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DEPARTMENT OF BOTANY

QUESTION BANK

B.Sc. SEM IV

PAPER-I

1. Seed dormancy is triggered by

a) Indole-3-ethano
b) **Abscisic acid**
c) Carbon dioxide
d) None of the above

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

a) Changing the environmental condition like light & temperature
b) Application of GA **c)** Chilling condition
d) all of the above

3.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

4. Which of these scientists formulated the cell theory?
a) Schleiden and Schwann
b) Rudolf Virchow
c) Robert Koch
d) Antony Von Leeuwenhoek

5. Which of these is not explained by the cell theory?
a) Source or new cells
b) The basic unit of life
c) Composition of living things
d) Formation of new cells

6.Which scientist was the first to explain that new cells arise from pre-existing cells?
a) Antony Von Leeuwenhoek
b) Matthias Schleiden

c) Rudolph Virchow
d) Theodore Schwann

7.What is the meaning of Omnis cellula-e cellula?
a) All cells have a nucleus
b) Cell is the basic unit of life
c) Living things are composed of cells
d) All cells arise from pre-existing cells

8.Which of these is not a postulate of the cell theory?
a) Cells are the basic units of life
b) All cells contain a nucleus which has the genetic material
c) Living things are composed of one or more cells
d) Cells arise from existing cells

9. Cell organelles are located within the ____ of the cell.
a) nucleus **b) cytoplasm** c) cell membrane d) lysosomes

10. Genetic material is contained within the ___ of the cell.
a) ribosomes b) cytoplasm c)nucleolus **d) nucleus**

11. What is the name of the region where double-stranded single circular DNA is found in the prokaryotic cell?

(a) Protonucleus

(b) Nucleus

(c) Nucleoid

(d) Nucleoplasm

12. In prokaryotic cells, ribosomes are

(a) 70 S

(b) 80 S

(c) 60S + 40S

(d) 50S + 40S

13. The two domains to which prokaryotes are classified into are:

(a) Bacteria and Protista

(b) Bacteria and Archaea

(c) Archaea and Eukarya

(d) Eukarya and Monera

14. When a water sample from a hot thermal vent was tested, it was found to contain a single-celled organism having a cell wall lacking a nucleus. What is its classification most likely?

(a) Eukarya

(b) Fungi

(c) Protista

(d) Archaea

15. Which of these is a characteristic of prokaryotic cells?

(a) Absence of cell organelles

(b) Absence of nucleus

(c) Presence of 70S ribosomes

(d) All of these

16. A difference between eukaryotic and prokaryotic cells is in having

(a) Ribosomes

(b) Cell wall

(c) Nuclear membrane

(d) None of the above

17. In prokaryotes, the hair-like outgrowths which attach to the surface of other bacterial cells are

(a) Flagella

(b) Pili

(c) Capsule

(d) Plasmids

18. A component of prokaryotic cells:

(a) Plasma membrane

(b) DNA

(c) Cytoplasm

(d) All of these

19. The process of recombination in prokaryotes takes place in this way

(a) Transformation

(b) Conjugation

(c) Transduction

(d) All of the above

20. The flagella of a prokaryotic and eukaryotic cell vary in

(a) Mode of functioning and location in the cell

(b) Types of movement and placement in the cell

(c) Microtubular organization and function

(d) Microtubular organization and type of movement

21.Transverse diffusion (flip-flop) is the movement of _____

a) cholesterol molecule
b) amino acid
c) protein
d) phospholipid

22.The mobility of integral proteins can be measured by physical state of the _____

a) amino acids
b) external phospholipids
c) membrane phospholipids
d) membrane appendages

23. Two cells can be operated in such a way that leads to a common continuous plasma membrane of both.

a) True
b) False

24. Which of the following can not be used to mediate the fusion of plasma membranes of two different cells?

a) electric shock
b) inactivated viruses
c) Polyethylene glycol
d) emulsifier

25.Which of the following is known as mitoplast?

a. Mitochondria without outer membrane
b. Another name for mitochondria
c. Mitochondria without membranes
d. Mitochondria without inner membrane

26.An organelle that mainly serves as a packaging area for molecules that are distributed across the cell and are called ____?
a. Golgi apparatus
b. Mitochondria
c. Plastids
d. Vacuole

27. The membranes of rough endoplasmic reticulum (RER) and smooth endoplasmic reticulum (SER) are continuous.
a)True
b) False

28. Which of the following biomolecules are not synthesized by the endoplasmic reticulum?
a) Proteins
b) Lipids
c) Nucleic acids
d) Cholesterol

29. Detoxification of organic compounds like barbiturates and ethanol in the liver is carried out by _____
a) smooth endoplasmic reticulum
b) sarcoplasmic reticulum
c) rough endoplasmic reticulum
d) nucleus

