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DEPARTMENT OF BOTANY

QUESTION BANK

B.Sc. SEM VI

PAPER-I

1. **Which of the following process is not required for growth.....?**
 - (a) Increasing size
 - (b) increase in shape
 - (c) increasing weight
 - (d) none of the above

2. **What is a sigmoid growth curve called?**
 - a) Exponential growth curve
 - b) Grand period curve
 - c) Declining growth curve
 - d) Interacting curve

3. **In which of the following phase do organisms in a population multiply at a faster rate?**
 - a) Deceleration phase
 - b) Stationary phase
 - c) Exponential phase
 - d) Log phase

4. _____ **is a plant hormone generally present in the gaseous state**
 - a) Ethylene
 - b) Ethane
 - c) Argon
 - d) None of the above

5. **Tendrils of garden peas coiling around any support signifies**
 - a) Seismonasty
 - b) Thigmotaxis
 - c) Gravitropism
 - d) Thigmotrophism

6. **Which of the following pigment involved in red-far red light interconversion?**
 - (a) Cytochrome

- (b) Lycopene
- (c) Phytochrome
- (d) Xanthophyll

7. One of the following is not an auxin

- a) Indole-3-acetic acid
- b) Malic Hydrazide
- c) Indole butyric acid
- d) Naphthalene acetic acid

8. How long does a circadian rhythm last?

- a. about an hour
- b. about a day
- c. about a month
- d. about a year

9. Who isolated the hormone auxin?

- a) Darwin
- b) Skoog
- c) Went
- d) Miller



10. The hormone responsible for apical dominance is _____

- a) IAA
- b) ABA
- c) GA
- d) Kinetin

11. Which of the following hormone promotes bolting?

- a) GA
- b) Ethylene
- c) Auxin
- d) Kinetin

12. Which of the following hormones is not a growth inhibitor?

- (a) Dormin
- (b) Abscisic acid
- (c) Ethylene
- (d) IAA

13. Which of the following is NOT a Nastic movement?

- a) Photonasty
- b) Thigmonasty

- c) Seismonasty
- d) Phytonasty

14. Pneumatophores show

- (a) thigmotropism
- (b) negative phototropism
- (c) negative geotropism
- (d) positive geotropism

15. Nastic movements differ from tropic movements in being

- (a) Nondirectional
- (b) Movements of variation
- (c) Stimulated by chemicals
- (d) Directional

16. Movements of leaves of the sensitive plant, *Mimosa pudica* are due to

- (a) seismonasty
- (b) chemonasty
- (c) thermonasty
- (d) hydrotropism

17. Which of the following is the example of Circadian Rhythm

- (a) opening of flower in night jasmine
- (b) photosynthesis in algae
- (c) both a and b
- (d) none of the above

18. The phenomenon of sex reversal is shown by

- (a) cytokinin
- (b) ABA
- (c) gibberlins
- (d) NAA

19. As of 1990 how many gibberlins were discovered

- (a) 84
- (b) 82
- (c) 94
- (d) 92

20. The striking stimulation of internode elongation causing increase in stem height is function of gibberlins called as

- (a) moulding
- (b) apical dominance
- (c) bolting
- (d) genetic dwarfism

21. Application of ethylene to dicot seedling results in drooping of leaf is called as

- (a) epinasty
- (b) hyponasty
- (c) bolting
- (d) sesimonasty

22. The action potential moves through parenchyma cells of xylem and phloem with a velocity of about

- (a) 4 cm per second
- (b) 2 cm per second

(c) 9 cm per second

(d) 3 cm per second

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23. Seed dormancy is triggered by

- a. Indole-3-ethanol
- b. Abscisic acid
- c. Carbon dioxide
- d. None of the above

24. _____ influences the process of flowering in plants.

