2 Match the following.

(4 Marks)

List A

List B

1. Paste

a. To make the duplication of matter.

2. Cut

b. To cancel the previous process.

3. Copy

c. Used to paste matter in proper location after cut or copy.

4. Undo

d. To cut the select matter.

Q.3 Write TRUE or False.

(5 mark)

1. MS Word is hardware. _____

2. Digital camera is input device used to take photographs.

3. A monitor displays information.

4. Microsoft office is a piece of software.

5. CPU controls only input data of computer.

Q.4 Write the answer in short.

(5 mark)

1. What is the full form of a Virus?

2. What number of function keys in a keyboard is

3. Write the function of Recycle Bin in MS Word.

4. Explain the function of Back Space Key

5. Which is output devices?

Total marks out of 20

Total marks out of 60

Total marks 80

External

Internal



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Sakkardara Chowk, Nagpur.

PART-III: HANDS ON PRACTISE

(10 marks)

Q.1 Enter and format the following text as directed below.

Title of the text - Aerial 13 Bold, Central alignment

Other text - Time New Roman 11, single spacing, justified alignment

Page set up margin-1.25" Left, Right, Top and Bottom

1.1 Ignorance of Law is not an Excuse

Every day is presumed to know the legal rules. If we go by literal translation of maxim "ignorant juris non excusat". Every member of the society is expected that his action conform to asset pattern or standards as reflected in legal rules. He cannot take the plea that he did not know them. No doubt, in practice, he cannot learn and understand all the laws of the land, but he can obtain expert guidance from those who possess legal knowledge. Thus he has access to books on law and to those persons who are experts in legal matters. Therefore, the maxim "ignorantia juris non excusat" places a burden on every member of society with the knowledge of law. In other words "Ignorance of law is not a good excuse."

Q.2 Prepare the salary slip of following three employees of library staff with calculating TOTAL using formula. (20 MARK)

DA=15%of BASIC, HRA=30%of BASIC, TOTAL=BASIC+AGP+DA+HRA+TA

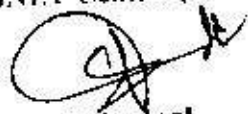
NAME	BASIC	AGP	DA	HRA	TA	TOTAL
Vijay Kumar	3,0000	8,000			800	
Sanjiv Kumar	25,000	7,000			800	
Sushil Kumar	24,000	6,000			800	

Q.3 Prepare Five slide in MS Power point for following text along with suitable animation and slide Transition effects. (20 mark)

1. Books for Use.
2. Every reader his/her book.
3. Every book its reader.
- 4 save the time of the reader.
5. Library is a growing organism.

Q.4 Write the URL and Useful information about National library of India, Kolkata. (5 Marks)

Q.5 Save the webpage providing information about OPAC of library of INFLIBNET Centre. (5marks)


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Sakkardara Chowk, Nagpur.

X

Kamala Nehru Mahavidyalaya
Shakkardhara square Nagpur
Department of Library and Information Science
MLISC Part – I Semester
Practical Examination Winter 2022

PART - A

Objective Test Subject: Information Sources and Services

Time: 30 Minutes

Total Marks: 20

Name: _____
Roll No. _____ Date _____

NOTE: ATTEMPT ALL QUESTIONS

Q 1: Solve all Multiple-Choice questions

5 Marks

1.1 How many volumes published in Marathi Vishwakosh?

(a) 17 (b) 18 (c) 19 (d) 20

1.2 Dictionary, glossary, Lexicon, Thesaurus, Vocabulary etc. deal with?

(a) Definition (b) Consent (c) Composite word (d) Word and meaning

1.3 Bhartiya Vyawhar Kosh is _____

(a) Multilingual (b) Unabridged (c) Bilingual (d) Abridge

1.4 Editor of Encyclopedia Of Library and Information Science ,

(a) Edward T. Hall (b) Franco to Goethals

(c) Melvin J. Lasky (d) Allen kent

1.5 Editor of Bhartiya Sanskriti Kosh _____

(a) Anant Joshi (b) Pandit Mahadev Shastri Joshi

(c) Tarktirth Lakshman Shastri Joshi (d) Prallhad Narhar Shastri Joshi

Q.2: State True or False

5 Marks

2.1 Encyclopedia gives history of words _____

2.2 India is reference annual _____

2.3 Dictionary gives meaning of words _____

2.4 Encyclopedia of Library and information is a general Encyclopedia _____

2.5 Marathi Vishwakosh is published by Maharashtra Rajya Nirmiti Mandal

Q. 3: Fill in the blanks with appropriate word

5 Marks

3.1 Encyclopedia Britannica is in _____ parts

3.2 Evaluation criteria of reference sources is _____

3.3 Who is who of India Writers is published by _____

3.4 Patents provides information _____

3.5 In how many volumes published Encyclopedia Of Library and Information Science

Q 4: Give short Answers

5 Marks

4.1 Give two examples of Special and General Encyclopedia

4.2 Write evaluation criteria of Reference Sources

4.3 What is Biographical Sources, name any two

4.4 Explain Reference Service

4.5 What is Dictionary

Internal Examiner

External Examiner



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Sakkardara Chowk, Nagpur.

RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR PRACTICAL
EXAMINATION OF MASTER OF LIBRARY & INFORMATION SCIENCE

KAMLA NEHARU MAHAVIDYALAYA, NAGPUR DEPARTMENT OF
LIBRARY AND INFORMATION SCIENCE

M.LISc - 2nd Year – 3rd Semester (CBCS) Session - 2022 - 2023
(winter)

3P1 - Information Technology Applications (Part-I)

Date - 03/02/2023

Maximum Marks - 20

Time – 11.00 am to 02.00 pm.

Name of Student:- _____

Roll No:- _____

Note -

1. All questions are compulsory.

Q.1 In which generation computers, vacuum tube technology is used?

A] First generation of computers

B] Second generation of computers

C] Second and third generation of computers

D] Fifth generation of computers

Q.2 Which of the following refers to High Storage Capacity?

A] Gigabyte

B] Kilobyte

C] Terabyte

D] Megabyte

Q.3 MARC stands for:

A] Machine Readable Catalogue

B] Machine Representation code

C] Components of Record Format

D] Machine Recorded Catalogue Card.

Q.4 Find out the Odd one

A] Laptop computer

B] Desktop Computer

C] Notebook computer

D] Main Computer.

Q.5 RLIN stands for

A] Retrieval of Library and Information News

B] retrieval Learn In Network

C] Research Linked Information Network

D] Research Library and Information Network

Q.6 Which of the following is a web browser?

A] Google

B] Bing

C] Yahoo

D] Microsoft Edge



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Sakkardap Chowk, Nagpur

Q.7 WWW was invented by

- A] Bill Gate
- C] Larry Page

- B] Tim Berners Lee
- D] Ted Nelson

Q.8 Shodhganga project organized by INFLIBNET.

- A] True
- B] False

Q.9 The logical operator AND, Or and NOT were devised by :

- A] Charles Babbage
- C] George Boole

- B] Herman Hollerith
- D] Vannevar Bush

Q.10 ISP Stand for -----

- A] Internet System Provider
- C] International Service Provider
- B] Internet Service Provider
- D] Interpol System Production

Q.11 Match the following. (4M)

List A

List B

- a. Shodhganga
- b. ETD
- c. Indian Digital Library
- d. HTML

- 1. IIT Kharagpur
- 2. Webpage connecting Language
- 3. INFLIBNET
- 4. Electronic Thesis Dissertation

- A] a-4, b-3, c-2, d-1
- B] a-3, b-2, c-1, d-4
- C] a-3, b-4, c-1, d-2
- D] a-1, b-2, c-3, d-4

Q.12 Fill in the blanks (6M)

- a. The first page of website is called _____
- b. The domain used for government website is _____
- c. Super computer developed by Indian Scientist is _____
- d. Google is an example of _____
- e. Head office of the INFLIBNET is at _____
- f. One Byte is equal to ____ Bits.

Total Marks Out of 20	Total Marks Out of 60	Total Marks 80

External

Internal

PART-II: HANDS ON PRACTISE

Total marks : 60

Q.1 Create the Bibliographic database of any FIVE books in the any Library software. (10 mark)

Q.2 Search the following form the Internet.(Attempt any five) (30 marks)

2.1 Open the site of INFLIBNET. save the web page of it and write the URL of the web page providing information about the INFLIBNET library Thesis.

2.2 Open the site of Library Associations and search the IALIS site and write the President name of 2022

2.3 Open the Vidyanidhi site and write Bibliometric report.

2.4 Open the NDLTD site and write the full form of NDLTD and search the Institutional Members (Universities, Libraries, etc.)

2.5. Open the Infolibrarian site and search the tools.

2.6 Open the Website of ALA, Write the webpage address providing details about Current library issue and save the web page.

Q. 3 Open the web OPAC in Kamla Nehru Mahavidyalay center Library and Search the library science books. (10 mark)

Q.4 Create the Borrower's Database of two Borrowers in the Library Software. (10 Marks)



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Kamla Nehru Mahavidyalaya
Chowk, Meerut

RTM Nagpur Univervisty, Nagpur
PRACTICAL EXAMINATION OF MASTER OF LIBRARY AND INFORMATION SCIENCE
SEM II (C.B.C.S.) SUMMER 2023
Kamla Nehru Mahavidyalaya, Nagpur
Department of Library & Information Science
MLIScl^{II} Year – Sem. 2nd
Subject- 2PI Classification Practice (Part II)

Date :

Time: 2¼Hrs

Marks: 80

Students Name : _____

Roll No. : _____

Note : All Question are compulsory.

Q. 1 : Attempt any Two.

(4 X 2 = 8)

- 1.1 English Readers book
- 1.2 A Periodical in Hindi
- 1.3 Education of Eskimos

Q.2 : Attempt any Three.

(6 X 3 = 18)

- 2.1 Collection of writing in English by Indian authors
- 2.2 Personal finance for cricketers
- 2.3 Russian – Sanskrit Dictionary
- 2.4 Social Structure of Hindi speaking people in Australia

Q. 3 Attempt any Three.

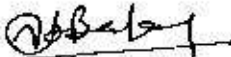
(8 X 3 = 24)

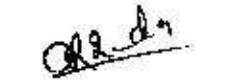
- 3.1 Bengalis living in Delhi
- 3.2 Folk arts by blind persons
- 3.3 Urdu words in Hindi Language
- 3.4 Astrological analysis of Cricket
- 3.5 Curriculum of Sindhi as second language in elementary school

Q. 4 Attempt any Three.

(10 X 3 = 30)

- 4.1 Encyclopedia of Ethnic cookery of Paharis
- 4.2 Method of teaching French as a second language in elementary school in Rajasthan
- 4.3 Swedish for Dutch speaking people
- 4.4 Social statues of Panjabi speaking in Canada
- 4.5 Jainism in Australia


External Examiner


Internal Examiner


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Sakkardara Chowk, Nagpur.

