QP Code: PV25DRSI004

Reg. No : .....

Name : .....

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

I SEMESTER (CBCSS - VPG) DEGREE EXAMINATIONS, NOVEMBER 2025

(Regular/Improvement/Supplementary)

M. Voc. Applied Biotechnology

SDC1AB01 : Cell and Molecular 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. Explain the translational control in eukaryotes.
2. Describe the structure and regulation of arabinose operon in *E.coli.*
3. Explain the different types of ribozymes.
4. Explain the chemical composition of plasma membrane.
5. Analyze how the antiparallel nature of DNA strands and complementary base pairing enable accurate replication and transcription processes.
6. Differentiate between selectins and cadherins in terms of structure and function.
7. Compare and contrast the A, B, Z, C, and D forms of DNA in terms of their structural characteristics, helical conformations, and biological significance.

Part B

*Short essay-type questions. Answer **any four**. Weightage **3** for each.*

(4x3 = 12 Weightage)

8. Evaluate the importance of mismatch repair in maintaining DNA fidelity during replication.
9. Explain the molecular events related to cell division.
10. Analyze the effect of phosphorylation and ubiquitination on protein degradation.
11. Explain the rolling circle model of viral DNA replication.
12. Briefly explain protein localization and targeting.
13. Differentiate between the three main eukaryotic RNA polymerases.
14. Differentiate between prokaryotic and eukaryotic protein synthesis.

Turn Over

Part C

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

15. Briefly explain the organization of prokaryotic and eukaryotic chromosomes.
16. Compare and contrast the functions of different DNA and RNA polymerases. How do their unique features enable them to perform their specific roles in prokaryotic DNA replication?
17. Discuss the molecular mechanisms underlying RNA interference, focusing on the roles of Dicer, RISC, and Argonaute proteins.
18. Discuss the role of different ion channels in maintaining the resting membrane potential and generating action potentials in neurons.

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