

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - IV EXAMINATION - WINTER 2025

Subject Code: 3140409

Date: 18-11-2025

Subject Name: Molecular Biology and Genetics

Time: 02:30 PM TO 05:00 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) Write law of segregation and law of independent Assortment.	03
(b) Explain mono-hybrid cross with example.	04
(c) Explain Nature and properties of genetic material.	07
Q.2 (a) Explain Griffith experiment for evidence of DNA as Genetic material.	03
(b) Explain monocistronic mRNA.	04
(c) Write enzymes and its function needed for transcription in eukaryotes.	07
OR	
(c) Explain initiation of replication in prokaryotes.	07
Q.3 (a) Explain concept of genetic code.	03
(b) Describe One gene one protein hypothesis.	04
(c) Give detailed note on sexlinked inheritance and chromosomal disorders .	07
OR	
(a) Define cistron, recon and muton	03
(b) Describe prokaryotic gene structure.	04
(c) What is cytoplasmic inheritance? Give its significance,	07
Q.4 (a) Define: pleiotropy, epistasis	03
(b) Explain concept of primosome.	04
(c) Explain mechanism of translation in prokaryotes.	07
OR	
(a) What is the effect of linkage and crossing over in genetics?	03
(b) Give a brief note on role of primers in replication of eukaryotes.	04
(c) Explain mechanism of translation in eukaryotes.	07
Q.5 (a) What is Excision repair?	03

- (b) Explain Molecular basis of mutation. **04**
- (c) Explain Wobble and adaptor hypothesis **07**
- OR**
- (a) What is Reverse mutation and suppression of mutation? **03**
- (b) Explain post transnational modifications. **04**
- (c) Write a note on Recombinational repair and SOS system. **07**