RTM NAGPUR UNIVERSITY, NAGPUR
Kamla Nehru Mahavidyalaya, Nagpur
EXAMINATION OF MASTER OF LIBRARY AND INFORMATION SCIENCE
SEM II (C.B.C.S.) SUMMER 2023
Subject- 2P2 Cataloguing Practice (Part II)

Date :

Time: 2½Hrs

Marks: 80

Part A : 1. Catalogue the following titles according to AACR II. 2. Attempt any four Questions.

3. All titles carry equal marks. (4 x 16 = 64)

Part B : Attempt any one Title for Subject Heading. (1 x 16 = 16)

Part A - Attempt any four Question.

Q.1

Adult Education & Challenges of the 1990s

Edited by Walter Leiman & Jindra Kulich

Croom Helm, London, 1986

Other Information : Call No. : 374 Acc. No. 3937 Pages : X, 324

H.T.P. : International Perspectives on adult Education & Continuing education, No. 12

Edited by Croom Helm.

Q.2

DISTRICT ADMINISTRATION IN INDIA

Edited by

S. S. Chahar

Concept Publishing Company, New Delhi, 2009.

Call No.: 352.0054 Accession No.-381981 Pages-xvi, 407 Size-30 cm ISBN-978-81-8069-562-9

Content Pages- 1. District Administration in Independent India by U. B. Singh, p. 144 - 151

2. District Administration in 21st Century by B. L. Saha p. 251-264

Q.3

Report of the Advisory Committee for Libraries

Seal of the Ministry of Education Government of India

Manager of Publication 1965

Other Information : Call No. : 379.1 Acc. No. : 2345 Pages : XII, 323 Size : 21 cm.

Publication Place : New Delhi

H.T.P. : Manager of Publication No. 322

Chairman of the Committee : K. P. Sinha



Principal
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Sakhardare Chowk, Nagpur

Q.4

Library History Seminar No. 4

Proceedings, 1971

Edited by Harold Goldstein & Hohn M. Goudeau

The Journal of Library Science.

School of Library Science

Florida State University, Tallahassee, Florida

Other Information : 1. This Micro Fiche prepared by School Library Science, Florida State University, Tallahassee 2. Dimension 11 X 15cm 3. Copy right 1972 by the Journal of Library History.

Title No. 5

DESIDOC JOURNAL OF LIBRARY & INFORMATION TECHNOLOGY

Volume 34, No. 6, 2014

Published by Defense Scientific Information and Documentation Centre
Delhi, 2014

Call No. 020.5

Size- 30 cm.

ISSN-0974-0643

Note- This is a bi-monthly periodical. Library subscribed the journal from Vol. 15, No. 1, 1995 to till date.

Title No. 6 -

THE LITTLE MATCH GIRL AND OTHERS TALES

(Sound Recording)

By

Hans Christian Anderson

Translated from French by Reginald Spink

Read by Boris Karloff

Warner, Distributed by Virgin Records

London, 1986

Other Information : 1. Disc (30 Min)

2. R. P. M. 32

3. Micro groove Stereo : 12 inch.

Note : The Classical Collection No. 21

Call No. : 823

Acc. No. : 901

Part B - Attempt any one Title for Subject Heading

Q. 7 : Attempt any one Title for Subject Heading. (1 x 16 = 16)

Title No. 1 Folk Literature in Koran - 398.204.957

OR

Title No. 2 World History of Dutch - 909.043.931

RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
PRACTICAL EXAMINATION OF MASTER OF LIBRARY & INFORMATION SCIENCE

KAMLA NEHRU MAHAVIDYALAYA, NAGPUR
DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

MLISc - 1st Year - 2nd Semester (CBCS)
Summer - 2023
2P3 - Information Technology Basic (Part-II)

Three Hours

Date: _____

Name of Student: _____

Roll No: _____

Mark 20

Part - I Objective Question Paper

(6 mark)

Q. 1 Select the correct option.

A) _____ how many bits?

- A. 1 bits B. 8 bits C. 2 bits D. 6 bits

B) _____ system an email message are

- A. Header message and signature B. Destination, Device and Sender
C. IP, IP, Domain, ISP D. TCP, IP and Message

C) _____ is the field of telecommunication

- A. Alan Turing B. Graham Bell
C. Graham Bell D. Graham Oddy

D) _____ does computer understand?

- A. High Level Language B. Low Level Language
C. Assembly Language D. Machine Language

E) _____ is a collection of documents?

- A. Connection to computer B. Help to view files and pictures in computer
C. Internet connection in computer D. All of the above

F) Which of the following is known as the father of computers? _____

- A. Dennis Ritchie B. Napier C. Charles Babbage D. Alan Turing

(4 Marks)

Q.2 Match the following.

List A

1. Search engine
2. URL
3. Firewall
4. HTTP

List B

- a. Webpage
b. Crawler
c. Internet. Standard for information Transmission
d. Protecting unauthorized access to internet



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Sakkardara Chowk, Nagpur.

(5 mark)

Q.3 Write TRUE or False.

1. A network that connects building within a city is called MAN.
2. CPU telephone is an example of digital signal.
3. _____
4. _____
5. CPU controls only input data of computer.

