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SECOND SEMESTER (CUFYUGP) DEGREE EXAMINATION, APRIL 2026

CHEMISTRY / POLYMER CHEMISTRY

CHE2MN105: SOLUTIONS AND SURFACE CHEMISTRY

2024 Admission onwards

Maximum Time: 2 Hours | **Maximum Marks :70**

Section A

All Questions can be answered. Each Question carries 3 marks (Ceiling: 24 Marks)

1	Write two examples each for lyophilic, lyophobic and macromolecular colloids.
2	Compare electro-dialysis of colloids with human medical dialysis.
3	What are emulsions? Write two examples.
4	State Hardy Schulze rule and explain.
5	Distinguish between adsorption and absorption with examples.
6	What are Freundlich and Langmuir isotherms?
7	Write the principle of adsorption chromatography.
8	Write few methods for extraction of metal ions from aqueous solution.
9	What is Rf value?
10	Describe the classification of solvent extraction methods.

Section B

All Questions can be answered. Each Question carries 6 marks (Ceiling : 36 Marks)

11	Distinguish between ideal and non -ideal solutions.
12	Calculate the vapor pressure of a solution containing 2 moles of benzene (C_6H_6) and 3 moles of toluene (C_7H_8) at 30°C. The vapor pressures of pure benzene and pure toluene at 30°C are 95.1 mmHg and 28.4 mmHg, respectively.
13	What are the differences between nematic and smectic liquid crystals?
14	Why a non-volatile solute increases the boiling point of water?
15	What is Vant Hoffs factor? How is it related to degree of ionization of a weak electrolyte?
16	Write three examples of enzyme catalysis.
17	What are the characteristics of enzyme catalysis?
18	Write three examples each for homogeneous and heterogeneous catalysis.

Section C

Answer any ONE. Each Question carries 10 marks (1×10=10 Marks)

19	Describe the classification of colloids.
20	Explain the principle, working and applications of thin layer chromatography.