

Roll No _____

END-TERM EXAMINATION
Odd Semester 2024-25

Course Code :- BP302T Course Name:-Physical Pharmaceutics

Programme Name: B.Pharma

Sem:-3rd



K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

Time: 3 Hours

Maximum Marks: 75

Instructions: The question paper consists of 32 questions divided into three-part A, B and C. Attempt all questions from section-A comprises 20 MCQs, Any two questions out of three from section-B and Any seven questions out of Nine from section-C

Section-A (20 X 1 = 20 Marks)

1	Critical solution temperature is defined as: A) Temperature above which components are miscible in all proportions B) Temperature at which Raoult's law is not obeyed C) Temperature at which solutions become hypertonic D) None of the above	CO-1	L-1
2	Which law explains the relationship between gas solubility and pressure? A) Raoult's law B) Dalton's law C) Henry's law D) Boyle's law	CO-1	L-2
3	In gas solubility in liquids, what is the impact of increased temperature? A) Increases solubility B) Decreases solubility C) No effect D) Changes state of matter	CO-2	L-2
4	Which type of solution does not follow Raoult's Law? A) Binary solutions B) Ideal solutions C) Real solutions D) All of the above	CO-2	L-3
5	Latent heat refers to the heat required for: A) Increasing temperature B) Phase change without temperature change C) Both temperature and phase change D) No change in state or temperature	CO-2	L-2
6	A eutectic mixture is characterized by: A) High melting point B) Low melting point C) Complete immiscibility D) Formation of liquid complexes	CO-3	L-2
7	Aerosols used in inhalers are mainly in which state of matter? A) Solid B) Liquid C) Gaseous D) Colloidal	CO-3	L-1
8	Which property measures a substance's resistance to polarization? A) Dielectric constant B) Optical rotation C) Refractive index D) Dipole moment	CO-3	L-2
9	Surface tension is measured in units of: A) Pascals B) Dynes/cm C) Joules D) Liters	CO-3	L-1
10	The spreading coefficient is used to measure: A) Surface tension B) Viscosity C) Detergency D) The ability of a liquid to spread over another liquid	CO-3	L-3
11	Which term describes the decrease of surface tension when solutes are added? A) Adsorption B) Desorption C) Solubilization D) Detergency	CO-4	L-3
12	The HLB scale is used to classify: A) Acids B) Bases C) Surfactants D) Buffers	CO-4	L-1
13	A surfactant with a high HLB value is likely: A) Lipophilic B) Hydrophilic C) Neutral D) Amphoteric	CO-4	L-2
14	Protein binding of drugs is important because: A) It affects drug solubility B) It influences drug action and bioavailability C) It can lead to protein denaturation D) All of the above	CO-4	L-3
15	Which of these is NOT a method to study complexation? A) Solubility method B) Phase diagram method C) Precipitation method D) Titration method	CO-4	L-1
16	Which type of complex involves hydrogen bonding and Van der Waals forces? A) Covalent complex B) Molecular complex C) Ionic complex D) None of the above	CO-1	L-2
17	The pH of a buffer is calculated using the: A) Raoult's equation B) Van't Hoff equation C) Henderson-Hasselbalch equation D) Ideal gas law	CO-1	L-1
18	Buffers are important in biological systems because they:	CO-2	L-3

	A) Increase solubility B) Maintain constant pH C) Enhance color stability D) Remove impurities		
19	The buffer capacity is defined as the: A) pH range a buffer can maintain B) Amount of acid/base needed to change pH by one unit C) Speed of pH adjustment D) Concentration of ions in a solution	CO-3	L-2
20	Distribution law is valid when: A) Solutes react with solvents B) Solutes distribute uniformly between two immiscible solvents C) Solutes are insoluble in both solvents D) All of the above	CO-3	L-2

Section B (2 X 10 = 20 Marks)

1	Explain the distribution law and its limitations. Provide examples of how the distribution law is applied in drug distribution and formulation.	CO-2	L-4
2	Discuss the role of aerosols in drug delivery, with emphasis on the structure, function, and types of inhalers used in pharmaceutical aerosols.	CO-3	L-4
3	Explain the concept of eutectic mixtures, and describe their importance in drug formulation. Provide examples of drugs that form eutectic mixtures and how they are utilized in pharmaceutical applications.	CO-3	L-5

Section C (7 X 5 = 35 Marks)

1	Describe Raoult's law and its significance in predicting the behavior of solutions.	CO-2	L-3
2	Describe the physicochemical properties of drug molecules, focusing on refractive index and optical rotation.	CO-1	L-4
3	What is surface tension? Describe one method to measure it.	CO-3	L-2
4	Explain the HLB scale and its application in formulating emulsions.	CO-4	L-4
5	Explain the role of complexation in drug action and stability.	CO-4	L-3
6	Explain the principles and methods for determining pH in solutions.	CO-1	L-4
7	Describe adsorption at solid-liquid interfaces and its pharmaceutical importance.	CO-4	L-3
8	Classify different types of complexation with examples.	CO-2	L-2
9	What are buffered isotonic solutions? Discuss their importance in pharmaceuticals.	CO-3	L-3