

KAMARAJ COLLEGE (Autonomous)

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

THOOTHUKUDI – 628 003

(5 Pages)

Reg. No:

Question Code No : 25003501

Sub Code : 24PMB031

PG Degree - End Semester Examinations, November 2025

Third Semester

M.Sc. BOTANY

Cell and Molecular Biology

(For those who joined in July 2024 onwards)

Time : 3 Hours

Maximum : 75 Marks

PART – A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer:

1. Which model of the plasma membrane explains the lateral mobility of proteins?
(a) Fluid Mosaic Model (b) Davson-Danielli Model
(c) Sandwich Model (d) Rigid Layer Model
2. Plasma membrane is responsible for _____ type of transport mechanism.

- (a) Carrier mediated (b) Diffusion
(c) Osmosis (d) All of these
3. In which cellular compartment does RNA editing primarily occur in eukaryotic cells?
- (a) Nucleus (b) Ribosome
(c) Mitochondria (d) Endoplasmic reticulum
4. The vacuole in plant cell is bounded by _____
- (a) Plasma membrane (b) Tonoplast
(c) Cell wall (d) Endoplasmic reticulum
5. In eukaryotes, the large ribosomal subunit is _____
- (a) 40S (b) 60S
(c) 70S (d) 80S
6. Cytokinesis in plant cell is characterized by _____
- (a) Formation of cleavage furrow
(b) Formation of cell plate
(c) Nuclear fragmentation
(d) Chromosome condensation
7. DNA replication in prokaryotes initiates at _____
- (a) OriC (b) Telomere
(c) Centromere (d) Enhancer
8. Which of the following is a type of excision repair?

- (a) Nucleotide excision repair (b) Mismatch repair
- (c) Base excision repair (d) All of these
9. In wobble pairing, which position of the codon is flexible?
- (a) First (b) Second
- (c) Third (d) All of these
10. Which of the mutation changes a single nucleotide but does not affect reading frame?
- (a) Frameshift (b) Substitution
- (c) Deletion (d) Addition

PART - B (5 X 5 = 25 Marks)

**Answer ALL Questions choosing either (a) or (b).
Answer should not exceed 250 words.**

11. (a) Describe the structure and functions of plant cell wall.

(OR)

- (b) Construct the structure of plasmodesmata and its role in movement of molecules.

12. (a) Elucidate the mitochondrial genome organization.

(OR)

- (b) Give a short note on structure of Golgi complex.

13. (a) Illustrate the structure and function of nucleus.

(OR)

(b) What are the role of cyclin dependent kinases in cell cycle?

14. (a) Write a short note on DNA repair mechanism.

(OR)

(b) Comment on Sanger sequencing method.

15. (a) Write a short note on wobble hypothesis.

(OR)

(b) Distinguish the polytene and lamp brush chromosomes.

PART - C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 600 words.

16. (a) Write a note on structural organization of plant cell.

(OR)

(b) Summarize the structure and functions of plasma membrane.

17. (a) Explain the structure and genome organization of chloroplast.

(OR)

(b) Discuss the ATPases transports as a storage organelle.

18. (a) Describe structure of DNA and its types.

(OR)

(b) Explain the mechanism of programmed cell death.

19. (a) Give an account of DNA replication in prokaryotes.

(OR)

(b) Write a note on post transcription changes.

20. (a) Write an elaborate account on mutation types.

(OR)

(b) Make a note on chromosomal aberrations.