**QP Code: U25C059**

**Reg. No : .....**

**Name : .....**

# ST MARY'S COLLEGE (AUTONOMOUS), THRISSUR-20

## III SEMESTER (FYUGP) DEGREE EXAMINATIONS, OCTOBER 2025

**B. Sc. Biotechnology**

**BTY3CJ202 : CELL BIOLOGY**

**2024 Admission Onwards**

**(Credits: 4)**

**Time: 2 Hours** **Maximum Marks: 70**

### Section A

*Answer **all**. Each question carries **3** Marks* ***(Ceiling: 24 Marks)***

1. State the three main postulates of the classical cell theory.
2. How will you classify cells based on the presence of nucleus?
3. Define osmosis.Give an example.
4. Explain why collagen is most abundant protein in ECM.
5. Why are ribosomes important in prokaryotic cells despite being simpler than eukaryotic ribosomes?
6. What are gap junctions ? Name its functional analogue in plant cells.
7. Predict the consequence of a mutation that leads to loss of centromere function.
8. Who proposed the Fluid Mosaic Model of the plasma membrane? What does the name implies?
9. What are cristae in mitochondria? State their functional signifcance.
10. Predict the effect on a cell if ciliary function is impaired.

### Section B

*Answer **all**. Each question carries **6** Marks* ***(Ceiling: 36 Marks)***

11. Apply your knowledge to explain the role of smooth ER in detoxification and lipid metabolism.
12. Apply your knowledge to explain how defects in endocytosis or exocytosis lead to diseases.
13. Compare and contrast the genomes of mitochondria and chloroplasts.
14. Analyze the role of nuclear matrix in maintaining nuclear organization.
15. Apply your knowledge to explain how lysosomes function in autophagy.

**Turn Over**

16. Explain the process of crossing over during prophase I and its importance.

17. Describe how the presence of chloroplasts gives plant cells an advantage over animal cells.

18. Describe the structural features of a metaphase chromosome.

## Section C

*Answer **any one**. Each question carries **10** Marks* ***(1x10=10marks)***

19. Critically evaluate the endosymbiotic theory with evidence from structural and genetic studies.

20. Compare and contrast the structural organization and functions of the three cytoskeletal components.

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