- (a) Photoperiod
- (b) Water in the soil
- (c) The acidity of the soil
- (d) Amount of green pigment

25. Phytochrome is a photosensitive pigment involved in _____.

- (a) Geotropism
- (b) Phototropism
- (c) Photoperiodism
- (d) Photorespiration

26. The change over from vegetative to reproductive phase in plants takes place in response to _____.

- (a) Length of the day
- (b) severity of temperature
- (c) Oxygen content in the air
- (d) mainly the food material available in the soil

27. A plant that require not less than 10 hours of light to flower is called _____.

- (a) Day-neutral plant
- (b) Short day plant
- (c) Long day plant
- (d) None of the above

28. **When the dark period of short-day plants is interrupted by brief exposure of light, then the plant _____.**

- (a) Produces more flowers
- (b) Will not bear any flowers
- (c) Turns into a long day plant
- (d) Produces flowers immediately

29. **Statement A: Vernalisation prevents precocious reproductive development. Statement B: Vernalisation promotes flowering by cold treatment.**

- a) Both the statements are true
- b) Both the statements are false
- c) Statement A is true but Statement B is false
- d) Statement B is true but Statement A is false

30. **Which is the site for perception of light/dark duration?**

- a) Leaves
- b) Stem
- c) Roots
- d) Apical bud

31. **The hormone responsible for flowering is _____**

- a) vernalin
- b) cytokinin
- c) ABA
- d) florigen

32. **Read following statements and answer in suitable term given in option:**

1. The promotion of flowering by a period of low temperature

2. Hormonal substance migrates from leaves to shoot for inducing flowering
3. The general metabolic activity of the embryo slow down or in inactive state
4. Formation of separation layer between tissue
 - a. Photoperiodism, vernalisation, abscission layer, dormancy
 - b. Vernalisation, photoperiodism, dormancy, abscission layer
 - c. Dormancy, photoperiodism, vernalisation, abscission layer
 - d. Abscission layer, vernalisation, dormancy, photoperiodism

33. How many of the following can help in breaking seed dormancy?

- a. Changing the environmental condition like light & temperature.
- b. Application of GA, or nitrates.
- c. Chilling condition
- d. All the above

34. Which of the following is long day plant

- a) barley
- b) hibiscus
- c)wheat
- d) rice

35. Site of vernalization or stimulus for vernalization is received by

- a) stem tip
- b) embryo
- c)endosperm
- d) both a and b

36. Senescence of entire plant after single reproductive cycle is shown by 1. Wheat 2. Rice 3. Bamboo 4. Maize

- a) 1 and 2
- b) 3 and 4
- c) only 3
- d) all of the above

37. Which of the following is not the method to break seed dormancy

- a) stratification
- b) scarification
- c) saline stress treatment
- d) all of the above

38. Which of the following is capable of inducing hypersensitive response in plants

- a) bryophytes
- b) epiphytes
- c) nematodes
- d) helminthes

39. Which of the following is/are feature of SAR

1. It can last for months
2. Involves gene activation
3. Not always needed for resistance

- a) 1 and 2
- b) 3 and 2
- c) only 3
- d) all of the above

40. Which of the following pairs are correctly matched plant defence method.

1. Rose stem – prickles
2. *Calotropis* – milky latex
3. *Opuntia* – spines
4. *Capcicum* - trichomes

- a) 1 and 2
- b) 3 and 4
- c) 2 and 3
- d) all of the above

41. a substance which possesses an aromatic ring bearing phenol including functional derivatives is called as

- a) borbone
- b) fulvic acid
- c) juglone
- d) Harborne

42. *Taxus buccata* is a plant which produces a terpenoid having pharmaceutical properties:

- a) taxum
- b) taxa
- c) taxol
- d) taxcus

43. The production of secondary metabolites requires the use of _____.

- (a) Meristem
- (b) Protoplast
- (c) Axillary buds
- (d) Cell suspension

44. The pair of hormones required for a callus to differentiate are _____.

- (a) Ethylene and Auxin
- (b) Auxin and cytokinin
- (c) Auxin and Abscisic acid
- (d) Cytokinin and gibberellin

45. Totipotency refers to _____.

- (a) Development of fruits from flowers in a culture
- (b) Development of an organ from a cell in a culture medium
- (c) Flowering in a culture medium
- (d) All of the above

46. Haploid plants can be obtained from_____.

- (a) Anther culture
- (b) Bud culture
- (c) Leaf culture
- (d) Root culture

47. Cybrids are produced by

- (a) The nucleus of one species but cytoplasm from both the parent species
- (b) The fusion of two same nuclei from the same species
- (c) The fusion of two different nuclei from different species
- (d) None of the above