30. Which enzymes are responsible for detoxification of organic compounds carried out by the smooth endoplasmic reticulum?
a) Dehydrogenases
b) Oxygenases
c) Nucleases
d) Ribonucleases

31. Glycolipids are synthesized in the ER and _____
a) Nucleus
b) Golgi complex
c) Mitochondrion
d) Plasma membrane

32. Hydrophobic transmembrane segments of which proteins are not synthesized in the endoplasmic reticulum?
a) integral membrane proteins
b) lysosomal proteins

c) steroids
d) secretory proteins

33. Golgi complex has a cisternae of diameter _____
a) 0.5-1 mm
b) 0.5-1 nm
c) 0.5-1 pm
d) 0.5-1 µm

34. Newly synthesized membrane proteins enter the cis face of the Golgi complex and leave from the *trans* face.
a) True
b) False

35. What is responsible for the transport of materials from the *cis* cisternae to the *trans* cisternae of the Golgi complex?
a) active diffusion
b) passive diffusion
c) translocon
d) transport vesicles

35. According to the fluid mosaic model, the membrane is _____
a) rigid b) discontinuous c) sheet-like **d) fluid-like.**

36. Who proposed the Fluid Mosaic Model of the plasma membrane?
a) Rudolf Virchow b) Meselson and Stahl
c) Schleiden and Schwann **d) Singer and Nicolson**

36.This is not the function of plasma membrane

(a) Energy transduction

(b) Intercellular interactions

(c) Responding to external stimuli

(d) Assisting in chromosome segregation

37. In the plasma membrane, Glycolipids are usually situated in

(a) cannot be predicted, it varies according to the cell types

(b) inner leaflet of the plasma membrane

(c) the outer leaflet of the plasma membrane

(d) evenly distributed in both outer and inner leaves of plasma membrane

38. The major interaction responsible for stabilizing plasma membrane

(a) hydrophobic interactions

(b) hydrophilic interactions

(c) covalent bonds

(d) ionic bonds

39. In the plasma membrane, lipid molecules are arranged in

(a) head parallel

(b) alternate

(c) scattered

(d) series

40. In the plant cell, this layer is present nearest to the plasma membrane

(a) Tonoplast

(b) Middle lamella

(c) secondary wall

(d) primary wall

41. Plasma membrane is made up of

(a) A protein, a lipid and a cellulose layer

(b) Bimolecular lipid layer surrounded by protein layers

(c) A protein layer between two lipid layers

(d) A lipid layer between two protein layers

42. Keeping in view the fluid mosaic model for the structure of cell membrane, which one of the following statements is correct with respect to the movement of lipids and proteins from one lipid mono layer to the other (described as flip flop movement)?

(a) While proteins can flip-flop, lipids can not

(b) Neither lipids, nor proteins can flip-flops

(c) Both lipids and proteins can flip-flop

(d) While lipids can rarely flip-flop, proteins can not

43.Mitochondria is the organ for _____
a) Cellular respiration
b) Cellular digestion
c) Cellular death
d) Cellular motility

44. The protruding invaginated sheets inside mitochondria is known as _____
a) Cristae
b) Fimbrae
c) Hyphae
d) Cellular Digestion

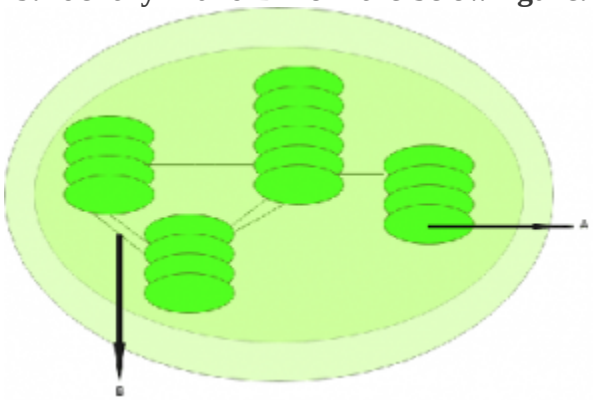
45. Which part of mitochondria has almost 70-75% protein content?
a) Outer membrane
b) Inner membrane
c) Both outer and inner membrane
d) Intermembrane space

46. Which part of mitochondria is responsible for the degradation of many enzymes?
a) Mitochondrial matrix
b) Cristae
c) Inner membrane
d) Outer membrane

47. What is the diameter of a chloroplast?
a) 1 – 2 micrometer
b) 2 – 4 micrometer
c) 4 – 6 micrometer
d) 6 – 10 micrometer

