BRAINWARE UNIVERSITY

Term End Examination 2019 – 20

Programme – Bachelor of Pharmaceutical Technology

Course Name – Pharmaceutical Engineering

Course Code – BP304T

(Semester – 3)

Time allotted: 3 Hours   **Full Marks: 75**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Question)   20 x 1 = 20

1.   Answer all the questions

(i)   "Impact" is the mechanism of size reduction for which of the following mill?

      a. Roller mill   b. Cutter mill

      c. Hammer mill   d. Fluid energy mill

(ii)   In cyclone separator, a powder is separated depending on its-

      a. Particle size   b. Density

      c. Particle size and density   d. Shape

(iii)   Preparation of fine emulsion from coarse emulsion is called as-

      a. Homogenization   b. Size separation

      c. Mixing   d. Creaming

(iv)   The process of converting vapour from solid state is known as-

      a. Evaporation   b. Distillation

      c. Sterilization   d. Sublimation

(v)   The major mechanism of mixing in sigma blade is-

      a. Convective mixing   b. Diffusive mixing

      c. Shear force   d. Tumbling

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(vi)   Size reduction of a brittle thermolabile substance should be done by-

      a. Cutter mill   b. Hammer mill

      c. Colloid mill   d. Fluid energy mill

(vii)   Which one of the following mill is not suitable for the thermo labile materials?

      a. Cutter mill   b. Hammer mill

      c. Colloid mill   d. All of the above

(viii)   Size separation is not based on -

      a. Particle density   b. Particle shape

      c. Particle size   d. Particle texture

(ix)   Which of the following dryer is known as lyophilizer?

      a. Fluidized bed dryer   b. Freeze dryer

      c. Spray dryer   d. Vacuum dryer

(x)   Distillation involves -

      a. Vapourization   b. Vapourization and condensation

      c. Condensation and crystallization   d. Crystallization and drying

(xi)   Claisen flask contains _____ number of necks.

      a. One   b. Two

      c. Three   d. Four

(xii)   For membrane filters, which pore size is effective to remove all the bacteria?

      a. $0.55\,\mu$ b. $0.44\,\mu$

      c. $0.30\,\mu$ d. $0.2\,\mu$

(xiii)   Filtration is an unit operation commonly used for collecting-

      a. Filtrate   b. Particulate matter

      c. Precipitate   d. Slurry

(xiv)   Which one of the following is not a mechanism of filtration?

      a. Entanglement   b. Impact

      c. Impingement   d. Straining

(xv)   Which of the following filter is made of polypropylene?

      a. Cartridge filter   b. Leaf filter

      c. Membrane filter   d. Rotary drum filter

(xvi)   The velocity of centrifuge is commonly expressed in terms of the following units-

    a. Diameter of the rotation   b. Meter per second square

    c. Meter square per second   d. Revolutions per minute

(xvii)   Reynolds number is indicative of one of the following-

    a. Fluid flow type   b. Frictional factor

    c. Pumping rate   d. Roughness of the pipe

(xviii)   In a pipe, laminar flow has a centre line velocity of 0.1 m/s. What is the average velocity?

    a. 5 cm/s   b. 10 cm/s

    c. 15 cm/s   d. 20 cm/s

(xix)   Which one of the following does not require manometer in the construction of flow meters?

    a. Venturi meter   b. Pilot tube

    c. Rotameter   d. Orifice meter

(xx)   Amber coloured glass gives special protection from-

    a. Hydrolysis   b. Oxidation

    c. Photolysis   d. Reduction

Group – B

(Short Answer Type Questions)

                                                           7 x 5 = 35

Answer any *seven* from the following

2.   Describe the factors affecting the selection of milling equipment for size reduction.   5

3.   With a neat diagram describe the construction and working of a hammer mill.   5

4.   Describe the specification of standard sieves as per I.P.   5

5.   With the help of a diagram, explain the construction and working of sigma blade mixer.   5

6.   With a neat diagram, explain the principle, construction and working of fluidized bed dryer.   5

7.   With a neat diagram briefly discuss about distillation under reduced pressure.   5

8.   Discuss the applications, advantages and limitations of different kind of plastics in pharmaceutical industry.   5

9.   Write a note on corrosion and its prevention.   3+2

10.   Define mixing. List out the applications of mixing in pharmaceutical field.   5

Group – C

(Long Answer Type Questions)
$2 \times 10 = 20$

Answer any *two* from the following

11.. With a labelled diagram describe the principle, construction and working of Silverson emulsifier.   10

12. Define filtration. Describe Kozeny- Carman equation and give its significance. Explain the mechanisms of filtration.   1+3+6

13. With a neat diagram, briefly describe the principle, construction, working and use of supercentrifuge.   10