48. Which of the following plant cells shows totipotency?

- (a) Cork cells
- (b) Meristem
- (c) Sieve tube
- (d) Xylem vessels

49. What is Callus?

- (a) Tissues that grow to form an embryoid
- (b) An unorganised actively dividing the mass of cells maintained in a culture
- (c) An insoluble carbohydrate
- (d) A tissue that grows from an embryo

50. The technique of obtaining large number of plantlets by tissue culture method is called_____

- (a) Organ culture
- (b) Micropropagation
- (c) Macropropagation
- (d) Plantlet culture

51. What is protoplast?

- (a) Cell wall + Plasma membrane
- (b) Plant cell - cell wall
- (c) Cytoplasm + cell wall
- (d) Plasma membrane – cytoplasm

52. Which of the following is not properly matched?

- (a) Explant - excised plant part used for callus formation
- (b) Cytokinins - root initiation in callus
- (c) Somatic embryo - embryo produced from a vegetative cell
- (d) Callus - undifferentiated mass of cells

53. The time duration for sterilization process by using autoclave is _____ minutes and the temperature is _____

- a) 10 to 30 minutes and 125°C
- b) 15 to 30 minutes and 121°C
- c) 15 to 20 minutes and 125°C
- d) 10 to 20 minutes and 121°C

54. Which of the following is not an application of tissue culture?

- (a) Rapid Clonal Propagation

(b) Somaclonal Variations

(c) Embryo rescue

(d) Transgenic plants

55. Which of the following statements about sterilization in plant tissue culture is false_____

(a) Explants can be sterilized with alcohol

(b) Instruments such as tweezers need to be sterilized with alcohol

(c) Before operation, hands need to be disinfected with alcohol

(d) The medium needs to be autoclaved

56. Who is known as the Father of tissue culture?

(a) Bonner

(b) Laibach

(c) Haberlandt

(d) Gautheret

57. Which of the following is not sterilizing agent

(a) mercuric chloride

(b) silver nitrite

(c) hydrogen per oxide

(d) inositol

58. Optimum pH for plant tissue culture medium is_____

(a) 7.5

(b) 8

(c) 5.7

(d) 8.5

59. Select the correct match

1. Growth regulators- glycine
2. Solidifying agent- sucrose
3. Macronutrient- magnesium
4. Micronutrient- boron

- a) 1 and 2
- b) 3 and 4
- c) 2 and 3
- d) all of the above

60. What is MDA culture

- a) microdrop array culture
- b) macrodrop array culture
- c) minidrop array culture
- d) none of the above

61. Plasmids and _____ have the ability to replicate within bacterial cells independent of the control of chromosomal DNA.

- a) bacteriophages
- b) fragments
- c) bacteria
- d) clones

62. What helps in identifying the successful transformants?

- a) Ori
- b) Viruses
- c) Selectable markers
- d) Enzymes

63. The process by which a foreign DNA is introduced into bacteria is called

- _____
- a) amplification

- b) transformation
- c) infection
- d) digestion

64. **What may complicate the process of gene cloning within the cell?**

- a) One recognition site
- b) Foreign DNA
- c) More than one recognition site
- d) Antibody

65. **Which organism can transfer 'T-DNA' within plants?**

- a) *Agrobacterium tumifaciens*
- b) *E.coli*
- c) *Aspergillus niger*
- d) *S. typhi*

66. **Which plasmid of *Agrobacterium tumifaciens* leads to tumor formation in dicots?**

- a) F plasmid
- b) Ti
- c) pUC
- d) pBR

67. **From which organism was the first restriction enzyme isolated?**

- a) *Escherichia coli*
- b) *Salmonella typhimurium*
- c) *Bacillus cereus*
- d) *Staphylococcus aureus*

68. **In genetic engineering, restriction enzymes cleave the DNA at a specific site known as _____**

- a) restriction
- b) recognition
- c) promoter
- d) sense

69. **Restriction enzymes are also known as _____**

- a) ligase
- b) polymerase

- c) telomerase
- d) restriction endonucleases

70. _____ was the first restriction endonuclease was isolated and characterized.

