22PHU413N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(Fourth Semester)

Branch- **PHYSICS**

CHEMISTRY – II

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The number of gram equivalent of a solute per liter of solution is known as a)Normality b)Molarity c)Molality d) Mole fraction	K1	CO2
	2	The number of significant digits in 5.003 is---- a) 5 b) 4 c) 3 d) 6	K2	CO2
2	3	Which of the following is an example of a compound synthesized from amino acids? a) Cholesterol b) Nucleic acids c) Peptide hormones d) Vitamin C	K1	CO2
	4	The "water-hating" end of a soap molecule is also called the: a) Hydrophilic end b) Hydrophobic end c)Ionic end d) Polar end	K2	CO2
3	5	Which of the following factors does not affect the extent of adsorption? a) temperature b) pressure c) nature of adsorbate and adsorbent d) color of adsorbent	K1	CO2
	6	Unit of specific conductivity is: a) ohm b) ohm^{-1} c) $S\ cm^{-1}$ d) $S\ mol^{-1}$	K2	CO2
4	7	Heat does not spontaneously flow from a colder body to a hotter one. Which of the following thermodynamics law states this? a) Zeroth law of thermodynamics b) First law of thermodynamics c) Second law of thermodynamics d) Third law of thermodynamics	K1	CO2
	8	Which of the following is an application of thermodynamics? a) Refrigerators b) Gas compressors c) Power plants d) All of the mentioned	K2	CO2
5	9	Select the correct wavelength range corresponding to UV-Visible region a) 400-800 nm b) 200-800 nm c) 100-400 nm d) 150 -450 nm	K1	CO2
	10	The photon of wavelength 400 nm corresponds to _____ wave number. (a) 20000 cm^{-1} (b) 25000 cm^{-1} (c) 40000 cm^{-1} (d) 10,000 cm^{-1}	K2	CO2

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SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain why sodium carbonate is considered a primary standard, but sodium hydroxide is not. Describe the principle behind volumetric analysis.	K2	CO2
		(OR)		
	11.b.	Differentiate between systematic and random errors with examples.		
2	12.a.	Demonstrate the various preparation methods of furan.	K3	CO3
		(OR)		
	12.b.	Demonstrate the mechanism of cleaning action of soaps.		
3	13.a.	Explain the determination of equivalent conductivity using a conductivity bridge.	K4	CO3
		(OR)		
	13.b.	Compare and contrast physisorption and chemisorption with at least 5 differences and examples.		
4	14.a.	Differentiate between isothermal, adiabatic, and isobaric processes with diagrams.	K3	CO3
		(OR)		
	14.b.	Explain the Joule-Thomson effect and also the significance of the Joule-Thomson coefficient.		
5	15.a.	Explain Beer and Lambert's Law. Derive Beer-Lambert law and state the limitations	K4	CO3
		(OR)		
	15.b.	Discuss the various types of transitions involved in UV spectroscopy.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Explain in detailed note on significant figures, confidence limits, and proper data reporting in analytical chemistry.	K4	CO3
2	17	Classify proteins based on their structure and function providing examples for each category.	K4	CO3
3	18	Derive the Langmuir adsorption isotherm with it's significance of each term. How does it explain the variation of adsorption with pressure?	K6	CO3
4	19	What is the need for second law? State different statements of second law of thermodynamics. Explain the concept of entropy by using second law.	K5	CO3
5	20	Explain in detail the principle, instrumentation, and working of UV-Visible spectroscopy. Explain its applications in organic qualitative analysis.	K5	CO3

Z-Z-Z END