

BACHELOR OF PUBLIC HEALTH AND HEALTH PROMOTION

Date: SATURDAY 8th JUNE 2019 Time 2:00pm-5:00pm

Instructions

Time allowed 3 hours

Attempt all questions

SECTION A: MULTIPLE CHOICE QUESTIONS (25 MARKS)

Circle the MOST correct answer

1. The following are true about drugs given sub-lingual apart from?
A. Should be water soluble
B. Include drugs like nitroglycerine and nifedipine
C. should be basic
D. Should not be chewed
2. The following are true about factors that affect oral route of drug administration apart from?
A. Blood perfusion
B. Lipid solubility
C. Not affected by first pass metabolism
D. Drugs protein in nature not given by this route
3. A researcher is studying the bioavailability of commonly used antimuscarinics to treat irritable bowel syndrome. Medication A is administered in a 100 mg daily dose orally and 60 mg of the drug is absorbed from the gastrointestinal tract unchanged. Thus, the bioavailability of Medication A is
A. 0%
B. 60%
C. 70%
D. 80%
E. 90%
4. Majority of drugs cross biological membranes primarily by:
A. Passive diffusion
B. Facilitated diffusion
C. Active transport
D. Pinocytosis
5. If the total amount of a drug present in the body at a given moment is 2.0 g and its plasma concentration is 25 µg/ml, its volume of distribution is:
A. 100 L
B. 80 L
C. 60 L
D. 50 L

6. The blood-brain barrier, which restricts entry of many drugs into brain, is constituted by:
 - A. P-glycoprotein efflux carriers in brain capillary cells
 - B. Tight junctions between endothelial cells of brain capillaries
 - C. Enzymes present in brain capillary walls
 - D. All of the above
7. Glomerular filtration of a drug is affected by its
 - A. Lipid solubility
 - B. Plasma protein binding
 - C. Degree of ionization
 - D. Rate of tubular secretion
8. Intramuscular injections can be administered on the following sites except
 - A. Gluteus
 - B. Deltoid
 - C. Thigh
 - D. Lower abdominal wall
9. Intravenous drugs can be administered via the following blood vessels apart from?
 - A. Femoral
 - B. Temporal
 - C. Brachial
 - D. Jugular
 - E. None of the above
10. Which of the following is NOT given by the transdermal route?
 - A. Nitroglycerine
 - B. Hormonal contraceptive
 - C. Fentanyl
 - D. Artesunate
11. The following are phase I reactions of drug metabolism apart from
 - A. Demethylation
 - B. Hydrolysis
 - C. Glucuronidation
 - D. Methylation
12. Which of the following is NOT an advantage of plasma protein binding of a drug?
 - A. Forms a reservoir for a drug
 - B. Decreases drug frequency of dosing
 - C. Gives drug low therapeutic index
 - D. Decreases elimination of drug
13. What is volume of distribution of drugs?
 - A. Amount of drug seen in plasma
 - B. volume containing same amount of drug administered as that seen in plasma
 - C. Amount of drug seen in tissue
 - D. All the above
14. The following affect glomerular filtration of drugs apart from?
 - A. Renal blood perfusion
 - B. Drug-plasma protein binding
 - C. Molecular weight of drug
 - D. Time at which drug was given
15. The following are uses of pharmaco-genetics apart from?
 - A. Used to identify treatment failures
 - B. Used to predict unanticipated drug toxicity
 - C. Focuses mainly on pharmacodynamics
 - D. Vital in pharmacovigilance
16. Diffusion of drugs across cell membrane:
 - A. Is dependent upon metabolic activity of the cell
 - B. Is competitively inhibited by chemically related drugs
 - C. Is affected by extent of ionization of drug molecules
 - D. Exhibits saturation kinetics

17. The main variation between competitive and non-competitive drug antagonist is?
- | | |
|---|---------------------------------|
| A. Dose of drug given | C. Frequency of dosing |
| B. Bonds formed between receptor and drug | D. Type of drug co-administered |
18. Comparison between the same generic but of different trade names for their efficacy is?
- | | |
|----------------------|-------------|
| A. Pharmacovigilance | C. Potency |
| B. Bioequivalence | D. Efficacy |
19. Active transport of a substance across biological membranes has the following characteristics except:
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|-----------------------|---------------------------------|
| A. It is specific | C. It is saturable |
| B. It is pH dependent | D. It requires metabolic energy |
20. The following illustrates an example of type A adverse drug reaction
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|--|--|
| A. Steven Johnson syndrome in penicillin | C. Withdraw syndrome in alcoholism |
| B. Tremors in salbutamol | D. Aplastic anaemia in chloramphenicol |
21. Penicillin related hypersensitivity is an example of?
- | | |
|----------------------------|-------------|
| A. Type I hypersensitivity | C. Type III |
| B. Type II | D. Type IV |
22. The 'time window' in drug hypersensitivity is mainly dependent on activation of?
- | | |
|----------------|---------------|
| A. Eosinophils | C. Mast cells |
| B. Neutrophils | D. Antibodies |
23. Thrombocytopenia due to heparin use is an example of type of hypersensitivity
- | | |
|------------|-------------|
| A. Type I | C. Type III |
| B. Type II | D. Type IV |
24. The most important factor which governs diffusion of drugs across capillaries other than those in the brain is:
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|-------------------------------------|
| A. Blood flow through the capillary |
| B. Lipid solubility of the drug |
| C. pKa value of the drug |
| D. pH of the medium |
25. The following drug exerts its mechanism of action in plasma because of distribution is affected by molecular weight
- | | |
|------------|------------------|
| A. Digoxin | C. Halothane |
| B. Heparin | D. Normal saline |

SECTION B: STRUCTURED QUESTIONS (25 MARKS)

Fill in the spaces provided

26. One of the functions of drug metabolism is activation of pro-drugs. Write down the names of the activated drug forms for the respective pro-drugs listed (4 marks)

- i. Levodopa
- ii. Enalapril.....
- iii. α -methyldopa.....
- iv. Prednisone

27. List 2 reactions that occur under the following phases of biotransformation (4 marks)

i. Non-synthetic phase

- a.
- b.

ii. Synthetic phase

- a.
- b.

28. Define Chelation citing two classes of drugs that exhibit that characteristic (3 marks)

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29. Define "Idiosyncrasy" citing one example of a drug that exhibits such a characteristic (3 marks)

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30. List 4 causes of drug resistance (4 marks)

- i.
- ii.
- iii.
- iv.

31. Define a "Ligand"

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32. Draw a well labelled graph and show the following curves; (6 marks)

- i. Partial agonist
- ii. Full agonist
- iii. Inverse agonist
- iv. Antagonist

SECTION C: ESSAY QUESTIONS (50 MARKS)

- 33.
- i. Discuss the "Receptor Occupation Theory" (4 marks)
 - ii. Explain the three types of drug antagonism citing relevant examples (9 marks)
 - iii. Classify adreno-receptors citing two sub-types under each (6 marks)
 - iv. For each sub-type of receptor above, list 2 sites where it is located and one effect exerted by the agonist at each of them (6 marks)
- 34.
- i. Describe the four classes of hypersensitivity citing one drug under each class that exhibits such features (12 marks)
 - ii. Explain the VEN classification citing 1 example under each (9 marks)
 - iii. Explain 4 supportive measures for management of a patient who has ingested a drug in overdose (4 marks)

THE END