- a) EcoRI
- b) BamHI
- c) Hind II
- d) Sma I

71. Restriction enzymes belong to a larger class of enzymes called _____

- a) proteins
- b) proenzyme
- c) nucleases
- d) isozymes

72. Cutting and joining of the DNA are which techniques?

- a) DNA degradation
- b) DNA replication
- c) DNA manipulation
- d) DNA synthesis

73. Enzymes that remove nucleotides one at a time from the end of a DNA molecule are called _____

- a) Ligases
- b) Exonucleases
- c) Endonucleases
- d) Modifying enzymes

74. Which type of restriction endonucleases is used most in genetic engineering?

- a) Type I
- b) Type II
- c) Type III
- d) Type IV

75. Which of the following statements is correct with respect to T4 DNA ligase?

- a) It can carry out only blunt ended ligations
- b) It doesn't requires ATP
- c) It requires a phosphate group at 3' end and a hydroxyl group at 5' end for the molecule to be joined
- d) It is obtained from T4 bacteriophage upon infection by E. coli

76. **If blunt ended ligations are to be carried out. Which of the following enzymes can be used?**

- a) E. coli DNA ligase
- b) T4 DNA ligase
- c) Both of these enzymes act equally in carrying out blunt ended ligations
- d) None of them is able to carry out blunt ended ligations

77. **A genomic library is a collection of _____**

- a) Genes
- b) Proteins
- c) Vectors
- d) Recombinants

78. **Which of the following is not true for a bacteriophage?**

- a) A very simple structure
- b) Consist either DNA or RNA
- c) Bacteriophages are viruses
- d) Complex structure that infects bacteria

79. **What is the capsid (protective coat) of the bacteriophage made up of?**

- a) DNA
- b) RNA
- c) Protein
- d) Organic acids

80. **Which of the following is not an example of bacteriophage?**

- a) M13
- b) Lambda phage
- c) Pbr322
- d) R209

81. **The cycle which is completed quickly in the infection by a phage is _____**

- a) Lysogenic
- b) Lytic
- c) Replication
- d) Capsid formation

82. **Which infection cycle is characterized by retention of the phage DNA molecule in the host bacterium for many thousands of cell division?**
- Lysogenic cycle
 - Lytic cycle
 - Integrative Phase
 - Protein synthesis
83. **Which of the following statements is correct with respect to exonuclease?**
- They only act on single stranded DNA molecules
 - They only act on double stranded DNA molecules
 - They remove a single nucleotide base at a time
 - They remove nucleotide bases from the middle of a polynucleotide chain
84. **Who were the scientists who discovered the plasmid pBR322?**
- Rodriguez and Bolivar
 - Joller smith
 - Herbert Boyer
 - Stanley Cohen and Joller smith
85. **What is the expanded form of pBR in pBR322?**
- Plasmid Boliver and Rodriguez
 - Plasmid Baltimore and Rodriguez
 - Plasmid bacterial recombination
 - Plasmid bacterial replication
86. **Which of the following enzyme is responsible for making a DNA copy from RNA?**
- Reverse transcriptase
 - DNA polymerase
 - RNA polI
 - RNA polII
87. **Which of the following is true about restriction endonucleases?**
- Type I and II requires ATP to move along DNA
 - Type I, II and III requires ATP to move along DNA
 - Type II requires no ATP and cleaves DNA within recognition sequence
 - Type II requires ATP and cleaves DNA within recognition sequence
88. **To make the recombinant plasmid permeable to DNA molecules, which of the chemicals is added?**
- MgCl₂

- b) CaCl_2
- c) NaCl
- d) HCl

89. **The extra chromosomal, self-replicating, closed, double stranded and circular DNA molecule is generally termed as _____**

- a) Chromosome
- b) Plasmid
- c) Genomic DNA
- d) Bacteriophage

90. **What is a DNA library?**

- a) A DNA fragment inserted into a vector
- b) A general collection of all genes sequenced thus far
- c) All DNA fragments identified with a probe
- d) A collection of DNA fragments that make up the entire genome of a particular organism

91. **Which of the following enzyme is required for end to end joining of DNA?**

- a) DNA ligase
- b) Restriction endonuclease
- c) RNA polymerase
- d) DNA polymerase

92. **Repressor molecules bind to _____**

- a) Operator
- b) Promoter
- c) Enhancer
- d) Hormone response element

