

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV (New) EXAMINATION – WINTER 2019

Subject Code: 2140401

Date: 16/12/2019

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.

		MARKS
Q.1	(a) Why is genetic code triplet?	03
	(b) Explain phenomenon of dominance.	04
	(c) What is the principle of independent assortment and how is this principle demonstrated in the results of a Two-gene (dihybrid) cross?	07
Q.2	(a) What is linkage? Explain its significance.	03
	(b) What three types of RNA participate in protein synthesis And what is the role of each type of RNA?	04
	(c) Explain abnormality due to trisomy in autosomal chromosome.	07
	OR	
	(c) What is difference between dominance and epistasis? Explain any one epistasis with example.	07
Q.3	(a) Explain role of DNA polymerase and RNA polymerase in replication.	03
	(b) Draw neat diagram of structure of tRNA.	04
	(c) Explain rho dependent and rho independent termination process.	07
	OR	
Q.3	(a) What is role of PCNA, RFC and RPA in eukaryotic replication?	03
	(b) What is post translational modification? Explain any two modifications in detail.	04
	(c) Explain the process of formation of transcription bubble with diagram.	07
Q.4	(a) Explain the terms sense strand, antisense strand and promoter.	03
	(b) Explain the process of synapsis in crossing over.	04
	(c) What progeny is expected when a carrier female for haemophilia marries a normal male? Explain X linked recessive inheritance using above example.	07
	OR	
Q.4	(a) What is role of primer in replication process?	03
	(b) Write a note on pleiotropy.	04
	(c) When a colour blind man marries with a normal visioned female, what type of progeny is expected in F2 generation?	07
Q.5	(a) What is P site, A site and E site on ribosome?	03
	(b) What is primosome and replisome?	04
	(c) Explain formation of initiation complex in prokaryotic translation.	07
	OR	
Q.5	(a) Give properties of genetic code.	03
	(b) What is genetic material? What are its properties?	04
	(c) Explain deletion, inversion and translocation mechanisms of chromosomal disorders.	07
