BRAINWARE UNIVERSITY

Term End Examination 2021 - 22
Programme – Bachelor of Pharmacy
Course Name – Biopharmaceutics and Pharmacokinetics
Course Code - BP604T
(Semester VI)

Time allotted : 1 Hrs.30 Min. **Full Marks : 75**

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question) 1 x 75=75

Choose the correct alternative from the following :

(1) What are the characteristics of continuous release systems?

a) Release the drug along the entire length of GIT
b) Prolonged their residence in the GIT and release
c) Release only at a specific drug
d) Release as soon as comes in contact to the saliva

(2) What is the characteristic of dissolution for controlled release systems?

a) Release the drug along the entire length of GIT
b) Prolonged their residence in the GIT and release
c) Release only at a specific drug
d) Very slow dissolution rate

(3) What is the characteristic of encapsulation or coating dissolution-controlled release systems?

a) Microencapsulation using slowly dissolving materials
b) Prolonged their residence in the GIT and release
c) Release only at a specific drug
d) Employ waxes to control the rate of dissolution

(4) What are the characteristics of diffusion-controlled release systems?

a) Release the drug along the entire length of GIT
b) Diffusion of the dissolved drug
c) Release only at a specific drug
d) Employ waxes to control the rate of dissolution

(5) What are the characteristics of Matrix diffusion-controlled release systems?

a) Release the drug along the entire length of GIT
b) Drug disperse in an insoluble matrix of rigid hydrophobic materials
c) Release only at a specific drug
d) Employ waxes to control the rate of dissolution

(6) What are the characteristics of reservoir devices-controlled release systems?

a) Release the drug along the entire length of GI T
b) Drug disperse in the insoluble matrix of rigid hydrophobic materials
c) Hollow systems containing drug surrounded b y a polymer membrane
d) Employ waxes to control the rate of dissolutio n

(7) What is the characteristic of pH-independent formulations?

a) Buffering agents that adjust pH to the desired value
b) Drug disperse in the insoluble matrix of rigid hydrophobic materials
c) Hollow systems containing drug surrounded b y a polymer membrane
d) Formation of complexes between the drug and anion/cation exchange resins

(8) What is the driving force for Passive Diffusion?

a) Concentration gradient only
b) Electrochemical gradient only
c) Charge equilibration and concentration gradie nt
d) Concentration and Electrochemical gradient

(9) What is the driving force of pore transport?

a) Hydrostatic pressure
b) Concentration gradient
c) Electrochemical gradient
d) Charge equilibration

(10) What will be the best definition for “carrier”?

a) Nonpolar drugs can be transported through car rier-mediated transport
b) Carrier binds reversibly and no covalently wit h the molecules
c) It discharges the molecules and gets destroyed itself
d) The carrier is a protein

(11) What influences the permeation of drugs in an Ionic or Electrochemical diffusion?

a) Charge on the membrane
b) Charge on the particle
c) Concentration gradient
d) Equilibration of charge

(12) What is the major difference between facilitated diffusion and passive diffusion?

a) Carrier-mediated transport
b) Downhill transport
c) Energy is used
d) Inhibition by metabolic poisons

(13) Which drugs are absorbed through pore transport?

a) High lipophilicity
b) Water-soluble drugs of molecular weight less t han 100 Dalton
c) Oily droplets
d) Affinity for carriers

(14) Which of these absorption methods involves engulfing of the extracellular drug?

a) Endocytosis
b) Passive diffusion
c) Facilitated diffusion
d) Ion-pair transport

(15) What is the other name of “cell eating”?

a) Transcytosis
b) Phagocytosis
c) Pinocytosis
d) Endocytosis

(16) Proteins interact with which part of the cell membrane?

a) Hydrophobic tail
b) Polar head
c) Non polar head
d) Hydrophilic tail

(17) What helps in the passing of inorganic ions?

a) Ion channels
b) Voltage gated channels
c) Aqueous filled pores
d) Diffusion

(18) The cell membrane is _____ in nature.

a) Impermeable
b) Semipermeable

c) Permeable
d) Permeable to only gases

(19) What is the most important characteristic of a drug to be absorbed after oral administration?

a) Dissolved in HCL
b) Dissolved in alkaline solution
c) Can pass through the cell membrane
d) Form aggregate and settle down

(20) Gastrointestinal route is an example of which of the major drug delivery routes?

a) The enteral route
b) The parenteral route
c) The topical route
d) The intravenous route

(21) The onset of drug action depends on the rate of:

a) Drug absorption
b) Drug dissociation
c) pH
d) GI motility

(22) Movement of ions through the pores in cell membrane can be controlled by-

a) Counter ion transport
b) Expenditure of intracellular energy
c) Both a & b
d) None of these

(23) What happens when an obese person is given with a lipophilic drug?

