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(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2021/2022

ACADEMIC YEAR

FIRST YEAR THIRD TRIMESTER

MAIN EXAMINATION

FOR BACHELOR OF SCIENCE IN NURSING DEGREE

COURSE CODE: NUR 131

COURSE TITLE: CLINICAL PHARMACOLOGY & THERAPEUTICS I

DATE: 26/08/2022

TIME: 9am – 12 pm

INSTRUCTIONS TO CANDIDATES

Answer ALL Section one (1) MULTIPLE CHOICE QUESTIONS and ALL Section two (2) SHORT ANSWER QUESTIONS and any one (1) section THREE (3) LONG ANSWER QUESTION.

TIME: 3 Hours

This paper consists of 11 printed pages. Please Turn Over



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SECTION 1 (MULTIPLE CHOICE QUESTIONS) (50 MARKS)

1. Drugs are excreted from the body through?
 - a) Kidney
 - b) Breast milk, saliva, sweat & bile
 - c) Intestine
 - d) All of the above

2. Application of the drug to the skin usually by a friction is known as?
 - a) Insertion
 - b) Insufflation
 - c) Instillation
 - d) Inunction

3. When the drug is introduced in the bone marrow, the route is known as?
 - a) Intraperitoneal
 - b) Intrathecal
 - c) Intramedullary
 - d) Intra-arterial

4. Test dose of penicillin is administered by which of the following route?
 - a) Subcutaneous
 - b) Intravenous
 - c) Intramuscular
 - d) Intradermal

5. Substances used to counteract the effects of poison are?
 - a) Antitussives
 - b) Antidotes
 - c) Anti-inflammatory
 - d) Anesthetics

6. Pick out the drug which increases cardiac output:
 - a) Noradrenalin
 - b) Methyldopa
 - c) Phenylephrine
 - d) Angiotensinamide

7. 5% dextrose in normal saline is?

- a) Isotonic
- b) Hypotonic
- c) Hypertonic
- d) Neutral

8. Quantity of adrenaline in 100ml of 1 in 1000 solution is?

- a) 1 gm
- b) 10 gm
- c) 0.1 gm
- d) 100 gm

9. 5 pints is same as?

- a) 1500 ml
- b) 1000 ml
- c) 3500 ml
- d) 2500 ml

10. Which of the following is an antiemetic drug?

- a) Metoclopramide
- b) Domperidone
- c) Ondansetron
- d) All of the above

11. A 22-year-old woman suffering from asthma was prescribed albuterol by inhalation. Albuterol is a bronchodilating drug with a molecular weight of 239 daltons. Which of the following permeation processes most likely accounted for the transfer of the drug through the bronchial mucosa?

- a) Aqueous diffusion
- b) Lipid diffusion
- c) Facilitated diffusion
- d) Endocytosis

12. A 2-month child accidentally got a dose of chloramphenicol which may be harmful to him due to low enzymatic activity. It is metabolised through phase-I reaction like:

- a) Acetylation.
- b) Reduction.
- c) Sulfation.
- d) Methylation.

13. The bioavailability of a drug administered by direct intravenous route is:
- a) 100%
 - b) 0%
 - c) Dependent on the half-life of the drug
 - d) Is unpredictable
14. A molecule with both affinity and efficacy at a receptor site is known as:
- a) Antagonist
 - b) Agonist
 - c) Booster
 - d) Competitor
15. The difference between the usual effective dose and the dose that causes severe life-threatening effects is called the:
- a) Therapeutic Index
 - b) Margin of safety
 - c) LD50
 - d) ED50
16. What is the aim of the Pre-clinical Development phase of drug development?
- a) To explore the drug efficacy and safety before it is administered to patients.
 - b) To carry out clinical trials
 - c) To discover the stability of a formulation
 - d) To test the drug in about 100 -500 patients.
17. In the Sympathetic Nervous System:
- a) It is the rest and digest system
 - b) Adrenaline and Noradrenaline are the main chemical messengers
 - c) Acetylcholine is the main chemical messengers
 - d) Activation results in a decrease in heart rate.

