

Roll No.

E-318

**M. Sc. (First Semester)
EXAMINATION, Dec.-Jan., 2020-21**

BOTANY

Paper First

(Cytology)

Time : Three Hours]

[Maximum Marks : 80

[Minimum Pass Marks : 16

Note : Attempt all Sections as directed.

Section—A

1 each

(Objective/Multiple Choice Questions)

Note : Attempt all questions.

Choose the correct answer :

1. Which of the following is responsible for bipophilic molecules to cross plasma membrane :

- (a) Polar tails
- (b) Non polar tails
- (c) Polar head
- (d) Non polar head

P. T. O.

2. Which of the following transport mechanism is seen in plasma membrane ?
 - (a) Active transport
 - (b) Passive transport
 - (c) Transport via carrier molecule
 - (d) All of the above
3. Cellulose is a polymer of :
 - (a) $\beta + 4$ linkages
 - (b) $\infty -$ linkages
 - (c) $\beta 1 - 6$ linkages
 - (d) $\infty -$ linkages
4. Organelle which is involved in cell wall synthesis :
 - (a) nucleus
 - (b) Lysosome
 - (c) Mitochondria
 - (d) Golgi complex
5. In plant secondary cell wall is present :
 - (a) Both side of primary cell wall
 - (b) Outside of primary cell wall
 - (c) Below plasma desmata
 - (d) Inside the primary cell wall
6. The function of cristae in mitochondria is :
 - (a) Oxidation reduction reaction
 - (b) Only oxidation
 - (c) Only reduction
 - (d) Phololysis

7. Mitochondria contains :
- (a) SS Linear DNA
 - (b) SS DNA circular
 - (c) ds DNA circular
 - (d) ds Linear DNA
8. Who discovered chloroplast ?
- (a) Robert Brown
 - (b) Konstantin
 - (c) Mereschlowshi
 - (d) Griffith
9. The chemical formula of chlorophyll is :
- (a) $C_{50}H_{70}Mg N_4O_4$
 - (b) $C_{55}H_{70}Mg N_4O_5$
 - (c) $C_{55}H_{72}Mg N_4O_5$
 - (d) $C_{50}H_{72}Mg N_4O_5$
10. Cell sap is found in :
- (a) Cytoplasm
 - (b) Nucleoplasm
 - (c) Chloroplast matrix
 - (d) Vacuoles

11. The experimental material in the experiment to prove the role of nucleus in heredity was :
- (a) Neurospora
 - (b) Acetabularia
 - (c) Nostoc
 - (d) C-elegans
12. The number of nuclear pore is related with :
- (a) Transcriptional activity of cell
 - (b) Replication
 - (c) Transport mechanism
 - (d) DNA content
13. Which cell organelle is involved in apoptosis :
- (a) Golgi complex
 - (b) Lysosome
 - (c) Mitochondria
 - (d) Chloroplast
14. edK2/cyclin E is found to function in :
- (a) $G_{1/S}$ transition
 - (b) G_0/G_1 transition
 - (c) S/G_2 transition
 - (d) G_2 / Mitosis transition

15. If DNA gets damaged at which check point cell cycle is halted :
- (a) $G_0 \rightarrow$
 - (b) $G_1 \rightarrow$
 - (c) $S \rightarrow$
 - (d) Anaphase
16. The protein by which microfilaments are made up of :
- (a) Cyclin
 - (b) Pectin
 - (c) Peptidoglycon
 - (d) Tubulin
17. Control microscopy uses which one of the following for visualization :
- (a) Acetocarmine
 - (b) Amido black
 - (c) Fluorescent dye
 - (d) Compositive blue
18. The technique that allows detection and localization of specific nucleic acid sequence on chromosome is :
- (a) GISH
 - (b) ISH
 - (c) FISH
 - (d) All of the above

19. Entire genome is used as a probe in which of the following technique :
- (a) Southern Blotting
 - (b) Western blotting
 - (c) ELISA
 - (d) GISH
20. The technique by which small deletions and duplications can be detected is :
- (a) Hybridization
 - (b) FISH
 - (c) PCR
 - (d) DNA fingerprinting

Section—B

2 each

(Very Short Answer Type Questions)

Note : Attempt any *eight* questions.

Write about

1. Polysaccharides involved in cell wall formation
2. Plasmodesmata
3. Na^+ , K^+ ATPase pump
4. Functions of chloroplast
5. Ultra structure of mitochondria
6. Structure of nucleolus
7. Retino blastoma
8. Functions of Golgi complex
9. ELISA (Enzyme linked immune sorbent assay)
10. Application of ISH (In-situ hybridization)

Section—C

3 each

(Short Answer Type Questions)

Note : Attempt any *eight* questions.

Explain

1. Chemical composition of secondary cell wall.
2. Fluid mosaic model of singer and Nicolson.
3. Enzymes of inner mitochondrial membrane.
4. Structure and functions of vacuoles.
5. Kuryotyping
6. Cyclin and cyclin-dependent kinases.
7. Apoptosis and its significance.
8. Radio immuno assay
9. Ultra structure of chloroplast
10. Principle of ISH (In-situ hybridization)

Section—D

5 each

(Long Answer Type Questions)

Note : Attempt any *four* questions.

1. Describe ultra structure and functions of cell wall.
2. Chemical composition of plasma membrane.
3. Describe mitochondrial of genome, its significance.
4. Ultra structure of prokaryotic and Eulcaryotic ribosome
5. Describe principle and applications of GISH (Genome in-situ hybridization).