(5 mark)

Q.4. Write the answer in short.

1. What is the full form of OPAC?

2. What is primary memory and secondary memory?

3. What is application software?

4. How many computer generation are there yet? Write about these?

5. Which are output devices?

Part I	Part II	Total marks 80
Total marks out of 20	(Total marks out of 60)	

External Examiner

Internal Examiner

PART-II: HANDS ON PRACTICE

Total marks : 60

Q.1 Create the Bibliographic database of any FIVE books in the any Library Software. (10 mark)

Q.2 Search the following form the Internet.(Attempt any five) (30 mark)

2.1 Open the site of INFLIBNET, save the web page of it and write the URL of the web page providing information about the INFLIBNET library Thesis.

2.2 Open, save and write the URL of the web page of National Digital library in India and Search the NCERT books.

2.3 Open, save and write the URL of the web page providing old theory question papers of Library & Information science on RIM Nagpur University.

2.4 Open, save and write the URL of the web page YCMOU site.

2.5 Open, save and write the URL of the web page e-PG Pathashala site and search the library Science study material.

Q.3. Open the web OPAC on Center Library in Kamla Nehru Mahavidyalaya and Search the ALA series books in accession register.

(10 mark)

Q.4. Create the Borrower's Database of two Borrowers in the Library Software.

(10 mark)

External Examiner



Principal
Kamla Nehru Mahavidyalaya
Nagpur


Internal Examiner

Mrs Sushma Inamdar
Librarian
Kamla Nehru Mahavidyalaya
Nagpur

RASHTRASANTILKDOH MAHARAJ NAGPUR UNIVERSITY, NAGPUR
PRACTICAL EXAMINATION OF MASTER OF LIBRARY & INFORMATION SCIENCE
KAMLA NEHRU MAHAVIDYALAYA, NAGPUR
DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

MLISc - 1st Year - 2nd Semester (CBCS)

Summer - 2023

2P4 - Information Sources & VIVA VOCE (Part-II)

Part A : Objective Question Paper

Date: 15/07/2023

Time : 30 Minutes

Mark 20

Name of Student:- _____ Roll No. : _____

Note : 1. Attempt all Question.

2. Marks for each question are indicated against each question.

Q. 1 Select the correct option. (5 Marks)

1.1 Editors India is _____

- a] Year b] Gazetteer c] Directory d] Guidebook

1.2 Asian Recorder is published from _____

- a] Kolkata b] Chennai c] Delhi d] Bangalore

1.3 Indian National Bibliography is published by _____

- a] National library, Calcutta b] INSDOC, New Delhi
c] Central Science Library, New Delhi d] Central Reference Library, Calcutta

1.4 World of Learning is _____

- a] Directory b] Encyclopedia c] Dictionary d] Yearbook

1.5 Chemical abstract is a _____

- a] Indexing Service b] Abstracting Service c] Reference Service d] All of these

Q.2 State True or False. (5 Marks)

2.1 Webster Geographical Dictionary is a Gazetteer _____

2.2 Address of the publisher of the Journal Library Herald can be found in Ulrich International Periodical Directory _____

2.3 Indian Books in Print is a National Bibliography _____

2.4 Frequency of Keesings Record of World Events is monthly _____

2.5 British National Bibliography published in weekly _____



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Sakkardara Chowk, Nagpur.

Q.3 Fill in the blanks with appropriate Word / words.

(5 Mark)

- 3.1 Publisher of Chemical Abstracts _____
- 3.2 The term Bibliography was derived from _____
- 3.3 Who publishes World of Learning? _____
- 3.4 Ulrich International Periodicals Directory is published by _____
- 3.5 Cumulative Book Index is published by _____

Q.4 Answer following in One or few Words.

(5 Mark)

4.1 What Words be the appropriate Source for finding information on places of tourist interest of Goa.

4.2 Which Volume of Ulrich's International Periodicals Directory is an Index Volume.

4.3 Which type of source Study Abroad is ?

4.4 Reference Sources are those?

4.5 Directories are which type of sources?

Part B: VIVA VOCE

60 Mark

Part A (Out of 20)

Part B (Out of 60)

Total (Out of 80)

External Examiner

Internal Examiner

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Practical Examination Of Master Of Library & Information Science
Kamla Neharu Mahavidyalaya, Nagpur
Department Of Library And Information Science
MLISc - 2nd Year – Semester 4th (CBCS)
Session - 2022 - 2023 (Summer)
4PI - Information Technology Applications (Part-II)

Date – 28/06/2023

Time – Three Hours

Marks - 80

Name of Student : _____ Roll No. : _____

Part A : Objective Question Paper - Mark 20

Q.1 Select the correct Option. (Mark 5)

1.1 For video conferencing.....and..... it is necessary.

- a. Internet connectivity and web camera b. Computer and webcam
c. Internet connectivity and scanner d. Computer and Scanner

1.2 What can be sent via e-mail

- a. Message in text b. file c. Photo d. All of the above

1.3 What is the smallest form of computer memory?

- a. TB b. GB c. KB d. MB

1.4 Discussions on the Internet about specific topics are known as

- a. News b. News group c. Fernet d. Mailing

1.5 OPAC function is

- a. Classification b. Circulation c. Cataloguing d. Computerize Catalogue

Q.2 Write the Full form of following abbreviations. (Mark 5)

a. RFID :

b. DOAJ :

c. WIPO :

d. SMTP :

e. DOAR :

Q.3 Write the following sentences TRUE or FALSE

(Mark 5)

3.1 National Digital Library of India is developed by IIT Kharagpur

3.2 Vidyaniishi is an Indian Doctoral Thesis database.

3.3 LinkedIn is a business and employment oriented service mainly used for professional networking.

3.4 Shodhaganga project organized by RKM Nagpur University

3.5 LIHMAN is Nagpur based Library Software.

Q.4 Write the answer of following questions in one or two sentences?

