



BRAINWARE UNIVERSITY
Term End Examination 2020 - 21
Programme – Bachelor of Pharmacy
Course Name – Pharmaceutical Engineering
Course Code - BP304T

Semester / Year - Semester III

Time allotted : 90 Minutes

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)

1 x 75=75

1. (Answer any Seventy five)

(i) Which of the following properties is responsible for the use of mercury in manometers?

- | | |
|-------------------------|-------------------------|
| a) High surface tension | b) High vapour pressure |
| c) Low specific gravity | d) Low vapour pressure |

(ii) How many liquids are used in differential manometer?

- | | |
|----------|--------|
| a) Four | b) One |
| c) Three | d) Two |

(iii) 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 |

(iv) The loss of head due to sudden enlargement in a pipe depends on the following differences

- | | |
|------------------|----------------|
| a) Diameters | b) Flow rates |
| c) Surface areas | d) Viscosities |

(v) 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

(vi) Displacement meter is used to measure one of the following-

a) Head loss of liquid

b) Velocity of liquid

c) Volume of liquid

d) Weight of liquid

(vii) Fluid energy mill works in the principle of -

a) Impact

b) Impact and attrition

c) Compression

d) Attrition

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

a) Particle size

b) Density

c) Particle size and density

d) Shape

(ix) The SI unit of energy is -

a) Kelvin

b) Joule

c) Meter

d) Calorie

(x) According to Bernoulli's theorem, if the speed is high, the pressure will be-

a) High

b) Low

c) Medium

d) Zero

(xi) Which of the following equipment is used for sieve analysis?

a) Alpine airjet sieve

b) Cyclone separator

c) Rotex screen

d) Shaking screen

(xii) Which one of the following is a disadvantage of sieve shaker method?

a) Attrition

b) Capacity limited

c) Expensive

d) Tedious

- (xiii) During size separation, movement of particles can be enhanced by-
- a) Agitation
 - b) Attrition
 - c) Gravitation
 - d) Mixing
- (xiv) Ball mill should be operated at
- a) Low speed
 - b) High speed
 - c) Optimum speed
 - d) Very low speed
- (xv) Which one of the following is not a purpose of size reduction?
- a) Physical stability
 - b) Increased dissolution rate
 - c) Increased absorption
 - d) Improved particle density
- (xvi) Most commonly used size separating instrument in laboratory is -
- a) Cyclone separator
 - b) Sedimentation tank
 - c) Sieve shaker
 - d) Collloid mill
- (xvii) Less than 2000 Reynolds number indicates-
- a) Turbulent flow
 - b) Transition flow
 - c) Centrifugal flow
 - d) Laminar flow
- (xviii) Which of the following device is used for temporary flow measurement?
- a) Displacement meter
 - b) Pilot static tube
 - c) Orifice plate
 - d) Venturi meter
- (xix) Rotameter tube is made up of-
- a) Glass
 - b) Tin
 - c) Plastic
 - d) Wood
- (xx) Suspension of a solid in a gas can be separated by
- a) Sieve shaker
 - b) Ball mill

c) Cyclone separator

d) Silverson emulsifier

(xxi) In SI system, the unit of conductance is-

a) W/m^2

b) W/m

c) $W/^\circ K$

d) $W/m^\circ K$

(xxii) Which of the following has lowest overall heat transfer coefficient?

a) Water

b) Dowtherm

c) Molten sodium

d) Air

(xxiii) What is the emissivity of a black body?

a) 0

b) 0.25

c) 0.5

d) 1

(xxiv) Which one of the following acts as source of heat for most of the evaporators?

a) Coal

b) Hot water

c) Oil bath

d) Steam

(xxv) Heat sensitive materials can be concentrated in an evaporator employing

a) Low pressure

b) High pressure

c) Vacuum

d) High residence time

(xxvi) Separation of liquids by distillation is based on the principle of-

a) Boiling point

b) Miscibility

c) Vapour pressure

d) Viscosity

(xxvii) Which law satisfies the batch type distillation of a binary system for separation?

a) Dalton's law

b) Raoult's law

c) Rayleigh's law

d) Stokes law

(xxviii) Which one of the following method is also known as differential distillation?

- a) Azeotropic distillation
- b) Molecular distillation
- c) Simple distillation
- d) Steam distillation

(xxix) Which distillation method is used to prepare aromatic spirit of ammonia?

- a) Flash Distillation
- b) Fractional distillation
- c) Molecular distillation
- d) Simple distillation

(xxx) Molecular distillation is used for the purification of-

- a) Carbohydrates
- b) Fats
- c) Proteins
- d) Volatile oils

(xxxi) When a substance is dissolved in a liquid, the vapour pressure of the liquid is -

- a) Decreased
- b) Increased
- c) Unchanged
- d) Initially increase then decrease

(xxxii) Duhring's rule is related to

- a) Crystallization
- b) Distillation
- c) Filtration
- d) Size reduction

(xxxiii) Which one of the following is most widely used method for extraction of volatile oils?

- a) Steam distillation
- b) Azeotropic distillation
- c) Molecular distillation
- d) Destructive distillation

(xxxiv) Silveson emulsifier shears the material by using-

- a) Suction force
- b) Centrifugal force
- c) Turbines
- d) Ultrasonic vibrations

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

- a) Evaporation
- b) Distillation
- c) Sterilization
- d) Sublimation

(xxxvi) Removal of small amount of moisture from sample is known as-

- a) Drying
- b) Distillation
- c) Filtration
- d) Conduction

(xxxvii) Which one of the following operation, should be followed by drying?

