QP Code: RA23BTECH109 Reg. No | | | | | | | | | | | AY 24

GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, ODISHA, GUNUPUR
(GIET UNIVERSITY)

B. Tech (Fourth Semester - Regular) Examinations, April – 2025

23BBTPC24001 - Molecular Biology

(Biotechnology)

Time: 3 hrs Maximum: 60 Marks

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. What do you mean by split genes? Give examples.	CO1	K1
b. The leading strand of a DNA molecule has the sequence 3'-CGCATGTAGCGA-5' at the primer formation region. Write the primer sequence required for its replication.	CO2	K2
c. Mention the role of sigma factor in transcription.	CO3	K1
d. Define Wobble Hypothesis and its importance.	CO4	K2
e. What will be happened to Trp operon, if the tryptophan is present or absent?	CO5	K2

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions	Marks	CO #	Blooms Level
2. a. Explain the details of genome organization in eukaryotes.	5	CO1	K1
b. Discuss the experiment by Hershey-Chase for the DNA as the genetic material.	5	CO1	K2
(OR)			
c. Explain with diagram and importance of central dogma in molecular biology.	5	CO1	K1
d. Discuss about the mechanism of Overlapping genes with diagram.	5	CO1	K2
3.a. Diagrammatically represent the initiation of replication in prokaryotes.	5	CO2	K2
b. Give the mechanism of replication of mitochondrial DNA.	5	CO2	K1
(OR)			
c. Describe the process of Mismatch repair system.	5	CO2	K1
d. Give the structure and functions of DNA Polymerase-III.	5	CO3	K2
4.a. How termination of transcription occurs? Explain the mechanism.	6	CO3	K3
b. Highlight the different types of RNA Polymerase and their functions.	4	CO3	K1
(OR)			
c. Give the role of Spliceosome in splicing mechanism.	5	CO4	K1
d. Explain the mechanism and importance of 5'-Capping in m-RNA.	5	CO4	K1
5.a. Discuss the mechanism of elongation of translation in Prokaryotes.	5	CO4	K2
b. Discuss the structure of prokaryotic and eukaryotic ribosomes and its role in protein synthesis.	5	CO4	K2
(OR)			
c. Mention the role of t-RNA and Aminoacyl t-RNA synthetase in translation.	5	CO5	K1
d. Enlist the different translational factors used in translation process and mention their functions.	5	CO5	K2
6.a. Discuss the regulation of Lac operon system with suitable diagram.	5	CO5	K2
b. Classify and discuss the properties of restriction enzyme.	5	CO6	K1
(OR)			
c. Illustrate the properties of a cloning vector.	5	CO6	K1
d. How to prepare recombinant DNA? Explain with suitable diagram.	5	CO6	K3

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