



Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET UNIVERSITY)

M.Sc. (Second Semester - Regular) Examinations, May - 2026

24MBIPC12004– Genomics and Proteomics

(Biotechnology)

Time: 3 hrs

Maximum: 60 Marks

Answer ALL questions

(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 are introns and exons?	CO1	K1
b. Define linkage.	CO2	K2
c. What is the Human Genome Project (HGP)?	CO3	K2
d. What is isoelectric focusing?	CO4	K1
e. What is contig assembly?	CO6	K1

PART – B

(10 x 5 = 50 Marks)

Answer **ALL** the questions

	Marks	CO #	Blooms Level
2. a. Compare prokaryotic and eukaryotic genome organisation.	5	CO1	K4
b. Describe the structure and functions of extra-chromosomal DNA.	5	CO1	K2
(OR)			
c. Describe different types of genetic markers used in gene mapping.	5	CO1	K2
d. Describe different types of molecular markers used in gene mapping.	5	CO1	K2
3.a. Discuss cytogenetic techniques used in gene mapping, including karyotyping and banding techniques	5	CO2	K4
b. Explain the FISH technique and its applications.	5	CO2	K2
(OR)			
c. Explain comparative gene mapping and its significance.	5	CO2	K4
d. Discuss somatic cell hybridization in gene mapping.	5	CO2	K4
4.a. Discuss the objectives and achievements of the Human Genome Project.	5	CO3	K4
b. Discuss the role of genomics in understanding the evolution of eukaryotes.	5	CO3	K5
(OR)			
c. Describe molecular methods for the identification and classification of organisms.	5	CO4	K2
d. Explain how genomics helps in tracking emerging diseases and drug design.	5	CO4	K4
5.a. Describe the principle and applications of 2D-PAGE.	5	CO5	K2
b. Discuss the yeast two-hybrid system for studying protein interactions.	5	CO5	K4
(OR)			
c. Describe proteome databases and their importance.	5	CO5	K2
d. Describe contig assembly and its importance in genome sequencing.	5	CO5	K2
6.a. Explain transcriptome analysis for gene identification and annotation.	5	CO6	K4
b. Explain protein–protein interactions and methods to study them.	5	CO6	K4
(OR)			
c. Describe the principles of metabolomics and its applications.	5	CO6	K2
d. Explain metagenomics and its role in environmental studies.	5	CO6	K4

--- End of Paper ---