

Roll No.

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**M.Sc. (First Semester)
EXAMINATION, Dec. - Jan., 2021-22**

BOTANY

Paper First

(Cytology)

[Time : Three Hours]

[Maximum Marks : 80]

[Minimum Pass marks : 16]

Note : Attempt all sections as directed

Section - A

(Objective/multiple choice Questions)

(1 mark each)

Choose the correct answers:

1. The plasma membrane is impermeable to all molecules except -
 - (A) Glucose
 - (B) ATP
 - (C) Urea
 - (D) K⁺

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2. The sodium potassium ATPase (sodium pump)
 - (A) Symporter
 - (B) An uniporter
 - (C) An antiporter
 - (D) An example of active transport
3. Which of the following is a cell surface receptor -
 - (A) Enzyme linked receptor
 - (B) G - Protein linked receptor
 - (C) Ion channel linked receptor
 - (D) All of the above
4. Which of the following signal molecule is not used for extracellular signaling -
 - (A) Autocrine
 - (B) Endocrine
 - (C) Paracrine
 - (D) Cyclic AMP
5. Thylakoid membrane produce ATP by the process of -
 - (A) Photosynthesis
 - (B) Chemiosmosis
 - (C) Chemosynthesis
 - (D) Respiration

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6. Name the plant organelle which act as a major site for an oxidative reaction -
- (A) Peroxisome
 - (B) Mitochondria
 - (C) Chloroplast
 - (D) Thylakoid
7. Cyanide is a mitochondrial toxin. The mechanism of action of cyanide is by inhibiting -
- (A) NADH dehydrogenase
 - (B) Cytochrome oxidase
 - (C) Succinate dehydrogenase
 - (D) ATP synthetase
8. Energy is measured in which of the following unit -
- (A) Kelvin
 - (B) Joule
 - (C) Pascal
 - (D) Mol
9. The protein network that lines the inner side of nuclear membrane is called -
- (A) Nucleolus
 - (B) Nuclear matrix
 - (C) Nuclear lamina (fibrous lamina)
 - (D) Nuclear protein

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10. The function of nucleolus is the synthesis of -
- (A) DNA
 - (B) m - RNA
 - (C) r - RNA
 - (D) t - RNA
11. Nucleoli is rich in -
- (A) DNA, RNA and Protein
 - (B) DNA and RNA
 - (C) DNA
 - (D) RNA
12. The basket like structure of filaments in nuclear pore complex has__filaments and is located in____side of the nuclear membrane__
- (A) 6, nuclear
 - (B) 8, nuclear
 - (C) 6, cytosolic
 - (D) 8, cytosolic
13. Which of the following is the correct constituents of prokaryotic ribosome?
- (A) 16s, 23s and 5.8s r RNA
 - (B) 23s and 5.8s r RNA
 - (C) 16s and 5s r RNA
 - (D) 16s, 23s and 5s r RNA

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14. DNA replication is controlled at which of the following check points -
- (A) G₁ phase
 - (B) G₂ phase
 - (C) m phase
 - (D) s phase
15. Cdk binds with _____ enabling the cdk to function as enzymes -
- (A) Mpf
 - (B) Cyclins
 - (C) Histones
 - (D) P₅₃
16. Shrinking of the nucleus is caused when this inactivates -
- (A) Gelsolin
 - (B) Tubulin
 - (C) Actin
 - (D) Lamin
17. Which of the following is an immune diffusion test
- (A) Double diffusion
 - (B) Gel diffusion
 - (C) Ouchterlany technique
 - (D) All of above

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18. Golgi apparatus is absent in -
- (A) Higher plants
 - (B) Yeast
 - (C) Bacteria and bluegreen algae
 - (D) None
19. What is microsome -
- (A) Compartment of Golgi
 - (B) Smaller fragments
 - (C) Small ER compartments
 - (D) Small vesicles of fragmented ER
20. Radial immunodiffusion is similar to -
- (A) Gel diffusion
 - (B) Double diffusion
 - (C) Ouchterlany technique
 - (D) All of these.

Section - B

(Very short answer type question)

(2 marks each)

Note : Attempt any 8 questions - write notes on -

1. Facilitated diffusion across plasma membrane

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2. Cellulose organization in cell wall
3. First law of thermodynamics
4. 'RUBISCO' gene of chloroplast genome
5. F₁ particle
6. Cell cycle and its phase
7. Do ribosome make protein?
8. Define secondary lysosome
9. Use of fluorescence in situ hybridization
10. Role of peroxisomes

Section - C

(Short Answer Type Questions)

(3 marks each)

Note : Attempt any eight questions. Write note on -

1. G - Protein coupled receptors
2. Ultrastructure of mitochondria
3. Simple Pits and Boardered Pits
4. Check points of cell cycle

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5. ELISA technique
6. Principle of confocal microscopy
7. Golgi apparatus
8. Bilayer models of plasma membrane
9. Role of microtubules in cell division
10. Prokaryotic ribosome and their role in protein synthesis.

Section - D

(Long Answer Type Questions)

(5 marks each)

Note : Attempt any four questions.

1. Describe different classes of ATPases involved in active transport through plasma membrane.
2. Explain genome organisation of chloroplast.
3. Discuss the mechanism of programmed cell death.
4. Give an account of any 2 techniques used in immune diagnosis.
5. Describe Ultrastructure of nuclear pore complex.