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

M.Sc. (First Semester - Regular) Examinations, January – 2026

24MLSPC11002 – CELL BIOLOGY AND GENETICS

(Life Science)

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 is peptidoglycan?	CO1	K1
b.	Define lampbrush chromosome.	CO2	K2
c.	Differentiate between RER and SER	CO3	K2
d.	What is chromosomal theory of inheritance?	CO4	K1
e.	What is a point mutation?	CO5	K2

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions

		Marks	CO #	Blooms Level
2. a.	Describe the general organization of a prokaryotic cell.	5	CO1	K3
b.	Describe G-protein coupled receptors with suitable example.	5	CO2	K3
	(OR)			
c.	Explain CAMs.	5	CO1	K3
d.	Explain Mendel's laws.	5	CO3	K2
3.a.	Describe Hardy-Weinberg principle.	5	CO5	K3
b.	Explain types of mutations.	5	CO5	K2
	(OR)			
c.	Explain ribosomes and their types with a neat diagram.	5	CO3	K2
d.	Describe the structure of nucleus with suitable diagram.	5	CO2	K3
4.a.	Explain the structure of lipopolysaccharide (LPS) and its role in bacterial pathogenicity.	5	CO1	K5
b.	Explain the role of peroxisomes in cellular metabolism.	5	CO3	K3
	(OR)			
c.	Describe the principle and application of LOD score.	5	CO4	K4
d.	Explain gene flow and its impact on population structure.	5	CO5	K3
5.a.	Compare euchromatin and heterochromatin with respect to structure and function.	5	CO3	K3
b.	Explain the origin, structure, and biological significance of polytene chromosomes.	5	CO2	K2
	(OR)			
c.	Discuss how cell cycle checkpoints ensure genetic integrity during cell division.	10	CO4	K4
6.a.	Explain how growth factor signaling pathways regulate the expression of cell cycle genes.	5	CO3	K4
b.	Explain the role of cytoskeleton in cell division.	5	CO1	K2
	(OR)			
c.	Describe how extracellular signaling pathways regulate the expression of cell cycle genes.	10	CO4	K4

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