(Mark 5)

4.1 Write the name of any two Digital Library Software ?

.....
.....

4.2 What is WEB - OPAC?

.....
.....

4.3 Write the evaluation criteria of Webpage?

.....
.....

4.4 What is domain? What can be the domain name for educational Institution.

.....
.....


4.5 Explain the weblogs?

.....
.....

Part A (Out of 20)	Part B (Out of 60)	Total Mark (Out of 80)

External Examiner

Internal Examiner


Principal
Kamla Nehru Mahavidyalaya
Sakkardara Chowk, Nagpur.

Total marks : 60

PART-B : HANDS ON PRACTISE

Q.1. Enter the bibliographical details of any five -- books in your Digital Library Management Software / Library Software and check the records of entered book in accession register. (10 marks)

Q.2. Solve any five (20 marks)

2.1. Open the site of INFLIBNET, save the web page of it and write the URL of the web page.

2.2 Search the classification data on OCLC site

2.3 Search the E- book Sites? Make a list and write the URL.

2.4 Number of Journals related to Library Science on DOAJ.


2.5 Search the DLIST database in LISA.

2.6 Search the Website of E-Reference Sources. Write the URL and name any three.

Q.3 Evaluate the INFLIBNET Library Webpage. (10 marks)

Q.4 Create your own web blog account in weblog service provider and post the information of S. R. Raghathan. (10 marks)

Q.5 Create your Facebook account and upload any image or document about related to library. (10 marks)


Principal
Kamla Nehru Mahavidyalaya
Sakkardara Chowk, Nagpur.

EXAMINATION : MLISc 1st Year – Semester 1st (CBCS) (NEP), WINTER 2023

Centre : Dept. of Lib. and Inf. Science, Kamla Nehru Mahavidyalaya, Nagpur.

Subject : IL1 Classification Practice (Part I)

Date : 07/02/2024

Time:

Marks: 50

Students Name : _____

Roll No. : _____

(2 x 3 = 6)

Q.1 Attempt any Three Example.

1.1] Photography

1.2] Computer Applications to libraries

1.3] Agriculture in Bible

1.4] Collection of Poetry

(4 x 3 = 12)

Q.2 Attempt any Three Example.

2.1] Islam in Pakistan

2.2] Philosophy of Hinduism

2.3] Research on goat

2.4] Use of tobacco in customs of Tripura

(6 x 2 = 12)

Q.3 Attempt any Two Example.

3.1] Architecture of hotels building in Chennai

3.2] Standards for Inter Library Loan

3.3] English drama for television and radio

3.4] Collections of letters displaying love

(10 x 2 = 20)

Q.4 Attempt any Two Example.

4.1] Exchange rate of currencies between India and U. S.

4.2] Collection of Oriya literature displaying temples

4.3] Private libraries in rural areas of Punjab

4.4] Treatment of migraine by physiotherapy

External Examiner

Internal Examiner



Principal

Kamla Nehru Mahavidyalaya

Sub-urban, Nagpur

RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

First Semester Master of Library and Information Science

Examination – Winter 2023

Centre: Kamala Nehru Mahavidyalaya, Nagpur

Subject: - Cataloguing Practical

Time: - 2 Hrs.

Marks: 50

Roll No.:

Date: 28/02/2024

Note: 1) Cataloguing the following title according to AACR 2

2) Attempt any five questions

3) All questions carry equal marks.

Title No. 1

VIVEKANAND

In Europe

By Swami Vidyatmananad Edited by

Swami Bodhasarananda

Third edition

Advaita Ashrama

Mayavati, Champawat, Uttarakhand, Himalayas

E-mail: mail@advaitashrama.org

2012

Other Inf

Call No. – 100.44/

ISBN – 978-81-7505-368-7

Pages – VI, 304

HTP– The Celebration of the 150th birth anniversary series of Swami Vivekananda

Title No. 2

BASICS OF TOURISM

Theory, Operation and Practice

By

Krishan K. Kamra & Mohinder Chand

Illustrated By Jatashankar R. Tiwari

First Edition

Kanishka Publishers, Distributors

New Delhi 2002

Other Inf

Call No. - 338.4791/

Page - xix, 270

ISBN-81-7391-523-7

Title No. 3

Acc No. - 9584

Size - 27.4 cm

Copy Right-2002

SCHOOL LIBRARIES

A Short Manual

C.A. Stott

The Cambridge University Press, New York

Second edition, 1955

Other Inf

Call No. -- 027.8/890

Size - 12x12 cm

In this book copy right act in year 1958.

Title No. 4

Pages- 148

Acc No- 1113

THE LEAVES OF RACE

By Michal Field

Dodd, Mead & Company, New York, 1958

Other Inf

Call No. - 823 /

Pages - IX, 285

Note: Michal Field is a pseudonym of two person Kotherine H. and Edith Emma Cooper.

