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University Examinations 2023/2024

THIRD YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY

HMM 3327, HML 3424: PHARMACOLOGY AND PHARMACOGNOSY

DATE: APRIL 2024 **TIME: 2 HOURS**

INSTRUCTIONS:
(i) The paper consists of **Three** Sections
(ii) Section A: Multiple Choice Questions
(iii) Section B: Short Answer Questions
(iv) Section C: Long Answer Questions

'Attempt all questions

1. 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
2. What does the term "bioavailability" mean?
   A. Plasma protein binding degree of substance
   B. Permeability through the brain-blood barrier
   C. Fraction of an uncharged drug reaching the systemic circulation following any route administration

D. Amount of a substance in urine relative to the initial doze

3. Parenteral administration:

A. Cannot be used with unconsciousness patients

B. Generally results in a less accurate dosage than oral administration

C. Usually produces a more rapid response than oral administration

D. Is too slow for emergency use

4. Biological barriers include all except:

A. Renal tubules

B. Cell membranes

C. Capillary walls

D. Placenta

5. What is the reason of complicated penetration of some drugs thrcugh brain-blood barrier?

A. High lipid solubility of a drug

B. Meningitis

C. Absence of pores in the brain capillary endothelium

D. High endocytosis degree in a brain capillary

6. The term "biotransformation" includes the following:

A. Accumulation of substances in a fat tissue

B. Binding of substances with plasma proteins

C. Accumulation of substances in a tissue

D. Process of physicochemical and biochemical alteration of a drug in the body

7. Metabolic transformation (phase 1) is:

A. Acetylation and methylation of substances

B. Transformation of substances due to oxidation, reduction or hydrolysis

C. Glucuronide formation

D. Binding to plasma protein

8. In case of liver disorders accompanied by a decline in microsomal enzyme activity the duration of action of some drugs is:

A. Decreased

B. Enlarged

C. Remained unchanged

D. Changed insignificantly

9. 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

10. 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

11. If an agonist can produce maximal effects and has high efficacy it's called:

A. Partial agonist

B. Antagonist

C. Agonist-antagonist

D. Full agonist

12. An antagonist is a substance that:

A. Binds to the receptors and initiates changes in cell function, producing maximal effect

B. Binds to the receptors and initiates changes in cell function, producing submaximal effect

C. Interacts with plasma proteins and doesn't produce any effect

D. Binds to the receptors without directly altering their functions

13. The substance binding to one receptor subtype as an agonist and to another as an antagonist is called:

A. Competitive antagonist

B. Irreversible antagonist

C. Agonist-antagonist

D. Partial agonist

14. Tick the second messenger of G-protein-coupled (metabotropic) receptor:

A. Adenylyl cyclase

B. Sodium ions

C. Phospholipase C

D. cAMP

15. All of the following statements about efficacy and potency are true EXCEPT:

A. Efficacy is usually a more important clinical consideration than potency

B. Efficacy is the maximum effect of a drug

C. Potency is a comparative measure, refers to the different doses of two drugs that are needed to produce the same effect

D. The ED50 is a measure of drug's efficacy

16. Tolerance and drug resistance can be a consequence of:

A. Drug dependence

B. Increased metabolic degradation

C. Depressed renal drug excretion

D. Activation of a drug after hepatic first-pass

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

A. Tolerance

B. Tachyphylaxis

C. Accumulation

D. Synergism

18. If two drugs with the same effect, taken together, produce an effect that is equal in magnitude to the sum of the effects of the drugs given individually, it is called as:

A. Antagonism

B. Potentiation

C. Additive effect

D. None of the above

19. Idiosyncratic reaction of a drug is:

A. A type of hypersensitivity reaction

B. A type of drug antagonism

C. Unpredictable, inherent, qualitatively abnormal reaction to a drug

D. Quantitatively exaggerated response

20. 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

SECTION B:

1. Define the following terms: (5 marks)
    a) Pharmacology
    b) First pass metabolism
    c) Prodrug
    d) Therapeutic Index of a drug
    e) Bioequivalence
2. Compare between drug potency and therapeutic efficacy (5 marks)
3. Drugs have a specific kind of nomenclature, explain the three names that a drug can go by citing an example in each. (5 marks)
4. Describe the process involved in pharmacokinets (5 marks)
5. List five factors governing choice of route of drug administration. (5 Marks)
6. With examples, give 3 types of vaccines (5 marks)
7. List five factors governing choice of route of drug administration. (5 Marks)
8. Discuss the drug management cycle (5 marks)

SECTION C

1. a) Explain the disadvantages of the parenteral route of drug administration (10 marks)
   b) With examples, list the different formulation of drugs available in the market (l0 marks)
2. Discuss in details the Steps Involved in the Extraction of Medicinal Plants (20marks)