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

M.Sc. (Second Semester - Regular) Examinations, July – 2025

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 is the criterion for a polymorphism to be considered as a SNP?	CO2	K1
b.	Which proteome database you will use for human proteins? Justify.	CO1	K5
c.	If there is 10% recombination, calculate the % of crossing over.	CO3	K3
d.	What do you understand by metabolomics?	CO2	K2
e.	Define genome.	CO1	K1

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions		Marks	CO #	Blooms Level
2. a.	Compare the genome organization of prokaryotes and eukaryotes.	5	CO1	K4
b.	Give a brief account of extra-chromosomal DNA.	5	CO2	K2
	(OR)			
c.	The Human Genome Project (HGP) has revolutionized our understanding of genetics and disease. Highlight its salient features and explain how it has impacted modern biology and medicine.	5	CO1	K2
d.	Write a brief note on plant genome sequencing projects.	5	CO3	K2
3.a.	Give a brief account of classical markers used in mapping.	5	CO2	K2
b.	Describe the process of RFLP and justify its use as a molecular marker.	5	CO3	K5
	(OR)			
c.	Provide a brief account on somatic cell hybridization.	5	CO4	K2
d.	As a researcher working with an uncharacterized genome, which molecular marker system would you choose for genome mapping? Discuss your choice with justification.	5	CO5	K5
4.a.	Describe the process of 16S rRNA sequencing and justify its use for identification of organisms.	5	CO5	K5
b.	Briefly describe the role of genome in tracking emerging diseases.	5	CO3	K2
	(OR)			
c.	Comparative gene mapping helps us understand evolutionary relationships and genome organization. Justify.	5	CO2	K5
d.	With the help of a suitable flow chart explain how SNPs help in comparative genomics and functional analysis.	5	CO4	K2
5.a.	Describe the principle and workflow of 2D-PAGE with the help of suitable diagram.	5	CO2	K2
b.	With the help of suitable diagram, illustrate the working of MALDI-TOF.	5	CO3	K3

	(OR)			
c.	Using suitable diagram, illustrate the working of yeast-two hybrid assay.	5	CO3	K3
d.	Give a brief account of proteome databases.	5	CO3	K2
6.a.	Proteomics offers transformative opportunities for clinical diagnostics and biomedical research. Justify this statement stating the applications.	5	CO3	K5
b.	Discuss the principal and method of chromosome walking.	5	CO2	K2
	(OR)			
c.	Compare and contrast between forward and reverse genetics.	5	CO3	K4
d.	Provide a brief note on functional annotation of gene.	5	CO3	K2

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