

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (NEW) EXAMINATION – SUMMER 2024

Subject Code:3140409

Date:20-07-2024

Subject Name:Molecular Biology and Genetics

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

	MARKS
Q.1 (a) What is relation between linkage and recombination?	03
(b) Give difference between dominance and epistasis.	04
(c) What do you mean by chromosomal anomalies? How are they generated? Explain chromosomal disorders arising due to autosomal trisomy with example.	07
Q.2 (a) If a hemophilic carrier female marries a normal male, what is probability for son to be hemophilic?	03
(b) Explain different types of structural aberrations in chromosome.	04
(c) Explain the direct experimental evidence to prove that DNA is genetic material in prokaryotes.	07
OR	
(c) Explain Frameshift and missense mutations with example.	07
Q.3 (a) Explain the terms semi conservative, conservative, and dispersive replication models.	03
(b) Explain chemical mutagens with example.	04
(c) Explain nucleotide excision repair with diagram	07
OR	
Q.3 (a) What is difference between reversion and suppression of mutation.	03
(b) Why is primer needed in replication? What is chemical composition of primer? And what is fate of primer as the replication proceeds.	04
(c) Explain base excision repair with diagram	07
Q.4 (a) What is monocistronic and polycistronic mRNA?	03
(b) Explain properties of genetic code.	04
(c) Compare initiation of translation in prokaryotes and eukaryotes.	07
OR	
Q.4 (a) Compare DNA polymerase of prokaryotes and eukaryotes.	03
(b) Explain post transcriptional modification of mRNA.	04
(c) Explain elongation step of prokaryotic replication with diagram	07
Q.5 (a) Explain the terms promoter, silencer, and enhancer.	03
(b) Explain Wobble hypothesis with example.	04
(c) Explain termination of transcription in prokaryotes.	07
OR	
Q.5 (a) Explain the term recessive, allele and homozygous	03
(b) Compare translation termination factors of prokaryote and eukaryotes.	04
(c) Explain formation of initiation complex in prokaryotic replication.	07
