Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UPES

End Semester Examination, May 2025

Program:	B. Pharm	**Semester:**	IV
Course:	Physical Pharmaceutics-II	**Duration:**	03 Hours
Course Code:	BP403T	**Max. Marks:**	75
Instructions:	Attempt all sections.		

SECTION A

(20Q×1M=20 Marks)

Attempt all questions. Each question carries one mark.

S. No.		Marks	Cos
Q 1	The zig-zag motion of colloidal particles is explained by: a) Tyndall Effect b) Diffusion c) Electrophoresis d) Brownian Motion	1	CO1
Q 2	What is the purpose of a protective colloid? a) Decrease viscosity of the dispersion medium b) Enhance solubility of colloids c) Prevent coagulation of lyophobic colloids d) Increase coagulation rate	1	CO1
Q 3	Surfactant solutions are termed as association colloids when their concentrations are: a) Less than the critical micelle concentration b) More than the critical micelle concentration c) Insufficient to saturate the bulk phase d) Insufficient to saturate the interface	1	CO1
Q 4	The composition of the electrical double layer includes: a) Stern and Gouy layers b) Compact and viscous layers c) Diffuse and sedimentation layers d) Hydrophobic and hydrophilic layers	1	CO1
Q 5	The supernatant liquid in a deflocculated suspension is: a) Clear b) Turbid c) Transparent d) Yellow	1	CO2
Q 6	The reduction of free surface energy in a suspension improves: a) Viscosity b) Sedimentation rate c) Stability of the suspension d) Reactivity of particles	1	CO2
Q 7	A sedimentation volume greater than 1 indicates: a) High particle aggregation b) Low particle settling c) High suspension stability d) The suspension is unstable	1	CO2
Q 8	According to Bancroft's rule, an emulsifier that is more soluble in water will form: a) Water-in-oil emulsion b) Oil-in-water emulsion c) Microemulsion d) Multiple emulsion	1	CO2
Q 9	Fluidity is a term associated with Newtonian fluids. An equivalent term for the flow of plastic fluids is: a) Plastic fluidity b)Mobility c) Flexibility d) Apparent fluidity	1	CO3
Q 10	The apparatus used for determining the viscosity of non-Newtonian fluids is: a) Ostwald viscometer b) Brookefield viscometer c) Falling sphere viscometer d) Capillary viscometer	1	CO3
Q 11	Pseudo-plastic flow is characterized by: a) Viscosity increasing with increasing shear rate. b) Viscosity decreasing with increasing shear rate. c) A constant viscosity at all shear rates. d) Flow behavior similar to plastic flow.	1	CO4
Q 12	What happens to the viscosity of a liquid with an increase in temperature? a) Increases b) Remains constant c) Decreases d) Doubles	1	CO3

Q 13	The type of particle diameter obtained by microscopic method of evaluation is: a) Surface-volume diameter b) Volume-surface diameter c) Projected diameter d) Stokes diameter	1	CO4
Q 14	Free flowing powders show a flatter cone with a: a) Smaller angle of repose b) Larger angle of repose c) Intermediate angle of repose d) None of the above	1	CO4
Q 15	Porosity of a porous powder can be defined as: a) Bulk volume/Void volume b) Void volume/Bulk volume c) True volume/Bulk volume d) Bulk volume/True volume	1	CO4
Q 16	The primary purpose of determining bulk density is: a) To calculate particle flow b) To measure particle porosity c) To estimate packing behavior d) To determine surface area	1	CO4
Q 17	The main objective of accelerated stability analysis is: a) To test drug compatibility with containers b) To evaluate microbial stability c) To predict shelf-life under normal storage conditions d) To reduce production costs	1	CO5
Q 18	The equation used for predicting the shelf life of a drug product is: a) Michaelis-Menten equation b) Arrhenius equation c) Hixon-Crowell equation d) Henderson-Hasselbalch equation	1	CO5
Q 19	The role of a catalyst in chemical reactions involves:? a) Changes the equilibrium b) Decreases activation energy c) Increases product yield d) Alters reaction stoichiometry	1	CO5
Q 20	During the hydrolysis of sucrose in the presence of excess water, the following occurs: a) First-order kinetics b) Second-order kinetics c) Pseudo-first-order kinetics d) Pseudo-zero-order kinetics	1	CO5
SECTION B (20 Marks) **(2Q×10M=20 Marks)** **Attempt 2 Question out of 3.**			
Q 1	Discuss the mechanism of electrical double layer formation around a colloidal particle. Explain electro-osmosis based on the concept of the electrical double layer. (7+3)	10	CO1
Q 2	Explain the principle and working procedure of an Andreasen pipette for particle size determination with the aid of a neat, labeled diagram. Also, compare its advantages and disadvantages to other techniques. (2+5+3)	10	CO4
Q 3	Write short note on any two of the following: (5+5) a) Flocculation and Creaming b) Flocculated vs deflocculated suspension c) Preservation of an emulsion	10	CO3
SECTION-C (35 Marks) **(7Q×5M=35 Marks)** **Attempt 7 Question out of 9.**			
Q 1	Briefly discuss the common methods used to improve the flow properties of powders.	5	CO4
Q 2	Explain the key features of the stress-strain curve and its significance in material analysis.	5	CO2
Q 3	Describe dilatant flow behavior of the materials with an example.	5	CO2
Q 4	With the help of a well labelled diagram explain working of Cone and Plate Viscometer.	5	CO2
Q 5	How does a colloidal system differ from a coarse system? Discuss the pharmaceutical applications of colloidal dispersions.	5	CO1
Q 6	Describe the effect of ionic strength on reaction rates.	5	CO5
Q 7	Derive the expression for calculating the rate constant and half-life for a first-order reaction.	5	CO5
Q 8	How would you determine the order of a given reaction using the half-life method?	5	CO5
Q 9	Discuss the measures that are taken to preserve an emulsion from microbial contamination and oxidation.	5	CO3