- a) Crystallization
- b) Evaporation
- c) Mixing
- d) Size reduction

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

- a) Fluidized bed dryer
- b) Freeze dryer
- c) Spray dryer
- d) Vacuum dryer

(xxxix) In drying process, the final product is in the form of-

- a) Slurry
- b) Solid
- c) Solution
- d) Solvent concentrate

(xl) In which one of the following drying process high vacuum is applied?

- a) Drum drying
- b) Freeze drying
- c) Spray drying
- d) Tray drying

(xli) In fluidized bed dryer, prefilter is used to filter-

- a) Air
- b) Fines
- c) Moisture
- d) Particles

(xlii) Surface tension is expressed in-

- a) Centi poise
- b) Poise

c) N/m²

d) Dynes/ cm

(xlili) Vortex formation is a common problem in-

a) Liquid mixing

b) Mixing of solids

c) Size reduction

d) Distillation

(xliv) Filter aids are mainly used when:

a) Liquid is required as product

b) Filter medium is not available

c) Solid are required as product

d) None of these

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

a) Entanglement

b) Impact

c) Impingement

d) Straining

(xlvi) Which one of the following is not a filter aid?

a) Diatomite

b) Carbon

c) Asbestos

d) Gelatin

(xlvii) Integrity tests are intended for following filters:

a) Leaf filters

b) Membrane filters

c) Drum filters

d) Edge filter

(xlviii) Clarification is the term used when the solid content of the product

a) Doesn't exceed 1%

b) Exceeds 5%

c) Exceeds 15%

d) Exceeds 20 %

(xlix) The process to separate insoluble particles from a liquid medium is known as-

a) Sieving

b) Filtration

c) Drying

d) Extraction

(l) During filtration, if the tip of the funnel touches the side of the beaker, it avoids-

- a) Backflow
- b) Bubbling
- c) Bumping
- d) Splashing

(li) Which one of the following is not an example of rotary vacuum filter?

- a) Scrapper discharge
- b) String discharge
- c) Scrapper discharge with drum precoating
- d) Vertical metal leaf filter

(lii) Which is the principle difference that influences centrifugation?

- a) Density
- b) Interfacial tension
- c) Particle size
- d) Viscosity

(liii) Which one of the following forces greatly enhances the separation force?

- a) Brownian force
- b) Centrifugal force
- c) Gravitational force
- d) Van der Walls force

(liv) Centrifugation is useful in one of the following types of dispersion -

- a) Coarse dispersion
- b) Colloidal dispersion
- c) Molecular dispersion
- d) Multi- size dispersion

(lv) For a sedimentation type, the centrifuge has one of the following conditions-

- a) Basket is non- perforated
- b) Basket is perforated
- c) Containing filter aid
- d) Containing filter medium

(lvi) Washing of solid is not possible in one of the following centrifuge-

- a) Non-perforated basket centrifuge
- b) Perforated basket centrifuge
- c) Semi- continuous centrifuge
- d) Super centrifuge

(lvii) 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

(lviii) Which is the preferred method of clarification of wine?

- a) Chromatography
- b) Precipitation
- c) Centrifugation
- d) Foam separation

(lix) Type I glass is also known as-

- a) Soda lime glass
- b) Treated soda lime glass
- c) Type NP glass
- d) Borosilicate glass

(lx) Amber coloured glass gives special protection from-

- a) Hydrolysis
- b) Oxidation
- c) Photolysis
- d) Reduction

(lxi) Fragility is a common disadvantage for

- a) Glass
- b) Plastic
- c) Rubber
- d) Metal

(lxii) Carbon steel is a type of-

- a) Stainless steel
- b) Cast iron
- c) Ferrous metal & alloys
- d) Nickel and its alloys

(lxiii) 2-chlorobuta-1,3-diene is the common name for-

- a) Neoprene rubber
- b) Nitrile rubber
- c) Butyl rubber
- d) Silicone rubber

(lxiv) Removal of components from the formulation through the container wall is known as-

- a) Sorption
- b) Desorption

c) Chemical reaction

d) Leaching

(lxv) Valve and actuator is used for -

a) Liquid dosage form

b) Semisolid dosage form

c) Aerosols

d) Solid dosage form

(lxvi) Transmission of gases, vapours, liquids through plastic packaging system is known as-

a) Permeation

b) Leaching

c) Sorption

d) Alteration

(lxvii) Collapsible tubes made from lead is not used in pharmaceutical packaging due to -

a) Inferior metal

b) Soft nature

c) Risk of poisoning

d) Inferior appearance

(lxviii) Hydrolytic resistance test is performed for glass to find out -

a) Mechanical strength

b) Melting point

c) Limit of alkalinity liberated by it

d) Quality

(lxix) Which one of the following is not a physical property in selection of material for pharmaceutical plant construction?

a) Strength

b) Wear properties

c) Sterilization

d) Cost

(lxx) The mechanical strength of aluminium is greatly affected over

a) 100 °C

b) 125 °C

c) 150 °C

d) 200 °C

(lxxi) Which one of the following is not a chemical corrosion?

a) Oxidation corrosion

b) Corrosion by hydrogen

c) Liquid metal corrosion

d) Wet corrosion

(lxxii) Which of the following is not included in WHO GMP guidelines in pharmaceutical plant construction?

a) General facilities

b) Space allocation

c) Clinical trials

d) Warehousing

(lxxiii) The word "ICH" stands for-

a) International Conference of Harmonization

b) International Community of Harmonization

c) Indian Conference of Humanity

d) Indian Community of Harmonization

(lxxiv) Rusting of iron is considered as-

a) Addition

b) Corrosion

c) Compression

d) Precipitation

(lxxv) Which of the following is not an example of combined state metal?

a) Iron Oxide

b) Zinc oxide

c) Calcium carbonate

d) Aluminium