

Total No. of printed pages = 4

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Roll No. of candidate

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2023

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B.Pharm. 3rd Semester End-Term Examination

(Regular)

PHARMACEUTICAL ENGINEERING THEORY

Full Marks – 75

Time – Three hours

The figures in the margin indicate full marks
for the questions.

Answer question No. 1 and Answer *all* questions.

1. Multiple choice questions (MCQ) :

(20 × 1 = 20)

- (i) According to Fourier's Law, conduction of heat through a metal wall is
- (a) Inversely proportional to temp difference
 - (b) Proportional to area of metal wall
 - (c) proportional to the thickness of the wall
 - (d) Proportional to weight of metal wall
- (ii) Which one of the following bodies radiates maximum amount of energy at a given temperature?
- (a) Grey body
 - (b) Black body
 - (c) Light grey body
 - (d) Polished black body
- (iii) Thermolabile substances CANNOT be dried using
- (a) Drum dryer
 - (b) Lyophilizer
 - (c) Spray dryer
 - (d) Tray dryer
- (iv) Silverson mixer is used for preparation of
- (a) Elixir
 - (b) Emulsion
 - (c) Mouth wash
 - (d) Syrup

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- (v) Containers meant for storage of injections (buffered and un-buffered aqueous solutions) are made from one of the following types of glasses.
- (a) Borosilicate (b) General-purpose
(c) Lime soda (d) Neutral
- (vi) Which of the act is considered for constructing manufacturing plant
- (a) Drugs and Cosmetics act and rules
(b) Federal regulations
(c) Pharmacy act
(d) Shops and establishment act
- (vii) Which one of these is not crystalline form
- (a) Amorphous (b) Hydrates
(c) Polymorphs (d) Pseudomorphs
- (viii) Which one of the following materials are used for the construction of the outer surface of the jacket of steam pans, because of its low thermal conductivity?
- (a) Carbon steel (b) Cast iron
(c) Copper (d) Stainless steel
- (ix) For Drying blood plasma, equipment used is
- (a) Fluidised bed drying (b) Freeze drying
(c) Spray drying (d) Vacuum drying
- (x) Which one of the following equipment is an example of heat transfer by radiation?
- (a) Hot Air Oven (b) Incubator
(c) Microwave oven (d) Refrigerator
- (xi) Factor increasing the efficiency of evaporator
- (a) High moisture content (b) High velocity flow
(c) High viscosity of liquid (d) High volume of liquid

- (xii) Which one of the following is not a mechanism of filtration?
- (a) Entanglement (b) Impact
(c) Impingement (d) Straining
- (xiii) Condenser in distillation unit act as
- (a) Energy exchanger (b) Heat exchanger
(c) Liquid exchanger (d) Material exchanger
- (xiv) Rectification is also known as
- (a) Fractional distillation (b) Molecular distillation
(c) Steam distillation (d) Simple distillation
- (xv) Nominal size of aperture means
- (a) Area of mesh as percentage
(b) Distance between two adjacent wires
(c) Number of meshes per linear length
(d) None of the above
- (xvi) The mechanism of mixing in sigma blade is
- (a) Convective mixing (b) Diffusive mixing
(c) Shearing (d) Tumbling
- (xvii) Theory of filtration is explained by
- (a) Darcy's equation (b) Stefan-Boltzman equation
(c) Stokes equation (d) Dalton's equation
- (xviii) What is the disadvantage of the filter press?
- (a) Filtration media can be used repeatedly
(b) Operation and maintenance is simple
(c) It require less space
(d) Used in proportion of solid in liquid to be filtered in 5% or less
- (xix) Which of the following isn't a mechanism of size reduction
- (a) Impact (b) Attrition
(c) Compression (d) Evaporation
- (xx) No of necks in claisen flask is
- (a) Four (b) One
(c) Three (d) Two

2. Short answers (answer *seven* out of nine) :

(7 × 5 = 35)

- (a) What are the various mode of stress applied for size reduction? Classify the size reducing instruments as per the mode of stress.
- (b) What is corrosion? Name the various types of Corrosion. How can corrosion be prevented?
- (c) What is Centrifugation? Write the theory of centrifugation.
- (d) Discuss about the factors influencing evaporation.
- (e) Write the application of size separation. Mention the official standards of powders according to the IP 1996.
- (f) Write about the construction and working of ball mill.
- (g) Explain the construction, working and uses of rotary drum filter.
- (h) Describe the mechanism of drying process. Explain the operation and working of fluidized bed dryer.
- (i) What do you mean by distillation process? Describe the construction and working of fractional distillation process.

3. Long answers (Answer *two* out of three) :

(2 × 10 = 20)

- (a) Discuss in details about the principle, construction, working and use of Freeze Dryer.
- (b) Derive the Bernoulli's equation stating the assumptions.
- (c) State and explain Fourier's law of heat transmission with equation.