B. Pharm. (CBCS Pattern) Semester - III
BP304T - Pharmaceutical Engineering

P. Pages : 3

Time : Three Hours

GUG/S/23/10887

Max. Marks : 75

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Notes : 1. Assume suitable data wherever necessary.

2. Diagrams and Chemical equation should be given wherever necessary.

3. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.

4. All questions are compulsory.

5. Illustrate your answers wherever necessary with the help of neat sketches.

1. Multiple Choice Questions. **1x20 =20**

1) Heat transfer in solid occur by
   a) conduction
   b) convection
   c) radiation
   d) forced convection

2) What is the use of high pressure nozzle or a whirling disk in a spray dryer?
   a) Increasing contact time
   b) Decreasing contact time
   c) Agitation
   d) Atomization

3) Which one of these doesn't contain any filter medium?
   a) Filter leaf
   b) Meta filter
   c) Filter press
   d) None of the above

4) The rate of filtration is expressed in from of
   a) Fick's law
   b) Darcy's law
   c) Stoke's law
   d) None of the above

5) For separation of emulsion which centrifuge use
   a) perforated basket centrifuge
   b) super centrifuge
   c) semi continuous centrifuge
   d) continuous horizontal centrifuge

6) Economy of Multiple effect evaporator is -------- than single effect evaporator.
   a) smaller
   b) greater
   c) equal
   d) none

7) Orifice meter is referred as ------
   a) Variable head meter
   b) Insertion meter
   c) Variable area meter
   d) Both a & b

8) An example of corrosion inhibitor is
   a) ceramic
   b) chromates
   c) plastic
   d) carbon brick

9) Which property of fluid account for the major losses in pipe?
   a) Density
   b) Specific gravity
   c) Viscosity
   d) Compressibility

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10) The difference in pressure head, ΔH can be read by --------
   a) Galvanometer
   b) Photometer
   c) Manometer
   d) None of these

11) Which theory states that the energy required for size reduction is directly proportional to new surface area produced.
   a) Griffith theory
   b) Rittinger's theory
   c) Bond theory
   d) Kick theory

12) A mixing mechanism in solid where in large masses of materials move from one location to another is termed as
   a) convective
   b) diffusive
   c) micro
   d) shear

13) Treated soda lime glass comes under
   a) type – I
   b) type – II
   c) type – III
   d) type – IV

14) Example of static mixer
   a) ribbon blender
   b) sigma blender
   c) None of above
   d) All of the above

15) One of the following is a sedimentation centrifuge.
   a) perforated backet centrifuge
   b) super centrifuge
   c) semi continuous centrifuge
   d) automatic batch centrifuge

16) The frictional resistance for fluid in motion is ------
   a) Inversely proportional to the square of the surface area of its contact.
   b) Inversely proportional to the square of the surface area of contact
   c) Proportional to the square of surface area of contact
   d) Proportional to the surface area of contact.

17) The sequence of arrangement of plate and frame in filter press is
   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

18) A cyclone separator is present in one of the evaporator.
   a) vertical tube evaporator
   b) forced circulation evaporator
   c) horizontal tube evaporator
   d) steam jacketed kettle

19) One of the following is static bed dryer.
   a) tray dryer
   b) drum dryer
   c) spray dryer
   d) fluidized bed dryer

20) Which one these for bacterial filtration?
   a) Membrane filter
   b) Sintered glass filter
   c) Filter paper
   d) None of the above

2.   Solve **any two.**   **20**

    a)   What do you mean by filter media and filter aids? Classify filtration equipment. Discuss in detail filter press and meta filter.

    b)   Explain various modes of size reduction. Discuss principle, construction and working of ball mill and fluid energy mill.

    c)   Write the principle and working of multiple effect evaporation. With the help of well labelled diagram, explain how is its economy calculated?

3.   Solve **any seven.**   **35**

    a)   Explain various grades of powder and sieve number as per IP.

    b)   Discuss types of corrosion in detail.

    c)   Explain mechanisms of mixing in solids. Classify equipment based on flow properties of powders.

    d)   Describe the term centrifugal effect. Write the principle and working of perforated basket centrifuge.

    e)   Mention different mechanisms of heat transfer with an account of their respective equations.

    f)   Enlist various equipment's used for distillation. Write the principle of molecular distillation.

    g)   Give Bernoulli's theorem with its applications.

    h)   Write a note on Fluidized bed dryer.

    i)   State the factors affecting during materials selection for pharmaceutical plant construction.

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