QP Code: P25C024

Reg. No : .....

Name : .....

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

III SEMESTER (CBCSS - PG) DEGREE EXAMINATIONS, OCTOBER 2025

M. Sc. Microbiology

MBG3E02 : CELL BIOLOGY

2024 Admission Onwards

Time: 3 Hours **Maximum Weightage: 30**

Part A

*Short answer type questions. Answer **any four** . Weightage **2** for each .*
(4x2 = 8 Weightage)

1. Describe the functions of nuclear lamella.
2. Describe the structure and functions of chloroplast DNA.
3. Explain the role of microtubules in cell movement.
4. Explain the loss of contact inhibition in cancer cells.
5. Differentiate between heterophagy and autophagy.
6. Compare the role of kinesins and dyneins cell movement.
7. Define the cell cycle and list its main phases.

Part B

*Short essay-type questions. Answer **any four**. Weightage **3** for each.*
(4x3 = 12 Weightage)

8. Explain the basic steps of the PI3K/PIP3/Akt signaling pathway.
9. Explain the importance of model organisms for biological research.
10. Analyze the structural differences between euchromatin and heterochromatin.
11. Illustrate the structure of neurons with suitable diagram.
12. Animal cell plasma membrane are more rigid than plant cell. Justify the above statement with suitable reasons.
13. Why does the body prefer apoptosis over necrosis for eliminating unwanted cells?
14. Compare and contrast the structure and function of tight junctions, adherens junctions, and gap junctions.

Turn Over

Part C

*Essay-type questions. Answer **any two**. Weightage **5** for each.*
(2x5 = 10 Weightage)

15. Describe the structure of Chloroplast and explain how each component works together to facilitate photosynthesis.
16. Analyze the role of second messengers in cellular signaling pathways using examples.
17. Analyze the structural organization of the Endoplasmic Reticulum and their role in protein modification and sorting.
18. Explain briefly the structure of the interphase nucleus with diagram.

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