18. What does "pharmacokinetics" include?

- a) Complications of drug therapy
- b) Drug biotransformation in the organism
- c) Influence of drugs on metabolism processes
- d) Influence of drugs on genes

19. A hydrophilic medicinal agent has the following property:

- a) Low ability to penetrate through the cell membrane lipids
- b) Penetrate through membranes by means of endocytosis
- c) Easy permeation through the blood-brain barrier
- d) High reabsorption in renal tubules

20. Biological barriers include all except:

- a) Renal tubules
- b) Cell membranes
- c) Capillary walls
- d) Placenta

21. For the calculation of the volume of distribution (V_d) one must take into account:

- a) Concentration of a substance in plasma
- b) Concentration of substance in urine
- c) Therapeutical width of drug action
- d) A daily dose of drug

22. Pick out the right statement:

- a) Microsomal oxidation always results in inactivation of a compound
- b) Microsomal oxidation results in a decrease of compound toxicity
- c) Microsomal oxidation results in an increase of ionization and water solubility of a drug
- d) Microsomal oxidation results in an increase of lipid solubility of a drug thus its excretion from the organism is facilitated

23. Which of the following processes proceeds in the second phase of biotransformation?

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

24. Half-life ($t_{1/2}$) doesn't depend on?

- a) Biotransformation
- b) Time of drug absorption
- c) Concentration of a drug in plasma
- d) Rate of drug elimination

25. Pharmacodynamics involves the study of following EXCEPT?

- a) Biological and therapeutic effects of drugs
- b) Absorption and distribution of drugs
- c) Mechanisms of drug action
- d) Drug interactions

26. What does "affinity" mean?

- a) A measure of how tightly a drug binds to plasma proteins
- b) A measure of how tightly a drug binds to a receptor
- c) A measure of inhibiting potency of a drug
- d) A measure of bioavailability of a drug

27. Irreversible interaction of an antagonist with a receptor is due to:

- a) Ionic bonds
- b) Hydrogen bonds
- c) Covalent bonds
- d) All of the above

28. What term is used to describe a more gradual decrease in responsiveness to a drug, taking days or weeks to develop?

- a) Refractoriness
- b) Cumulative effect
- c) Tolerance
- d) Tachyphylaxis

29. What phenomenon can occur in case of using a combination of drugs?

- a) Tolerance
- b) Tachyphylaxis
- c) Accumulation
- d) Synergism

30. A teratogenic action is?

- a) Toxic action on the liver
- b) Negative action on the fetus causing fetal malformation
- c) Toxic action on blood system
- d) Toxic action on kidneys

31. Characteristic unwanted reaction which isn't related to a dose or to a pharmacodynamic property of a drug is called?

- a) Idiosyncrasy
- b) Hypersensitivity
- c) Tolerance
- d) Teratogenic action

32. Muscarinic receptors are located in:

- a) Autonomic ganglia
- b) Skeletal muscle neuromuscular junctions
- c) Autonomic effector cells
- d) Sensory carotid sinus baroreceptor zone

33. Which of the following cholinomimetics activates both muscarinic and nicotinic receptors?

- a) Lobeline
- b) Pilocarpine
- c) Nicotine
- d) Bethanechol

34. Acetylcholine is not used in clinical practice because?

- a) It is very toxic
- b) The doses required are very high
- c) It is very rapidly hydrolyzed
- d) It is very costly

