

- N.B. : 1. All questions are compulsory
2. Figures to right indicate full marks

Q. 1	Choose appropriate option for following multiple choice based questions.	20
1	Reynolds number depends on one of the following factor.	
a	Viscosity of the liquid	
b	Surface area of the pipe	
c	Roughness of the pipe	
d	Volume of the liquid	
2	Which of the following theory is used for the study of flow of fluids?	
a	Stoke's	
b	Charle's	
c	Raymond's	
d	Bernoulis	
3	Size reduction of potent materials is necessary for one of the following quality control parameters in formulation of dosage forms.	
A	Hardness	
b	Friability	
c	Content uniformity	
D	Mixing	
4	Which theory states that the energy required for size reduction is directly proportional to the new surface area produced?	
a	Griffith's theory	
b	Rittinger's	
c	Kick's theory	
d	Bond's theory	
5	During size separation movement of particles can be enhanced by _____	
a	Agitation	
b	Attrition	
c	Gravitation	
d	Mixing	
6	Economy of multiple effect evaporator is given by the formula	
a	N unit of steam supplied / N units of vapour produced	
b	1 unit of steam supplied / N units of vapour produced	
c	N units of vapour produced / N unit of steam supplied	
d	N units of vapour produced / 1 unit of steam supplied	
7	Process of evaporation can be fastened by	
a	Increasing the boiling point of liquid feed	
b	Decreasing the boiling point of liquid feed	
c	Decreasing the surface area of evaporator	
d	Decrease the time of exposure of the liquid feed to heat	
8	In a shell and tube heat exchanger, baffles are provided on the shell side to	
a	Decreases coefficient of friction	
b	Decreases rate of heat transfer	
c	Prevent stagnation of shell side fluid	
d	Increase the cross-sectional path	
9	Radiation heat transfer is characterized by	
a	Movement of discrete packets of energy as electromagnetic waves	
b	Due to bulk fluid motion, there is a transport of energy	

c	There is the circulation of fluid by buoyancy effects	
d	Thermal energy transfer as vibrational energy in the lattice structure of the material	
10	Stripping area in distillatory refers to _____	
a	Fusing of liquid	
b	Condensation of liquid	
c	Separation of components	
d	Evaporation of liquid	
11	Dry spots are formed during one of the following period?	
a	First Falling period	
b	Constant Rate period	
c	Initial Adjustment period	
d	Second falling period	
12	Which product is not dried by a spray dryer?	
a	Fruit juice	
b	Bacterial & viral cultures	
c	Lactose	
d	Serum	
13	The mixing of liquids at molecular level can be termed as :	
a	Bulk transport	
b	Turbulent mixing	
c	Laminar mixing	
d	Molecular diffusion	
14	Turbulent mixing is a mechanism of mixing.	
a	Solid-solid mixing	
b	Solid-liquid mixing	
c	Liquid-liquid mixing	
d	solids only	
15	One of the following equation gives the rate of filtration	
a	Darcy's equation	
b	Stoke's equation	
c	Vant - Hoff equation	
d	Einstein equation	
16	The sequence of arrangement of plates and frames in filter press can be given by dots as one of the following	
a	1.2.3.1.2.3.1.2	
b	3.2.1.3.2.1.3.2	
c	1.2.3.2.1.3.2.1	
d	1.2.3.2.1.2.3.2	
17	Centrifugal effect is	
a	$F=G/C$	
b	$C = F/G$	
c	$G=F/C$	
d	$C=FG$	
18	Which centrifuge causes considerable breakage of crystals during discharge	
a	Non-perforated basket centrifuge	
b	Supercentrifuge	
c	Semicontinuous horizontal centrifuge	
d	Tubular bowl centrifuge	
19	Which metal makes the steel corrosion resistant?	
a	Chromium and nickel	
b	Copper and selenium	
c	Tantalum and molybdenum	

d	Titanium and niobium	
20	Dry corrosion is also called as _____	
a	Oxidation corrosion	
b	Electrochemical corrosion	
c	Wet corrosion	
d	Chemical corrosion	
Q. 2 A	Answer any one question.	12
a	I. Describe the principle, construction and working of fluidized bed dryer II. Explain Measurement of equilibrium moisture content	
b	I. What is corrosion? Explain different theories of corrosion. II. Describe various types of iron as a material of construction	
Q. 2 B	Answer any four questions	48
a	I. State and explain laws governing size reduction II. Compare and contrast the advantages and disadvantages of Pitot tube and Rotameter	
b	I. Outline the principle, construction and working of horizontal tube evaporator II. Memorize the concept of heat transfer by convection and working of shell and tube heat exchanger	
c	I. Give the basic principle, theory and application of molecular distillation II. Explain the operation of bubble cap plate in fractional distillation	
d	I. Explain principle construction, working and uses of filterleaf. II. Describe principle construction, working and uses of perforated basket centrifuge	
e	Explain factors affecting mixing and add a note on liquid mixing mechanisms	