48. The number of chloroplasts found in Arabidopsis thaliana is _____
a) 100
b) 150
c) 50
d) 200

49. Identify A and B from the below figure.



a) A – Lumen; B – Thylakoids
b) A – Thylakoids; B – Lumen
c) A – Stroma; B – Grana
d) A – Grana; B – Stroma

50. Which of the following is not a component of the nucleus?
a) Chromosome
b) Nucleolus
c) Cytoplasm
d) Nuclear envelope

51. Mark the INCORRECT statement about nuclear lamina.
a) Filaments present in the inner membrane of the nucleus
b) Made up of lamin proteins
c) Provide mechanical support to the nucleus
d) It has bounded with the ribosomes

52. Name the structure which is used to transfer macromolecules between the cytoplasm and nucleus.
a) Microtubules
b) Nuclear pores
c) Cilia
d) Centrioles

53. Non-membrane bound body of the nucleus which disappears in the late prophase and reappears in telophase_____
a) Nucleolus
b) Chromosome
c) Nucleoplasm
d) Nuclear pore

54. Which of the following is not true for chromatin?
a) Organized structure of DNA and protein
b) These are highly condensed DNA
c) It is found in the nucleus
d) It contains a single dsDNA

55. Which region of chromatin is transcriptionally silent?
a) Nucleoid
b) Centromere
c) Euchromatin
d) Heterochromatin

56.Which class of leucoplast is responsible for fat storage?
a) Amyloplast
b) Proteinoplasts
c) Aleuroplasts
d) Elaioplasts

57. ___ divide after endosperm formation.
a) Zygote
b) Hilum
c) Micropyle
d) Cuticle

58.Embryogeny occurs at _____ end.
a) hilum
b) hypophysis
c) asix
d) microplylar

59. The outer layer in dicots is called _____
a) procambium
b) ground meristem
c) protoderm
d) proembryo

60. In monocots, the ____ end produces the suspensor cells.
a) micropylar
b) hilum
c) coleoptile
d) coleorhizae

61. which of the following is not endospermic seed.

a) castor
b) maize
c) gram
d) rice

62. golden yellow color tag is given to

a) nucleus seed
b) foundation seed
c) breeder seed
d) registered seed

63. seeds which are the initial seed of an improved variety with limited quantity is known as

a) nucleus seed
b) foundation seed
c) breeder seed
d) registered seed

64.the color on bag of certified seeds is

a) blue
b) white
c) red
d) yellow

65. Scar on seed coat is-------:

a) hilum
b) micropyle
c) siliqua
d) ovule

66. A provisional certificate is given as during ISTA certification for

a) A submission certificate for the seed sample
b)Completion certificate for the seed testing
c)Sampling and testing from the same laboratory
d)Sampling and testing from the different laboratories

67. The rudimentary shoot or stem of an embryonic plant is called-------:
a) coleoptile **b)plumule** c) funicle d) pedicle

68. Objectives of seed certification includes
a) High quality b) Discontinues supply of varieties to consumers
c) Unavailability of varieties to the farmers d) All

69. Coleorhiza and coleoptile is absent in ------- seeds:

a) pea b) rice c) wheat d) maize

70. Small opening in the surface of an ovule through which sperm enters in embryo sac:

a) plumule b) spikes **c) micropyle** d) hyllum

71. This is an example of industrial melanism is

(a) Mutation
(b) Neo Darwinism
(c) Neo Lamarckism
(d) Natural selection

72. This is a most popular example of Lamarck
(a) Primrose
(b) Snail
(c) African Giraffe
(d) only (c)

73. Stanley Miller proposed origin of life by:
(a) Biogenesis
(b) abiogenesis
(c) chemical synthesis
(d) none

74. Stanley Miller conducted experiments in 1953 on proebiotic Earth environment using special apparatus.The primary surprising products were:

(a) Peptide
(b) Nucleotide
(c) sugar
(d) amino acid

75. Which one of the following amino acids was not found to be synthesized in Miller's experiment?
(a) alanine
(b) Guanine
(c) Aspartic acid
(d) Glutamic acid

76. Stanley Miller did his experiments and produced amino acids by electric discharge passed in NH3+H2O, CH4 and ……..
(a) nitrogen
(b) oxygen
(c) carbon di oxide
(d) hydrogen

77. The quickest method of plant breeding is
a) introduction b) Selection c) Hybridisation d) Mutation Breeding

78. The new varieties of plants are produced by
a) Introduction and mutation b) Selection and hybridisation
c) Mutation and Selection d) Selection and Introduction

79. Pure line breed refers to
a) heterozygosity only b) homozygosity only
c) homozygosity and self assortment d) heterozygosity and linkage

80. Breeding for disease resistance requires
a) a good source of resistance b) Planned hybridization
c) Diseases test d) all of these

81. Heterosis is
a) Appearance of spontaneous mutations
b) Induction of mutations
c) Mixture of two or more traits
d) Superiority of hybrids over their parents.