a) Drug aggregation will begin
b) He cannot absorb lipophilic drugs
c) High adipose tissue take up most of the lipophilic drug
d) A large amount of drug is needed as the person's weight is more

(24) Who has poorly developed BBB?-

a) Infants
b) Adults Of age more than 20
c) Aged
d) Children at puberty

(25) What should be the molecular weight of the drug molecules so that they can easily pass through the membrane?

a) 600-800 Dalton
b) 500-600 Dalton
c) 300-500 Dalton
d) 200-400 Dalton

(26) Which type of drug cannot enter the cell membrane in the below picture?

a) Ionized drug
b) Unionized drug
c) Hydrolyzed drug
d) Unhydrated drug

(27) Which drugs cannot pass the capillary endothelial barrier?

a) Molecular size less than 600 Dalton
b) Drugs bound to blood components
c) Drugs bound to a chemical moiety
d) All drugs can pass

(28) Which of the following drug cannot pass through the plasma membrane barrier?

a) Drug size less than 50 Dalton
b) Lipophilic drugs 50-600 Dalton
c) Polar or ionized drugs of size greater than 50 Dalton
d) Drug size more than 600 Dalton

(29) What is the name of the specialized cells that support the blood-brain barrier tissue?

a) Astrocytes
b) Dendrites
c) Fat cells
d) Endothelial cells

(30) Why dopamine cannot be administered for the disease parkinsonism?

a) Don't have a medicine
b) It is not the medicine
c) Cannot cross the blood-brain barrier
d) Forms aggregate and thus cannot cross the BBB

(31) In equation, X=Vd*C, what does Vd denotes?

a) Density
b) Volume of blood
c) Volume of body
d) Volume of distribution

(32) How can you determine the extracellular fluid volume?

a) Evans blue
b) Na+
c) D20
d) Tritiated water

(33) Which one of the below does not belong to the 4 classes of lipoprotein?

a) Chylomicrons
b) Very low-density lipoproteins
c) High-density lipoprotein
d) Fatty acids

(34) Which drugs bind to RBC membrane?

a) Pentobarbital
b) Acetazolamide
c) Imipramine
d) Phenytoin

(35) Which one of the following is the principal organ for drug excretion?

a) Lungs
b) Liver
c) Kidneys
d) Sweat glands

(36) Which compounds are excreted through the lungs?

a) Lipophilic
b) Gaseous
c) Liquid and hydrophilic
d) Solid less than 100 Dalton

(37) Which of the following compounds are used as agents to determine glomerular filtration r ate?

a) Calcium ion
b) Albumin
c) Creatinine
d) Calcium carbonate

(38) What is the equation for clearance?

a) Elimination rate / plasma drug concentration
b) Plasma drug concentration/elimination rate
c) 1 / Plasma drug concentration
d) 1 / Elimination rate

(39) What will be the renal clearance ratio of a drug whose renal clearance is 40 ml/min and th e clearance of creatinine is 95 ml/min?

a) 0.421
b) 2.38
c) 0.010
d) 0.025

(40) Which drugs cannot be filtered through glomerulus?

a) Drugs bound to plasma proteins
b) Unbound
c) Free drug
d) Below molecular weight of 300 Dalton

(41) What is the equation of bioavailable fraction?

a) 1/Bioavailable dose
b) 1/Administered dose
c) Bioavailable dose/ Administered dose
d) Administered dose/ Bioavailable dose

(42) Which of the following is not an important parameter of plasma level time studies?

a) Cmax
b) Tmax
c) The area under the plasma level-time curve
d) Steady state level

(43) Which of the following will not be a parameter that should be examined for urinary excret ion data?

a) (dXu/dt)max
b) (tu)max
c) Xu
d) Cmax

(44) What should be the disadvantage of cross over study on volunteers?

a) Minimize the intersubject variability in plasma drug levels
b) Minimize the carry-over effect
c) Minimizes variations due to time effect
d) Takes a lot of time to get the result of the stud y

(45) A drug can be 100 % bioavailable, if it is administered by-

a) Oral route
b) Intravenous route
c) Transdermal route
d) Rectal route

(46) How much time does an intravenously administered drug take to complete a complete circ ulation?

a) 5-8 min
b) 7-10 min
c) 1-3 min
d) 1 min

(47) What is the equation to find out the apparent volume of distribution?

a) Amount of drug in the body/plasma drug conc entration
b) Plasma drugconcentration/amount of drug in t he body
c) 1 / plasma drug concentration
d) 1 / Amount of drug in the body

(48) To have a plasma distribution value of 900 ml and plasma drug concentration to be 1.2 m g/ml what should be the amount of drug that should be given to the patient?

a) 1080 ml
b) 1080 g
c) 1080 mg
d) 1g/ml

(49) Which organ comprises the peripheral compartment in a two compartment model?

