



KENYATTA UNIVERSITY
EXAMINATION FOR THE DEGREE OF BACHELOR OF PHARMACY

PPA 530: PHARMACEUTICS VII

3RD TRIMESTER 2021/2022

TIME: 3 HOURS

INSTRUCTIONS:

- i) *This paper has three sections: Section A, B and C*
- ii) *Answer all questions.*
- iii) *Answer each section on a separate booklet.*
- iv) *Do not write on this question paper.*

Section A: ANSWER ALL QUESTIONS (40 MARKS)
Question 1-20 MCQS 1 MARK EACH

1. Uremic patients may exhibit pharmacokinetic changes in the following except:
 - a) Bioavailability
 - b) Volume of distribution
 - c) Clearance
 - d) Peak plasma concentration
2. Uremic dose can be calculated as:
 - a) $\frac{k_u}{k_N} \times \text{Normal dose}$
 - b) $\frac{k_N}{k_u} \times \text{Normal dose}$

3. Dosing interval in uremic patient can be calculated as:

$$a) Tu = \frac{k_N}{k_u} \times T_N$$

$$b) Tu = \frac{k_u}{k_N} \times T_N$$

4. Which of the following is not a factor affecting dialysability of drugs?

- a) Protein binding
- b) Water solubility
- c) Molecular weight
- d) Class of the drug

5. Which method of dialysis is more effective for fast drug removal in overdose or poisoning?

- a) Peritoneal dialysis
- b) Hemodialysis

6. Concerning the different classes of drugs, which of the following is not true?

- a) High extraction = Flow limited drugs
- b) Low extraction = enzyme limited drugs
- c) Intermediate extraction drugs = $f_u \times cl_i$

7. For low extraction drugs, the recommended dose adjustment of maintenance dose may be calculated as follows except:

- a) Patients with child class A- a maintenance dose of 50% of normal.
- b) Patient with child class B- a maintenance dose of 25% of normal.
- c) Patient with child class C- a maintenance dose of 12.5% of normal.

8. The Screening Tool of Older Persons' Potentially Inappropriate Prescriptions (STOPP) criteria are organized according to:

- a) Drug class.
- b) Adverse effects.
- c) Physiologic system.
- d) Specific disease/condition.

9. Which of the following is an age-related physiologic change that may affect the absorption of drugs?

- a) Xerostomia
- b) Faster stomach emptying
- c) Altered pH of the stomach contents
- d) Increased gastrointestinal tract motility

10. The use of multiple medications has been associated with decreased adherence due to:
- a) Cost.
 - b) Burnout.
 - c) Complexity of regimens.
 - d) All of the above
11. Elderly patients with dementia-related psychosis treated with antipsychotics are at an increased risk for:
- a) Falls.
 - b) Suicide.
 - c) Clotting disorders.
 - d) Death, mainly from cardiovascular or infectious causes.
12. A prescribing cascade occurs when:
- a) A patient's condition deteriorates as a result of his or her medication regimen.
 - b) A patient's limited life expectancy results in the cessation of some medications.
 - c) Adverse drug reactions prevent the appropriate treatment of a treatable condition.
 - d) A patient has an adverse drug reaction and additional drugs are prescribed to control the symptoms of this reaction.
13. Medication reconciliation should be conducted:
- a) On admission.
 - b) After transitions of care.
 - c) Before prescribing new medications.
 - d) All of the above
14. Dosage regimen refers to:
- a) The concentration of active agent in the drug formulation
 - b) The manner in which the drug is given to old people
 - c) The manner in which a drug is taken
 - d) The manner in which a drug is given to a child
15. What is the optimal multiple dosage regimen?
- a) The concentration of active agent in the drug formulation
 - b) Dosage which maintains the plasma concentration within the therapeutic window.
 - c) The manner in which a drug is taken
 - d) The manner in which drug given to a child

16. On what basis is the dose interval calculated?
- a) Active drug concentration in the formulation
 - b) Half-life of the drug
 - c) Duration of the disease
 - d) Age of the patient
17. What is fluctuation?
- a) C_{max}/C_{min}
 - b) C_{min} / C_{max}
 - c) $1/C_{min}$
 - d) $1/C_{max}$
18. A doctor orders Zofran 2mg for a child who weighs 13.6kg. The safe dosage range of this drug is 0.15mg/kg. Is this a safe dose?
- a) No, this is not a safe dose. A safe dose would be 1.02mg/dose
 - b) Yes, this is a safe dose
 - c) No, this is not a safe dose. A safe dose would be 0.5mg/dose
19. A doctor orders 300mg of Zmax once a day for a child who weighs 72lbs. The safe dose range for this medication is 10-12mg/kg/day. Is this a safe dose for this patient?
- a) Yes, this is not a safe dose.
 - b) No, this not a safe dose. A safe dose is 310.8-558.2 mg/day
 - c) No, this is not a safe dose. A safe dose is 327.3-392.7 mg/day
20. A child weighs 52lbs. The child has a fever and the doctor orders Tylenol. The safe dose range of this medication is 10-15mg/kg every 6hours. What is the maximum safe dose this child can have per day?
- a) 148 mg/day
 - b) 289 mg/day
 - c) 1,418 mg/day
 - d) 785 mg/day
21. Illustrate using a plasma concentration time plot, how a drug administered as a multiple i.v bolus of 100mg with a dosing interval equal to the half-life will attain steady state.

(6 marks)

22. Describe the formulation factors that affect the dissolution of drugs. (6marks)

23. Describe four drug delivery systems. (8marks)

SECTION B: ANSWER ALL QUESTIONS (40MARKS)

1. Discuss three approaches to detecting bacterial contamination under the following categories.
 - a) Serological methods. (6 marks)
 - b) Molecular methods. (6 marks)
2. Distinguish between primary metabolites and secondary metabolites when applied to microorganisms. (4 marks)
3. Discuss the function of fermentation tanks used in industrial production of antibiotics. (8 marks)
4. Explain four methods that are used by bacteria to acquire resistance to antibiotics. (8 marks)
5. Describe any four methods used to test sensitivity of bacteria to antibiotics. (8 marks)

SECTION C. ANSWER ALL QUESTIONS 40MARKS

1. Describe three physical properties of proteins and their commercial application. (6marks)
2.
 - a) Explain two mandatory labels that must be affixed to whole blood in a blood transfusion center (2marks)
 - b) Illustrate using a diagram, the process of blood components preparation. (5marks)
 - c) Distinguish between irradiated red cells solutions and washed red cells solution. (2marks)
 - d) Outline the production and uses of cryoprecipitate. (2marks)
3. Describe the preparation and use of the following:
 - a) Human albumin solution. (2marks)
 - b) Fibrinogen concentrate. (2marks)
4.
 - a) Name two organisms popularly used for production of dextran. (2marks)
 - b) Discuss the process of production of dextran for pharmaceutical industry. (4marks)
5. Distinguish between biobetter and biosimilar biopharmaceuticals. (2marks)
6. Using specific examples, explain two sources of enzymes for commercial use. (2marks)

7. Discuss the two major steps in enzyme and hormone commercial production (4marks)
8. Describe the commercial production of insulin using recombinant DNA technology (3marks)
9. Explain how monoclonal antibodies are produced (2marks)