35. Parasympathomimetic drugs cause:

- a) Bronchodilation
- b) Mydriasis
- c) Bradycardia
- d) Constipation

36. The mechanism of atropine action is?
- a) Competitive ganglion blockade
 - b) Competitive muscarinic blockade
 - c) Competitive neuromuscular blockade
 - d) Noncompetitive neuromuscular blockade
37. Which of the following antimuscarinic drugs is often effective in preventing or reversing vestibular disturbances, especially motion sickness?
- a) Atropine
 - b) Ipratropium
 - c) Scopolamine
 - d) Homatropine
38. Catecholamine includes following EXCEPT?
- a) Ephedrine
 - b) Epinephrine
 - c) Isoprenaline
 - d) Norepinephrine
39. Which of the following effects is related to direct beta₁-adrenoreceptor stimulation?
- a) Bronchodilation
 - b) Vasodilatation
 - c) Tachycardia
 - d) Bradycardia
40. Norepinephrine produces?
- a) Vasoconstriction
 - b) Vasodilatation
 - c) Bronchodilation
 - d) Decreased potassium concentration in the plasma
41. Indicate the beta₁-selective antagonist?
- a) Propranolol
 - b) Metoprolol
 - c) Carvedilol
 - d) Sotalol

42. Subtype-selective α_1 receptor antagonists such as tamsulosin, terazosin, alfusosin are efficacious in?
- a) Hyperthyroidism
 - b) Cardiac arrhythmias
 - c) Benign prostatic hyperplasia (BPH)
 - d) Asthma
43. All of the following are recommended at the initial stages of treating patients with heart failure EXCEPT?
- a) Reduced salt intake
 - b) Verapamil
 - c) ACE inhibitors
 - d) Diuretics
44. This drug has beta-adrenergic blocking activity:
- a) Flecainide
 - b) Sotalol
 - c) Lidocaine
 - d) Verapamil
45. All of the following calcium channel blockers are useful in the treatment of cardiac arrhythmias EXCEPT?
- a) Bepridil
 - b) Diltiazem
 - c) Verapamil
 - d) Nifedipine
46. Angina pectoris is?
- a) Severe constricting chest pain, often radiating from the precordium to the left shoulder and down the arm, due to insufficient blood supply to the heart that is usually caused by coronary disease
 - b) An often-fatal form of arrhythmia characterized by rapid, irregular fibrillar twitching of the ventricles of the heart instead of normal contractions, resulting in a loss of pulse
 - c) The cardiovascular condition in which the heart ability to pump blood weakens
 - d) All of the above

47. All these drug groups useful in angina both decrease myocardial oxygen requirement (by decreasing the determinations of oxygen demand) and increase myocardial oxygen delivery (by reversing coronary arterial spasm), EXCEPT?

- a) Nitrates and nitrite drugs (Nitroglycerin, Isosorbide dinitrate)
- b) Calcium channel blockers (Nifedipine, Nimodipine)
- c) Beta-adrenoceptor-blocking drugs (Atenolol, Metoprolol)
- d) Potassium channel openers (Minoxidil)

48. This drug is a non-peptide angiotensin II receptor antagonist:

- a) Clonidine
- b) Captopril
- c) Losartan
- d) Diazoxide

49. Choose the diuretic agent having a potent and rapid effect:

- a) Furosemide
- b) Spironolactone
- c) Dichlothiazide
- d) Indapamide

50. The main principle of shock treatment is:

- a) To increase the arterial pressure
- b) To increase the peripheral vascular resistance
- c) To increase the cardiac output
- d) To improve the peripheral blood flow

SECTION 2 (SHORT ANSWER QUESTIONS) ANSWER ALL (30 MARKS)

1. Define the components of pharmacokinetics (5 marks).
2. What are the types of drug transportation through membranes? (5 marks).
3. Describe half-life (5 marks).
4. Explain main ways of removing drugs from the body (5 marks).
5. Describe three uses of beta-adrenergic antagonist (Beta blockers) and name two examples of beta-adrenergic blockers (5 marks).
6. What are the sources of drugs? Give an example in each source. (5 marks).

SECTION 3 (LONG ANSWER QUESTIONS) ANSWER ANY ONE QUESTION (20 MARKS)

1. Routes administration play a major role in drug bioavailability:
 - a) Explain the routes of drug administration (10 marks).
 - b) Describe advantages and disadvantages of oral route (10 marks).
2. Clinical practice of a nurse involves the management of patients with hypertension:
 - a) Explain the non-pharmacological therapy for hypertension (10 marks).
 - b) Classify antihypertensives (10 marks)