Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with A++ Grade by NAAC. Recognised by UGC under Section 12B
Coimbatore - 641 043, Tamil Nadu, India
Continuous Internal Assessment - I August, 2025
Semester V

Class: IIII UG **Time: 2 Hours**
Major: Zoology **Marks: 60**

23BZOC09 - MOLECULAR BIOLOGY

Course Outcomes:

CO1 Understand structure of nucleic acids and basic concepts of protein synthesis
CO2 Describe the molecular mechanisms behind DNA replication in prokaryotes and eukaryotes
CO3 Comprehend RNA synthesis and processing, and protein synthesis.
CO4 Get new avenues of joining research in related areas such as therapeutic strategies or related opportunities in industry.
CO5 Understand and apply general concepts of cell and molecular biology to relevant, specific problems.

Part – A **6×1=6**
Answer the following

1 Successive major goove in DNA double helix are CO1K1
a) 3.4 A^0 b) 2.3A^0 c) 4.5 A^0 d) 2.9 $A^0$2.

2 Where does translation occur in a eukaryotic cell? CO1K1
a) Endoplasmic reticulum b) Cytoplasm c) Nucleus d) Mitochondria

3 What are nucleosomes CO2K2
a) RNA molecule b) Subatomic particles
c) Units of DNA packaging in the cell d) Components of cell membrane

4 Who introduced the term 'nucleic acid'? CO2K2
a) Meischer b) Richard Altmann c) Robert brown d) Feulegen and Rossen

5 What is the primary function of messenger RNA (mRNA)? CO3K1
a) Transfering electrons b) Carrying amino acids c) Catalyzing chemical reaction
d) Carrying genetic information from DNA to ribosomes

6 Which type of RNA is involved in the splicing of pre-mRNA during gene expression? CO3K1
a) mRNA b) rRNA c) snRNA d) tRNA

Part – B **3×6=18**
Answer should not exceed 400 words

7. a Describe the role of DNA-Protein interaction CO1K2
(or)
b. Explain the DNA polymorphisms CO1K1

8. a. Comment on Histone-modifications CO2K3
(or)
b. Write about the DNA replication and cell cycle regulation CO2K4

9. a. Explain the chromatin remodeling CO3K2
(or)
b. Elaborate the 5'-capping and 3'-polyadenylation of mRNA CO3K2

Part - C **3×12=36**
Answer should not exceed 800 words

10. a Diagrammatic representation of Central Dogma of Molecular Biology? CO1K2
(or)
b. Describe about the types of DNA forms CO1K4

11. a. Elaborate the role of Chromosomes and Chromatin in molecular Biology CO2K3
(or)
b. Explain the centromeric and telomeric DNA replication CO2K2

12. a What is transcription? Give an example and explain transcription CO3K2
(or)
b. Explain on the splicing of RNA, Comment hnRNA converted into mRNA? CO3K2