

Roll No:

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B.Sc. Biochemistry, Semester-III Examination-2023
Paper Title: Molecular Biology and Genetics
Paper Code: BBC-CC11

Time: 3hour

Max Marks: 75

*Note: This paper has 3 sections A, B, and C. Attempt all the three sections
Section A: Answer all the questions; Section B: Answer any 2 out of 4; Section C: Answer all the questions, each question has an internal choice*

Abbreviations Used

CLO- Course Learning Outcome, PLO- Program Learning Outcome, BTL- Blooms 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 (Attempt all questions)

(1X10=10 Marks)

Q. No	Questions	BTL	CLO	PLO
A	The measurable readout of the assay in Hershey Chase experiment is.....	4	1	2
B	Removal of primers from Okazaki fragments is done by.....	4	2	2
C	Telomerase ispolymerase.	1	2	2
D	DNA double helix issupercoiled.	5	3	3
E	ϵ subunit of DNA polymerase performs.....	5	2	4
F	Reason for selectivity of dNTPs over rNTPs by DNA polymerase is	3	2	5
G	Eukaryotic transposons are mostly.....thatgenomic DNA.	1	1	2
H	The antibody binding diversity is resulted in mRNA variants and protein variants by a process known as.....	3	3	2
I	Polyadenylation is a post transcription modification that stabilizes the mRNA and prevents cleavage. The consensus PolyA sequence is.....	2	3	4
J	 chromosome is ordered and occupy non-overlapping region	2	3	4

SECTION B: Long type Questions (Attempt ANY TWO out of FOUR)

(2X15=30 Marks)

Q. No	Questions	BTL	CLO	PLO
1	Write a detailed account of eukaryotic genome organization and packaging. Discuss about the chromatin remodeling and their impact in the same context. Draw diagrams to explain.	3	1	2

2	What are the three laws of Mendel? How Mendel's findings are explained through chromosomal theory in modern language of molecular biology. How gene interaction produce deviation from Mendel's laws? Describe with examples.	2	4	2
3	Explain about (a) Incomplete dominance, (b) Incomplete penetrance, (c) Overdominance, (d) Codominance with examples.	3	4	2
4	Write in detail about RNA editing and splicing	1	2	3

SECTION C: Short-type Questions. (Attempt all questions, each question has an internal choice) (5X7=35 Marks)

Q. No	Questions	BTL	CLO	PLO
1	Pausing of ribosome during translation in presence or absence of tryptophan regulates the tryptophan operon. Explain the mechanism. OR In Escherichia coli, describe the events that mark the end of the initiation stage of transcription?	4	3	5
2	Mendel's work disproves the idea of blending inheritance? How? OR An genotype composition of a person is Aa Bb Cc and it makes an abnormal gamete with the genotype AaBc. Does this gamete violate the law of independent assortment or the law of segregation (or both)? Explain your answer.	4	4	2
3	Explain self-splicing and assisted-splicing. OR Rho dependent and independent termination of transcription	5	3	2
4	Differentiate between prokaryotic and eukaryotic replication OR Differentiate between Euchromatin and Heterochromatin	3	2	5
5	What do you understand by consensus sequence? Give an example of that. Describe the locations of consensus sequences within bacterial promoters. What are their functions? OR explain these terms in very brief, A. Repressor, B. Inducer, C. Operator site, D. Corepressor, E. Activator, F. Attenuator, G. Inhibitor.	4	4	3
6	In Escherichia coli, describe the events that mark the end of the initiation stage of transcription? OR Describe method of radioactivity measurement by Gas Ionization Counters and its principle	5	4	4
7	Explain the semi-discontinuous replication with experimental design on Okazaki. OR Explain CAP dependent activation of Lac operon.	2	2	5
