

Roll No: _____

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M.Sc. Biochemistry, Semester II Examination, 2023
Paper Title: Molecular Biology-II
Paper Code: MBC 201

Max Marks: 60

Time: 2.5 h

Note: This paper has 3 Sections, A, B, and C. Attempt all three sections. Section A: Answer all the questions; Section B: Answer any two; Section C: Answer all the questions, each question in this section has an internal choice

Abbreviations Used:

CO- Course Outcome, PO- Program Outcome, BTL- Bloom Taxonomy Level: BT level 1- Remember; BT level 2-Understand; BT level 3-Apply; BT level 4-Analyse; BT level 5-Evaluate, BT level 6-Create

SECTION A**[1x10=10 Marks]**

Q. No. 1	MCQs or fill in the blank type questions. Attempt all.	BTL	CLO	PLO
i.	The DNA damage caused by deamination is an example of (a) Single-base alteration (b) Two-base alteration (c) Cross linkage (d) Chain breaks	3	1	2
ii.	Sickle-cell anaemia is a good example of mutation.	1	1	3
iii.	The mobile segments of DNA are called	1	3	3
iv.	The mutation involving the replacement of one purine by another (a) Frameshift mutation (b) Transition (c) Transversion (d) None of the above	3	1	3
v.	The nitrogenous base that is never found in genetic code (a) Adenine (b) Guanine (c) Thymine (d) Cytosine	2	2	2
vi.	The factories for protein biosynthesis are	1	2	3
vii.	The synthesis of complementary DNA from mRNA is catalyzed by the enzyme	4	3	2
viii.	The total DNA (genetic information) contained in a living organism is regarded as (a) Genome (b) Transcriptome (c) Proteome (d) Gene	3	3	3
ix.	The codon(s) that terminate(s) protein biosynthesis (a) UAA (b) UAG (c) UGA (d) All of them	1	2	3
x.	Methylation of DNA results in	2	5	3

	(a) Activation of genes (b) Inactivation of genes (c) No effect on genes (d) Inactivation of protein motifs			
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SECTION B

[2x12.5=25 Marks]

Q. No. 2	Long answer type questions (Attempt ANY TWO)	BTL	CLO	PLO
(a)	Describe in detail the process of prokaryotic translation initiation, elongation and termination.	1	2	3
(b)	Describe in detail the "SOS" repair of DNA. Discuss the role of key players in SOS. How is SOS repressed in normal circumstances?	2	1	2
(c)	Describe lactose operon. Write briefly on the gene expression and its regulation in eukaryotes.	3	3	3
(d)	Briefly discuss Histones Modifications and their role in oncogenesis.	4	5	2

SECTION C

[5x5=25 MARKS]

Q. No. 3	Short answer type (Attempt all, each question has an internal choice)	BTL	CLO	PLO
(a)	Briefly discuss the termination of translation in eukaryotes. OR Highlight the process of translation initiation in eukaryotes.	1	2	3
(b)	What are mutagens and how are they classified? Briefly discuss. OR Discuss the process of Site Directed Mutagenesis.	2	1	3
(c)	Schematically describe the applications of CRISPR-CAS technology in the creation of transgenic animal/ plants. OR Why is the Genetic Code considered as "Degenerate"? Explain how the wobble hypothesis supports Degeneracy.	3	3	2
(d)	What are transposons? Discuss types of transposons and their role in gene regulation? OR Write short notes on: Gene inactivation by DNA methylation.	1	3	3
(e)	Briefly discuss Epigenetic regulation of transcription. OR Schematically describe homologous recombination.	2	5	3

END OF THE QUESTION PAPER