82.Genetic information stored in mRNA is translated to polypeptide by _____
a) Ribosome
b) Nucleus
c) Endoplasmic reticulum
d) Golgi apparatus

83. Which of the following ribosomal RNA does not take part in rDNA organization of E.coli?
a) 5S RNA
b) 23S RNA
c) 16S RNA
d) 5.8S RNA

84. Name the site where secreted protein synthesized?
a) ER membrane bound ribosomes
b) Mitochondrial ribosome
c) Membrane free ribosome
d) Chloroplast ribosome

85. Name the antibiotic which inhibits protein synthesis in eukaryotes?
a) Penicillin
b) Cycloheximide
c) Cinhonine
d) Chlorophenicol

86. Which among the following is not a function of the vacuole?

a) They help to store the toxic metabolic by-products of the plant cell.

b) They provide turgidity and rigidity to the plant cell.

c) They help to maintain the osmotic pressure in the cell.

d) They help the plant in its growth by the process of cell division.

87. Cell sap is found inside_____

a) Protoplasm

b) Cytoplasm

c) Nucleoplasm

d) Vacuoles

88. Which of the following is not a function of the vacuole in plants?

a) They store toxic metabolic wastes

b) They help with the process of cell division

c) They help to maintain turgidity

d) They provide structurally support

89. **Tonoplast is a _____**
a) membrane
b) toxic compound
c) sphingolipid
d) glycoprotein

90. Synthesis of RNA and proteins take place in _____
a) M phase
b) S phase
c) G1 Phase
d) G2 phase

91.When does synapsis occur during meiosis?
a) Zygotene
b) Leptotene
c) Diplotene
d) Pachytene

92. Spindle fibers are made up of _____
a) Spindles
b) Tubulin
c) Flagella
d) Humulin

93.Chromosomes are separated during?
a) Prophase
b) Anaphase

c) Metaphase
d) Telophase

94.Crossing over occurs between _____
a) Two daughter nuclei
b) Two different bivalents
c) Non sister chromatids of bivalents
d) Sister chromatids of bivalents

95.Cell plate is laid during _____
a) Cytokinesis
b) Karyokinesis
c) Interphase
d) Metaphase

96.DNA replicates during _____
a) G1 phase
b) G2 phase
c) S phase
d) Prophase

97.Chromosomes are arranged along equator during _____
a) Prophase
b) Metaphase
c) Anaphase
d) Telophase

98.Chiasmata formation takes place during _____
a) Prophase I
b) Metaphase I
c) Anaphase I
d) Telophase I

99.In the beads on a string model, the bead is made up of _____
a) 6 histone proteins
b) 8 histone proteins
c) 6 histone proteins and DNA
d) 8 histone proteins and DNA

100.Nucleosome is made up of _____
a) DNA, histone core protein
b) DNA, histone core protein, linker H1
c) RNA, histone core protein
d) RNA, histone core protein, linker H1

101.Which of the following histone pairs forms tetramers in solution?
a) H1, H2A

b) H2A, H2B
c) H2B, H3
d) H3, H4

102.Association of DNA and histone is mediated by _____
a) Covalent bonding
b) Hydrogen bonding
c) Hydrophobic bonding
d) Vander Waals interactions

103.Mammals have _____ type of sex determination.
a) XX/ XY
b) XX/ XO
c) ZZ/ ZY
d) Genic

104.In the Melandrium album, absence of which segment of Y chromosome leads to development of a female plant?
(A) Suppressor region
(B) Promoter region
(C) Fertility region
(D) Pairing region

105.The DNA threads which appear inside the nucleus at the time of cell division?

a) Spindle fibers b) Centrioles

c) Asters **d) Chromosomes**

106.Chromatin is composed of _____
a) DNA
b) DNA and proteins
c) DNA, RNA and proteins
d) None

107. Cellular DNA is uncondensed throughout _____
a) Prophase
b) Interphase
c) Telophase
d) Anaphase

108.Which of the following statements is true about the ends of the chromosome?

(a) The ends of the chromosome are called Satellites

(b) The ends of the chromosome are called Centromeres

(c) The ends of the chromosome are called Telomeres

(d) The ends of the chromosome are called Kinetochore

109. Which of the following statements is true about the metaphase?

(a) A chromosome is the thickest during the metaphase

(b) A chromosome is the shortest during the metaphase

(c) A chromosome is the longest during the metaphase

(d) Both (a) and (b)

110. A functional chromosome has

a) centromere
b) telomere
c) origin of replication
d) all of these