

Exam Date &amp; Time: 05-Dec-2018 (09:30 AM - 12:30 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

BPharm Semester III - End Semester Examination December 2018  
 Course Code: PCE-BP304T Course Title: Pharmaceutical Engineering  
 Date: 05-12-2018

Pharmaceutical Engineering [PCE-BP 304T]

Marks: 75

Duration: 180 mins.

### I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

- 1) Which is the principle difference that influences centrifugation?  
 1) Densities      2) Interfacial tensions      3) Particle sizes      4) Viscosities      (1)
- 2) Centrifugal method is used for one of the following process.  
 1) Mixing      2) Drying      3) Separation      4) Sizing      (1)
- 3) Which one of the properties is responsible for the use of mercury in manometers?  
 1) High surface tension      2) High vapour pressure      3) Low specific gravity      4) Low vapour pressure      (1)
- 4) Which one of the following experiments is used for the study of flow of fluids?  
 1) Bernoulis      2) Orifice meter      3) Reynolds      4) Stokes      (1)
- 5) ..... is used in the separation of solids from fluids by cyclone separator.  
 1) Gravitational force      2) Centrifugal force      3) Tension force      4) Spring force      (1)
- 6) Which principle operates in the hammer mill?  
 1) Attrition      2) Crushing      3) Cutting      4) Impact      (1)
- 7) Which one of the following dryers is known as lyophilizer?  
 1) Fluidized bed dryer      2) Spray dryer      3) Freeze dryer      4) Tray dryer      (1)
- 8) Hot spots are formed during one of the following periods of drying?  
 1) Constant rate period      2) First falling period      3) Initial readjustment period      4) Second falling period      (1)
- 9) In which type of mixer, the trough is stationary?      (1)

- 1) Barrel mixer      2) Double cone blender      3) Ribbon mixer      4) Zigzag mixer
- 10) Uneven mixing leads mainly to one of the following problems in tablets manufacture? (1)
  - Content
  - 1) uniformity variation      2) Disintegration time fluctuates      3) Friability problems      4) Poor flow of granules
- 11) In the heat interchanger, finned tubes are used for one of the following purposes. (1)
  - Increasing
  - 1) the surface area      2) Introducing steam      3) Introducing the cold fluid      4) Reducing the size of apparatus
- 12) Fourier's law is applicable to one of the following types of heat flow. (1)
  - 1) Conduction      2) Convection      3) Emission      4) Radiation
- 13) Which one of the following is not a theory of corrosion? (1)
  - Acid
  - 1) theory of corrosion      2) Chemical theory of corrosion      3) Galvanic theory of corrosion      4) Bronsted theory of corrosion
- 14) One of the following equations is used for explaining the theory of filtration? (1)
  - 1) Darcy's equation      2) Stefan-Boltzmann equation      3) Stokes equation      4) Dalton's equation
- 15) Which one of the following mechanism is involved in case of meta filter? (1)
  - 1) Cake filtration      2) Depth filtration      3) Surface filtration      4) Zig zag filtration
- 16) Which of the following factors do not affect rate of evaporation? (1)
  - 1) Temperature of liquid      2) Humidity of surrounding air      3) Depth of liquid      4) Surface of liquid
- 17) The rate of evaporation increases if surface area of liquid is (1)
  - 1) Large      2) Small      3) Moderate      4) None of the above
- 18) The process of separation between components of the mixture containing miscible volatile liquids having different but close boiling points is called (1)
  - 1) Rectification      2) Distillation      3) Evaporation      4) Condensation
- 19) Which one of the following is not a physical factor affecting selection of materials for Pharmaceutical plant construction? (1)
  - 1) Mass      2) Wear properties      3) Thermal conductivity      4) Corrosion of material of construction

Corrosion can be prevented by

- |                         |                       |                    |              |     |
|-------------------------|-----------------------|--------------------|--------------|-----|
| Use of                  |                       | By changing        | All of       | (1) |
| 1) Corrosion inhibitors | 2) Coating and lining | 3) the environment | 4) the above |     |

### II Long Answers

Answer all the questions.

- 1)
  - a) Describe drying rate curve.
  - b) Explain the principle, construction and working of perforated basket centrifuge. (10)
- 2) Explain principle, construction, working, uses, merits and demerits of steam distillation process (10)

### III Short Answers

Answer all the questions.

- 1) Explain the principle, construction and working of ball mill. (5)
- 2) Discuss the construction and working of sieve shaker. (5)
- 3) State Bernoulli's theorem with equation and give two applications. (5)
- 4) Write short notes on construction and working of double cone blender. (5)
- 5) Explain the working of multiple effect evaporator (5)
- 6) Explain the working of any one of heat exchanger with a labelled diagram (5)
- 7) Explain different types of glasses used in pharma industry (5)

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