

<b>Name:</b>	 <b>UPES</b> UNIVERSITY OF TOMORROW
<b>Enrolment No:</b>	

**UPES**

**End Semester Examination, December 2024**

<b>Program:</b> B. Pharm	<b>Semester :</b> III
<b>Course:</b> Pharmaceutical Engineering	<b>Duration :</b> 03 Hours
<b>Course Code:</b> BP304T	<b>Max. Marks:</b> 75
<b>Instructions:</b> Attempt all sections.	

**SECTION A**

**(20Q×1M=20 Marks)**

**Attempt all questions. Each question carries one mark.**

S. No.		Marks	Cos
<b>Q 1</b>	Select the property of an ideal fluid: A. Compressible fluid                      B. Non-viscous fluid C. Plastic fluid                                D. Viscous fluid	1	CO1
<b>Q 2</b>	One of the following uses a thin plate for measuring the flow of fluids. A. Orifice meter                                B. Pitot tube C. Rotameter                                    D. Venturi meter	1	CO1
<b>Q 3</b>	Following is NOT TRUE in case of construction of hammer mill. A. Hammers are flat or sharp edges      B. Hammers are rigid or swing type C. Metal sheet with holes or slots        D. Woven type of screen	1	CO1
<b>Q 4</b>	One of the following is NOT associated with fluid energy mill. A. Consumes less energy                    B. Produces more fines C. Produces cooling                            D. Promotes contamination	1	CO1
<b>Q 5</b>	Disadvantage of the sieve shaker method is — A. Attrition                      B. Capacity limited      C. Expensive equipment    D. Tedious	1	CO1
<b>Q 6</b>	The process used for separating light and heavy particles using a vertically directed stream of liquid is — A. Centrifugation      B. Elutriation              C. Filtration                  D. Levigation	1	CO1
<b>Q 7</b>	In the heat interchanger, finned tubes are used for one of the following purposes. A. Increasing the surface area              B. Introducing steam C. Introducing the cold fluid                D. Reducing the size of apparatus	1	CO2
<b>Q 8</b>	The body that radiates the maximum amount of energy at a given temperature is one of the following. A. Black body                                    B. Grey body C. Light grey body                                D. Polished black body	1	CO2
<b>Q 9</b>	Choose the limitation of using a steam-jacketed kettle from the following. A. High efficiency                              B. Lower installation costs C. Inability to apply reduced pressure      D. Suitable for all types of liquids	1	CO2
<b>Q 10</b>	Select a preferable evaporator suitable for corrosive liquid that gives a crystalline product. A. Falling film evaporator                    B. Forced circulation evaporator C. Horizontal film evaporator                D. Vertical tube evaporator	1	CO2
<b>Q 11</b>	Vacuum pump is attached to which of the following parts of the distillation apparatus? A. Adopter      B. Condenser              C. Receiver                  D. Still	1	CO2
<b>Q 12</b>	In the distillation process, which type of liquid evaporates first? A. Immiscible liquid                            B. Less volatile liquid C. More volatile liquid                         D. Non-volatile liquid	1	CO2
<b>Q 13</b>	Drying is essential after one of the following unit operations. A. Crystallization      B. Evaporation              C. Mixing                      D. Size reduction	1	CO3

<b>Q 14</b>	The type of product that has an equilibrium moisture content (EMC) of practically zero is one of the following. A. Non-porous and insoluble                      B. Non-porous and soluble C. Porous and insoluble                              D. Porous and soluble	1	CO3
<b>Q 15</b>	Name the mechanism in which adjacent particles (in a powder bed) are transferred to another location. A. Convective mixing                                      B. Diffusive mixing C. Negative mixing    D. Positive mixing	1	CO3
<b>Q 16</b>	Silverson emulsifier shears the material through one of the following actions. A. Centrifugal                      B. Suction                      C. Turbine                      D. Ultrasonic vibrations	1	CO3
<b>Q 17</b>	The efficiency of filtration increases if: A. compressibility of solids is high                      B. filter aid is added to the slurry C. filter medium is used                                      D. size distribution of solids is wide in slurry	1	CO4
<b>Q 18</b>	In clarification process, which is the more important factor? A. Depth of the media                                      B. Pore size of the filter media C. Surface area of filter                                      D. Volume of slurry	1	CO4
<b>Q 19</b>	Centrifugal method is used for one of the following process. A. Mixing                      B. Purification                      C. Separation                      D. Sizing	1	CO4
<b>Q 20</b>	In density gradient centrifugation, what is the purpose of the gradient? A. To provide a temperature change                      B. To support the sample tubes C. To separate particles based on buoyant density                      D. To mix the components	1	CO4
<b>SECTION B (20 Marks)</b> <b>(2Q×10M=20 Marks)</b> <b>Attempt 2 Question out of 3.</b>			
<b>Q 1</b>	Illustrate and describe the principle, construction, working, applications, advantages and disadvantages of spray dryer with help of a labeled diagram.	10	CO3
<b>Q 2</b>	Illustrate and describe the principle, construction, working, applications, advantages and disadvantages of flash distillation with help a labeled diagram.	10	CO4
<b>Q 3</b>	Write difference between any four: a) Conduction vs Convection b) Filter Media vs Filter Aid c) Drying vs Evaporation d) Rate-Zonal Centrifugation vs Isopycnic Centrifugation e) Liquid Mixing vs Solid Mixing	10	CO3
<b>SECTION-C (35 Marks)</b> <b>(7Q×5M=35 Marks)</b> <b>Attempt 7 Question out of 9.</b>			
<b>Q 1</b>	Describe the principles and applications of a rotameter using a labeled diagram.	5	CO1
<b>Q 2</b>	Explain the principle and construction of hammer mill.	5	CO1
<b>Q 3</b>	Describe working of a rotary drum filter using a labeled diagram.	5	CO4
<b>Q 4</b>	Write the principle, working and application of perforated basket centrifuge.	5	CO4
<b>Q 5</b>	Discuss the principle and construction of planetary mixer using a labelled diagram.	5	CO3
<b>Q 6</b>	Elaborate on various mechanisms employed in size separation.	5	CO1
<b>Q 7</b>	Discuss Fourier's law of heat transfer and its applications.	5	CO2
<b>Q 8</b>	Describe various factors that affect the rate of evaporation.	5	CO2
<b>Q 9</b>	Write the composition and classification of glasses used in pharmaceutical industry.	5	CO5