a) Liver
b) Lungs
c) Kidneys
d) Muscles

(50) In which of the following models the body is considered to be composed of several compa rtments?

a) Compartment model
b) Noncompartment model
c) Physiologic model
d) Human model

(51) Which organs will make up the peripheral compartment?

a) Lungs
b) Liver
c) Kidneys
d) Pancreas

(52) Which of the following is not a characteristic of the caternary compartment model?

a) It gives a visual representation of various rate processes in drug disposition
b) It shows how many rate constants are necessar y
c) Compartments and parameters bear a relations hip with physiologic functions
d) Useful in predicting drug

(53) In noncompartmental analysis, Mean residence time is equal to _____

a) The area under the first moment curve/area un der the zero moment curve
b) The area under the zero moment's curve/area under the first moment curve
c) 1 / Area under the first-moment curve
d) 1/ Area under the zero moment curve

(54) Which model is also known as membrane permeation rate limited?

a) Physiologic model
b) Compartment mode
c) Noncompartment model
d) Mammillary model

(55) In pharmacokinetics, the term 'rate' refers to a change in which of the following measure ments over time.

a) Drug dose
b) Drug elimination
c) Concentration of drug in plasma
d) Drug metabolism

(56) Instantaneous distribution to most body tissues and fluids is assumed in which of the follo wing models?

a) One-compartment model
b) Two-model
c) Multicompartment model
d) Non-compartmental model

(57) The amount of drug per unit of volume is defined as the:

a) Volume of distribution
b) Concentration

c) Rate
d) Absorption

(58) Which data is needed to decide on that the drug is suitable to prepare retard preparation?

a) Clearance
b) Area under the curve
c) Biological half life
d) Absorption rate constant

(59) Which method is not suitable to calculate area under the curve?

a) Least square method
b) Weighing
c) Trapezoidal rule
d) Integration of curve

(60) Which factors has no effect on bioavailability?

a) Maximum plasma level
b) Therapeutic range
c) Tmax
d) Quantity of food

(61) Which marker is used to estimate volume of plasma?

a) Evans blue
b) Cr-51
c) HTO
d) Antipyrine

(62) Unit for rate of infusion

a) Mg/L
b) mg
c) mg/h
d) mg.L/h

(63) Clearance is determined as the ratio of

a) Rate of Absorption to Plasma drug concentrati on
b) Rate of Elimination to Volume of distribution
c) Rate of Elimination to Plasma drug concentrat ion
d) Rate of Elimination to Plasma drug concentrat ion

(64) The loading dose of a drug is usually based on

a) Total clearance of the drug
b) Plasma protein binding percentage
c) Fraction of drug excreted unchanged in urine
d) Apparent volume of distribution and desired st eady state drug concentration in plasma

(65) Which is not a factor influencing the plasma elimination half life of a drug?

a) Aparent volume of distribution
b) Clearance
c) Protein binding
d) Route of administration

(66) The objective of pharmacokinetic model is to quantify the drug content in-

a) Distribution
b) Dissolution
c) Disintegration
d) Diffusion

(67) A system showing dose dependent pharmacokinetics, will follow-

a) Linear pharmacokinetics
b) Non-linear pharmacokinetics
c) Zero order
d) Pseudo first order

(68) Which of the following statement is correct with respect to non-linear pharmacokinetics?

a) First order
b) First order followed by zero orde
c) Pseudo first order
d) Zero order

(69) For determining in vivo Michaelis- Menten constant, two doses of following are used-

a) Inhalation
b) Infusion
c) I.V. bolous
d) Oral

(70) The disadvantages of in vivo method of determining Km and Vm are

a) Clearance changes
b) Compartment model changes
c) Drug is eliminated by more than one capacity limited elimination
d) Unpredicted dose level

(71) Double reciprocal plot of Michaelis- Menten equation is also called as-

a) Hanes- Woolf plot
b) Lineweaver- Burke plot
c) Scatchard plot
d) Metabolism

(72) Which of the following is not involved in non-linear pharmacokinetics?

a) Binding to proteins and tissue
b) Release and dissolution
c) Enzymes or carrier systems
d) Diffusion and permeability

(73) According to chrono-pharmacokinetics, which of the following factors is responsible for v ariation in drug distribution?

a) Protein binding
b) Extracellular fluid
c) Red blood cells
d) Tissue binding

(74) Which of the following is not a cause of non-linear pharmacokinetics?

a) Saturation of plasma protein binding
b) Saturation of carrier molecules
c) Enzyme inhibition
d) Enzyme induction

(75) Chrono-pharmacokinetics involves the study of ADME with reference to -

a) Dosing interval
b) Time of administration
c) Time of the day
d) Sample collection time