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

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

24MBIPC11007 – Basics of Chemistry and Physics

(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 #	Bloom s Level
a.	A car is racing on a circular track of 180 m radius and of banking angle 30 degree. To avoid the chances of skidding what should be the speed of the car?	CO1	K3
b.	The volume of steam is produced by 1 gram of water at 100 ℃ is 1650 cm^3.Calculate the change in internal energy during the change of the state.	CO4	K1
c.	Write down the Arrhenius equation.	CO3	K3
d.	Define Surface Tension and Viscosity.	CO5	K2
e.	Define isoelectric point.	CO4	K1

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions		Marks	CO #	Bloom s Level
2. a.	Explain Electromagnetic spectrum. Also write its various biomedical and electronic applications.	7	CO1	K1
b.	Compare between Stationary wave and Progressive wave.	3	CO1	K1
	(OR)			
c.	Define waves and write the types of waves with example.	5	CO1	K2
d.	Explain conduction, convection and radiation.	5	CO1	K1
3.a.	State and explain laws of Thermodynamics.	5	CO4	K1
b.	Define Entropy. An ideal gas absorbs 500 J of heat and does 200 J of work. Calculate the change in internal energy of the gas.	5	CO4	K3
	(OR)			
c.	Write a short note on random walk and directed motion in a biological system.	6	CO1	K2
d.	What is a Reynolds number? Write its physical significance with biological importance.	4	CO1	K3
4.a.	Write a note on Nerst equation with their application.	5	CO4	K1
b.	write down the difference between oxidation reaction and reduction reaction.	5	CO4	K1
	(OR)			
c.	write about protein with their types and briefly explain about peptide bonds.	10	CO4	K1
5.a.	Define molarity. If 64 moles of salt are dissolved to form 2 litres of solution, calculate the molarity of the solution.	5	CO1	K2
b.	Differentiate between molecular formula and structural formula.	5	CO1	K2
	(OR)			
c.	Distinguish between kinetic and thermodynamic control of a reaction.	5	CO1	K1
d.	Write short note on spectroscopy (any one).	5	CO4	K1
6.a.	Define Coulombs law and Two-point charges of $+5\ \mu C$ and $+10\ \mu C$ are placed in	5	CO1	K1

	air at a distance of 20 cm apart. Calculate the electrostatic force between them.			
b.	Define Ohms law and an electric heater operate at 220 V and draws a current of 5 A. Calculate the resistance and power consumed.	5	CO1	K1
	(OR)			
c.	Define capacitance. Explain the concept of capacitor with neat diagram. Also write the types of capacitors.	7	CO4	K1
d.	Define Centripetal and Centrifugal force.	3	CO1	K3

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