Title No. 5

Acc No. - 2229

Size - 21.3 on

INTERNATIONAL ENCYCLOPEDIA OF SCIENCE SOCIAL SCIENCE

Volume 1-22

Edited by

F. G. Peck and Hedley Aflalo

Komal Publication

New Delhi ,2006

Other Inf

Call No. - 300.96/

Pages - IX, 454

Acc No. - 44126

Size - 23 cm

Title No. 6

A REVIEW OF ADULT EDUCATION

By

Ministry of Education

Government of India

Manager of Publication 2000

Other Infⁿ

Call No. - 374/

Page - XI, 280 with 90 tables

Title No. 7

Acc No. 43210

Size - 24 cm

OUTLINES OF LINGUISTICS

By

Dr. Dorothy Blair

M.A., Ph. D

Edited by K. T. Sharma

Asia Publishing House, Bombay, New Delhi

Other Infⁿ

Call No.- 420/

Page - XII, 419

Bibliography 416-419

Title No. 8

REPORT

Of

THE CURRICULUM DEVELOPMENT CENTRE IN PHILOSOPHY

University Grant Commission

New Delhi

1990

Acc No. - 41215

Size- 24.8 cm

Year of pub - 1979

Other Inf

Call No. - 100/

Page - 424

ISBN -81-85025-46-0

Size - 26 cm

Acc No. - 76062



Principal
Kamla Nehru Mahavidyalaya
Sakardara Chowk, Nagpur

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

EXAMINATION : MLISc 1st Year – Semester 1st (CBCS) (NEP), WINTER 2023

Centre : Dept. of Lib. and Inf. Science, Kamla Nehru Mahavidyalaya, Nagpur.

Subject : IL3 Information Sources VIVA VOCE

Date : 09/02/2024

Time:

Marks: 20

Students Name : _____

Roll No. : _____

Objective Question Paper

Q. 1 Selected the correct option of the following?

(Mark 5)

1.1) What is dictionary?

- ☞ a) Grammar of words b) Knowledge of words c) Collection of words d) Use of words

1.2) In how many parts New Encyclopedia Britannica is published?

- a) 5 b) 6 c) 3 d) 4

1.3) What is the suitable reference source to know about the information of a particular Place ?

- a) Encyclopedia b) Yearbook c) Gazetteer d) Globe

1.4) Yearbooks are also known as?

- a) Directory b) Annual c) Hand book d) Dictionary

1.5) Asian Recorder is published from where?

- a) New Delhi b) Islamabad c) Peeking d) Colombo

☞ **Q.2 Match the pair.**

(Mark 4)

List A

1. publication Frequency of Books in Print
2. publisher of Indian library Science Abstracts
3. abstracting service
4. constitutional head of the state government

List B

- a) Governor
- b) LISA
- c) IASLIC
- d) Annually

Q.3 Write True or False.

(Mark 5)


3.1) World of Learning publishes by Europa Publications - _____

3.2) University News Periodicals publishes by AIU - _____

3.3) Encyclopedia Britannica is published Chicago city - _____

3.4) B. N. B. belongs to United Kingdom - _____

3.5) Directories are Tertiary Sources - _____


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Sakkardara Chowk, Nagpur

Q. 4 Write the Answer of following questions?

(Mark 6)

4.1) what is a purpose of a year book?

4.2) What is Hand book?

4.3) What is National Bibliography?

4.4) What does indexing periodical provide us?

4.5) How Much Time did it take for the creation of the Indian constitution?

4.6) What are Reference sources?

Mark out of 20	Mark Out of 30	Total Mark Out of 50

External Examiner

Internal Examiner

Rashtrisant Tukdoji Maharaj Nagpur University, Nagpur

Practical Examination : MLISc 2nd Year – Semester 3rd (CBCS) Winter 2023
Subject : 3P1 Information Technology Application (Part I)
Center : Kamla Nehru Mahavidyalaya, Nagpur
Time : 2.30 Hours Date : Marks 80
Roll No. : _____ Name of the Students : _____

Note: Part 1. Objective Question Paper (Mark 20)
Part 2. Practical Paper (Mark 60)

Part 1. Objective Question Paper (Mark 20) Attempt all Questions.

Q.1 Select correct option of the following.

(Mark 06)

1. In a virtual library :

- A] There is no corresponding physical collection.
- B] Collection is available online as well as offline.
- C] Collection is available online as well as print form.
- D] Collection is available on CD as well as print form.

2. What does the red line on the computer screen represent?

- A] Grammar mistake B] Spelling mistake C] Word Mistake D] None of these

3. What is control V on Key board used for?

- A] To Paste B] To Bold C] To Copy D] To Save

4. Which of the following is the correct chronology of internet based facilities?

- A] Google, Hotmail, Facebook, What's App B] Facebook, Google, Hotmail, What's App
- C] Hotmail, Google, Facebook, What's App D] Hotmail, Google, Facebook, What's App

5. What is OPAC?

- A] Classification Method B] Circulation Method
- C] Catalogue Method D] Computerize Method

6. Which one is the odd from the others?

- A] MEDLARS B] INFLBNET C] DELNET D] OCLC

Q.2 Write True Or False.

(Mark 05)

1. RSS feed used for Web2.0.

2. Earlier name of OCLC is Ohio college library Centre.

3. PCs (Personal Computer) are Microcomputer.

4. Dublin Core is e-library software.

5. Ctrl+Alt+Del key combinations when pressed restart the computer.

Q.3 Match the following.

