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Azara, Hatkhowapara,  
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**BP 304 T**

Roll No. of candidate

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**2019**

**B.Pharm. 3<sup>rd</sup> Semester End-Term Examination**

**PHARMACEUTICAL ENGINEERING THEORY**

**(New Regulation) (W.e.f 2017-2018)**

Full Marks – 75

Time – Three hours

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

1. Answer the following : (MCQ)

(20 × 1 = 20)

(i) Which of the following state of matter is NOT  
come under fluid?

(a) Solid

(b) Liquid

(c) Gas

(d) Vapour

(ii) The Radiation energy flows through space by  
means of

(a) Mechanical Wave

(b) Electromagnetic Waves

(c) Matter Waves

(d) Radio wave

[Turn over

- (iii) Which is an example of vacuum filter?
- (a) Filter Leaf
  - (b) Cyclone Separator
  - (c) Meta Filter
  - (d) Plate and Frame Filter
- (iv) Injections are stored in following types of glass
- (a) Borosilicate
  - (b) Lime Soda
  - (c) General Purpose
  - (d) Neutral
- (v) Which of the following theory do NOT explain the theory of Filtration?
- (a) Poiseuille's Equation
  - (b) Darcy's Equation
  - (c) Bernoulli's Theorem
  - (d) Kozeny Carman Equation.
- (vi) What is the pore size of membrane filter can remove bacteria form a solution?
- (a)  $0.010 \mu m$  to  $0.10 \mu m$
  - (b)  $0.03 \mu m$  to  $0.65 \mu m$
  - (c)  $0.80 \mu m$  to  $1.2 \mu m$
  - (d)  $3.0 \mu m$  to  $5.0 \mu m$
- (vii) Centrifuges are used for the analysis of dosage forms in terms of one of the following stabilities.
- (a) Chemical Stability
  - (b) Physical Stability
  - (c) Photostability
  - (d) Thermal Stability

(viii) Ball Mill works on the principle of

- (a) Cutting
- (b) Crushing and Shearing
- (c) Attrition and impact
- (d) Impact

(ix) During size separation, movement of particles can be enhanced by one of the following technique

- (a) Agitation
- (b) Attrition
- (c) Gravitation
- (d) Mixing

(x) Which one of these is not crystalline form?

- (a) Amorphous
- (b) Hydrates
- (c) Polymorphs
- (d) Pseudomorphs

(xi) The mechanism of mixing in sigma blade is

- (a) Convective mixing
- (b) Diffusive mixing
- (c) Shearing
- (d) Tumbling

(xii) Which one of the following mechanism is NOT for solid?

- (a) Convective Mixing
- (b) Shear Mixing
- (c) Diffusive Mixing
- (d) Laminar Mixing

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- (xiii) Reynolds number depends on one of the following factors
- (a) Roughness of the pipe
  - (b) Surface area of the pipe
  - (c) Viscosity of the liquid
  - (d) Volume of the liquid
- (xiv) 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
- (xv) Factor increasing the efficiency of evaporator
- (a) High moisture content
  - (b) High velocity flow
  - (c) High viscosity of liquid
  - (d) High volume of liquid
- (xvi) Thermolabile substances CANNOT be dried using
- (a) Drum dryer
  - (b) Lyophilizer
  - (c) Spray dryer
  - (d) Tray dryer
- (xvii) Real solutions are the solutions which deviate from the following laws.
- (a) Dalton's Law
  - (b) Raoult's Law
  - (c) Ideal Solution
  - (d) Both (a) and (b)

(xviii) Which liquid distils first among the followings?

- (a) Benzene                      (b) Glycerine  
(c) Phenol                        (d) Toluen

(xix) Fourier's law is applicable to one of the following types of heat flow.

- (a) Conduction  
(b) Convection  
(c) Emission  
(d) Radiation

(xx) 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

2. Answer any seven questions. (7 × 5 = 35)

- (a) Explain the mechanisms of mixing in solids.  
(b) What are the various mode of stress applied for size reduction? Classify the size reducing instruments as per the mode of stress.  
(c) What is drying? Write the objectives, applications & mechanism of drying process.  
(d) Write a note on Black Body and Grey Body.  
(e) What are the Mechanisms of Filtration? Write the difference between surface and depth filtration type.  
(f) Describe the theory of centrifugation.

- (g) Write about the construction and working of ball mill.
- (h) Write the application of size separation. Mention the official standards of powders according to the IP 1996.
- (i) Explain the factors influencing the selection of milling equipment.
- (j) Explain the simple distillation process with neat diagram.

3. Answer any two questions. (2 × 10 = 20)

- (a) Derive the Bernoulli's Theorem for flow of fluids.
  - (b) Explain the theories of Filtration and write the construction, working, uses, merits and demerits of plate and frame filter.
  - (c) Write the mechanism of Drying in details. Explain the principles, construction, working, uses, merits and demerits of Tray dryer
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