Name:

Enrolment No:

UPES

End Semester Examination, December 2024

Program: B. Pharm **Semester :** III
Course: Pharmaceutical Engineering **Duration :** 03 Hours
Course Code: BP304T **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 fluid flow in which the fluid particles in one layer DO NOT mix with the fluid particles in the other layer is called as? A. laminar flow B. layer flow C. mixed type D. turbulent flow	1	CO1
Q 2	Select one of these is having a single tapered section for the measurement of flow of fluids. A. Orifice meter B. Rotameter C. Pitot tube D. Venturi meter	1	CO1
Q 3	Select the one that is NOT a size reduction process. A. Clarification B. Comminution C. Diminution D. Pulverization	1	CO1
Q 4	The modes observed in a ball mill for size reduction are as follows. A. Attrition and cutting B. Compression and impact C. Cutting and compression D. Impact and attrition	1	CO1
Q 5	The following forces are used in a cyclone separator for the size separation of particles. A. Adhesive forces B. Centrifugal forces C. Cohesive forces D. Shearing forces	1	CO1
Q 6	Aperture tolerance is _____. A. The thickness of the wire used B. The variation in the size of the sieve openings C. The number of meshes per linear length of 25.4 mm D. The weight of the sieve	1	CO1
Q 7	Fourier's law is applicable to one of the following types of heat flow. A. Conduction B. Convection C. Emission D. Radiation	1	CO2
Q 8	Flow of heat is NOT applicable generally in one of the following unit operations. A. Centrifugation B. Crystallization C. Drying D. Refrigeration	1	CO2
Q 9	The following factors increases the efficiency of evaporator. A. High moisture content B. High vacuum C. High viscosity of liquid D. High volume of liquid	1	CO2
Q 10	Purpose of a deflector in a forced circulation evaporator is: A. Creates large surface area B. Facilitates pumping of liquid C. Promotes separation of liquid and vapour D. Provides heat to the evaporator	1	CO2
Q 11	Water for injection is prepared using one of the following distillation methods. A. Flash distillation B. Fractional distillation C. Simple distillation D. Steam distillation	1	CO2
Q 12	Claisen flask for distillation consists of one of the following number of necks. A. Four B. One C. Three D. Two	1	CO2
Q 13	Choose the dryer that is known as lyophilizer. A. Fluidized bed dryer B. Freeze dryer C. Spray dryer D. Vacuum dryer	1	CO3

Q 14	Hot spots are formed during one of the following periods. A. Constant rate period B. First falling period C. Initial readjustment period D. Second falling period	1	CO3
Q 15	The major mechanism of mixing in a sigma blade is: A. convective mixing B. diffusive mixing C. shearing D. tumbling	1	CO3
Q 16	The following action is required for wet granulation, when planetary mixer is used. A. Agitatory action B. Blending action C. Kneading action D. Shearing action	1	CO3
Q 17	Cellulose membrane filter is an example for the following type of filtration. A. Cake filtration B. Decantation filtration C. Depth filtration D. Screen filtration	1	CO4
Q 18	One of the following equations is used for explaining the theory of filtration A. Darcy's equation B. Stefan-Boltzmann equation C. Stokes equation D. Dalton's equation	1	CO4
Q 19	The following is the disadvantage of a non-perforated basket centrifuge. A. High efficiency B. Continuous operation C. Requires manual scraping of solids D. High moisture retention	1	CO4
Q 20	Below centrifugation method is used for separating macromolecules like proteins and nucleic acids. A. Low-speed centrifugation B. Ultracentrifugation C. Differential centrifugation D. Super centrifuge	1	CO4
SECTION B (20 Marks) (2Q×10M=20 Marks) Attempt 2 Question out of 3.			
Q 1	Describe the principle, construction, working, uses, merits and demerits of twin shell blender using a suitable diagram.	10	CO3
Q 2	Describe the principle, construction, working, uses, merits and demerits of freeze dryer using suitable diagram.	10	CO3
Q 3	Write a detailed note on the following: a) Specifications of sieves b) Energy losses due to enlargement and contraction	5+5	CO1
SECTION-C (35 Marks) (7Q×5M=35 Marks) Attempt 7 Question out of 9.			
Q 1	Write Bernoulli's principle and equation with a labeled diagram.	5	CO1
Q 2	Explain the mechanism of size reduction and discuss its importance in pharmaceutical applications.	5	CO1
Q 3	Illustrate and describe the principles and applications of a cyclone separator using a labeled diagram.	5	CO1
Q 4	Describe the principles and construction of a vacuum distillation with a labeled diagram.	5	CO2
Q 5	Describe the principles and working of a filter leaf using a labeled diagram.	5	CO4
Q 6	Write the principle and application of perforated basket centrifuge with a labelled diagram.	5	CO4
Q 7	Write a note on laws governing the radiation exchange from a black body.	5	CO2
Q 8	Discuss the principle and working of steam jacketed kettle using a labelled diagram.	5	CO2
Q 9	Write a detailed note on cast iron, covering its composition, classification and applications.	5	CO5