(Mark 04)

- List A**
a) Shodhganga
b) Vidwan
c) NASSDOC
d) DESIDOC

- List B**
1. Database of Indian Experts
2. To work as a Defense scientific information
3. Indian electronic Thesis and Dissertation Database
4. Providing information support to social science

A] a-4, b-3, c-2, d-1 B] a-3, b-2, c-1, d-4 C] a-3, b-1, c-4, d-2 D] a-1, b-2, c-3, d-4

Q.4 Fill in the blank.

(Mark 05)

- a) Full form of NDLTD.

- b) Full Form of DELNET.

- c) UNESCO has development software.

- d) What is full form of PDF in the context of computer file system?

- e) What type of services, Internet has been providing to its users?

Part I (out of 20)	Part II (out of 60)	Total marks 80

External Examiner

Internal Examiner

PART-II : HANDS ON PRACTISE

Total marks : 60

Q.1 Create the Bibliographic database of any 2 books in the any Library software. (10 marks)

Q.2 Search the following form the Internet. (Attempt any five) (30 marks)

2.1 Open the site of INFLIBNET, save the web page of it and write the URL of the web page providing information about the Vidya Mitra.

2.2 Open the site of IASLIC Library Associations and search the Indian Library Science Abstract.

2.3 Open the site of LIS Gateways and search the Library Legislation.

2.4 Open the site of IFLA and Search the IFLA Library and write the five latest addition.

2.5. Search and Write any five name of plagiarism Detecting Software.

2.6. Search and write any five names of Best Digital Libraries and any one open the digital library and download one e-book.

Q. 3 Open the Web OPAC in Center Library of Kamla Nehru Mahavidyalaya, Nagpur. and Search and write any five books of Library Science. (10 mark)

Q.4 Create the Borrower's Database any two in the Library Software. (10 Marks)


Principal
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Sakardar Chowk, Nagpur.

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

SESSION: SUMMER 2024

CENTRE NAME : KAMLA NEHRU MAHAVIDYALAYA, NAGPUR.

**EXAM NAME : SECONT SEMESTER MASTER OF LIBRARY & INFORMATION
SCIENCE (CBCS) (NEP),**

Subject : (2L1) Classification Practice (Part II)

Date :

Time: 2 hours

Marks: 50

Roll No. : _____ Students Name: _____

Q. 1 Attempt any Three Example.

(2 x 3 = 6)

- 1.1 Child Artists
- 1.2 Gujarati Proverb
- 1.3 Statistical Mathematics
- 1.4 Hydrology

Q.2 Attempt any Three Example.

(4 x 3 = 12)

- 2.1 African's
- 2.2 Marathi Magazine
- 2.3 Swedish Dictionary
- 2.4 University News from Uttar Pradesh

Q.3 Attempt any Two Example.

(6 x 2 = 12)

- 3.1 Portuguese readers for Australian speaking people
- 3.2 Telugu speaking people in Gujarat
- 3.3 Sikhism in Maharashtra

Q.4 Attempt any Two Example.

(10 x 2 = 20)

- 4.1 Education of Bengalis in Alaska
- 4.2 Urdu as a second language in elementary School in Punjab
- 4.3 Drug abused among young adults

External Examiner

Internal Examiner


PRINCIPAL
Kamla Nehru Mahavidyalaya
Sankar Chowk, Nagpur

RASHI TRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

SESSION: SUMMER 2024

CENTRE NAME: KAMLA NEHRU MAHAVIDYALAYA, NAGPUR.

EXAM NAME: SECONT SEMESTER MASTER OF LIBRARY & INFORMATION SCIENCE (CBCS) (NEP),

Subject: (2L2) Cataloguing Practice (Part II)

Date: _____

Time: 2 hours

Marks: 50

Roll No. : _____ Students Name: _____

Note - Solved any five Question questions are compulsory.

Q.1

History of the Great Civil. war (1642 - 1649)
5th completely revised edition
4 Volumes by James J. Lingane & I. M. Kolthoff,
Longmans, green & Co., London, 1950

Other Information:

Call No. : 990

Acc. No. 6530 - 6531

Size: 20 x 20

Note: All the volumes have been published but the Volume 1 & 3 are not available in the library.

Q.2.

Italian Short Stories
Edited by Gustane Flaubert
S. Krager Basel, Rusia, 1957

Other Information:

Call No. : 853

Acc. No. : 3578

Pages: X342p.

Size: 20cm.

Important Contents:

1. The Removal, by Vasco Pratolini. p. 61-67
2. The poor by Carlo Camolo. p. 1-27 : Call No. : 305.569
3. The House by Cesare Parese. Traslated by Alexander Fainberg p. 35 - 52 : call No. 823

Q.3

Selected Speeches & Statements of Quaidiazam Mohammed ali Jinnah
(1932 - 34 & 1946 - 1947)

Edited by M. Rafique Afzal

With Foreword by S. M. Ikram

New Delhi Manager of publication 1963

Other Information:-

Call No. 323.1

Pages: XX, 542

Sizes: 23cm Acc. No. : 54267

Note: Jinnah was Governor General of Pakistan during 1947 - 48.

He was Born 1870 & dead in 1948.

Q.4

Journal of the Indian Council of Philosophical Research
Volume XIV Number 2, December 1980

Editor by D.P. Chattopadhyaya

Indian Council of Philosophical research, New Delhi

Other Information:

Call No. : 105



PRINCIPAL

**Kamla Nehru Mahavidyalaya
Sekkardara Chowk, Nagpur**

Note: 1. this is a quarterly journal. It was started in 1965 & completes one volume in one calendar year. Library does not Subscribe Volume 3 & 4
2. Use inclusive notation for Book No. & Acc. No.

Q.5 Adult Education & Challenges of the 1990s
 Edited by Walter Leirman & Jindra Kulich
 Croom Helm
 London
 1986

Other Information:

Call No. : 374 Acc. No. 8754 Size: 25cm Pages: XII, 305

IL.T.P.: International perspectives on adult education & continuing education.

Edited by Croom Helm. No. 13

Q.6 INTERNATIONAL MIGRATION
 Microform
 By
 R. P. Soly-Mirza
 Microfilm by Okaland Universtiy
 Rochester, Michigan in 1998

Other Information:- Call No. - 325/ Acc. No. - MIC66
1 micro films reel: 35cm. Includes Bibliography

Q.7 CONFERENCE ON THE NUMERICAL SOLUTION OF
 DIFFERENTIAL EQUATIONS
 Held in Dindee 1969.
 Berlin, Springer Verlag. 1969

Call No.- 510.4/ Accession No.- 158924 Pages- vi, 275 Size- 30 cm
Note- Lecture Notes in Mathematics. 109.

Q. 8 Teaching & Research in Public administration in India
 Papers presented at the workshop on Teaching & Research in
 Public Administration in India held at S. V. University,
 Tirupati in February 1980
 Published by
 S.V. University Press, Tirupati. 1980

Other Information -

Call No. : 353.8 Page No. : VII, 347

Size : 23 X 18cm.

Acc. No. : 24310

RASHTRISANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

SESSION: SUMMER 2024

CENTER: KAMLA NEHRU MAHAVIDYALAYA, NAGPUR

EXAMINATION: MLISC 1ST YEAR - SEMESTER 2ND (CBCS) (NEP)

SUBJECT: 2L3 INFORMATION TECHNOLOGY APPLICATION TO LIBRARIES

DATE: _____ TIME: 2 30 HOURS

ROLL NO.: _____ STUDENT'S NAME: _____

Note: Part 1. Objective Question Paper (Mark 20)

Part 2. Practical Paper (Mark 30)

Part 1. Objective Question Paper (Mark 20)
Attempt all Questions.

(Mark 06)

Q.1 Select correct option of the following.

- 1.1 Where vacuum tube technology is used?
- A] First generation of computers.
 - B] Second generation of computers
 - C] Second and third generation of computers.
 - D] Fifth generation of computers

1.2 The Super computer solves:

- A] Only numerical analysis
- C] Multi-variety mathematical problems

- B] only mathematical problems
- D] None of the above

1.3 The Heart of Computer is

- A] Input Unit
- B] Output Unit
- C] Memory
- D] CPU

1.4. Pen drive is used in which of the following?

- A] CPU
- B] Hard disk
- C] USB
- D] ADA

1.5 PCs (Personal Computer) are:

- A] Mainframe computer
- B] Mainframe computer
- C] Micro Computers
- D] Super Computer

1.6 Which of the following is not a programming language?

- A] FORTRAN
- B] COBOL
- C] BASIC
- D] ASCII

Q.2 Write True Or False. (Mark 05)

1. Internet, intranet and extranet mean the same thing. _____
2. The first page displayed by a web site is usually called a home page. _____
3. The Internet is an example of wan. _____
4. Shodhganga project organized by INFLIBNET. _____
5. DOAR is a Institutional Repository. _____

Q.3 Match the following.

(Mark 04)

- | List A | List B |
|-------------|--------------------------------------|
| a. SOUL | 1. Open Source Library Software |
| b. KOHA | 2. Software for University Librarian |
| c. Google | 3. Pascal |
| d. CDS/ISIS | 4. a popular search engine |

A] a-2, b-1, c-4, d-3 B] a-3, b-2, c-1, d-4 C] a-3, b-1, c-4, d-2 D] a-1, b-2, c-3, d-4

Q.4 One word answer.

(Mark 05)

a) Write any four Library Networks.

b) Full Form of DOAJ.

c) Full form of NDLTLD.

d) Write any two Automation Library Software

e) Write any two open source software for digital libraries.

Part I (out of 20)	Part II (out of 30)	Total marks 50

External Examiner

Internal Examiner



PRINCIPAL

**Kamla Nehru Mahavidyalaya
Sakkardare Chowk, Nagpur**

PART-II: HANDS ON PRACTISE

Total marks: 30

Q.1 Create the Bibliographic database of any 2 books in Library management software. (Mark 5)

Q.2 Search the following form the Internet. (Attempt any five) (15 marks)

2.1 Open the site of INFLIBNET, save the web page of it and write the URL of the web page providing information about the INFLIBNET major activities.

2.2 Open, save and write the URL of the web page e-PG Pathashala and search the notes of library Science.

2.3 Open the site DOAR and search the information (About us).

2.4 Open the website of DELNET and Save the webpage providing information about research at DELNET.

2.5 Open the Homepage of INDEST consortium.

2.6 Open the website of ALA; Write the webpage address providing Details about Activities and services.

Q. 3 Open the Web OPAC in Central Library of Kamla Nehru Mahavidyalaya, Nagpur and Search and write any five books of Library Science.

OR

(Mark 5)

Create the Borrower's Database of two Borrowers in the Library Software.

Q.4 Evaluation of Library webpages in IIT Delhi Library Webpage. (Mark 5)


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