



**KISII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**

**SECOND YEAR EXAMINATION FOR THE AWARD OF THE**  
**DIPLOMA IN CLINICAL MEDICINE AND SURGERY**  
**THIRD SEMESTER 2021/2022**  
**[JUNE-SEPTEMBER, 2022]**

**CIMS 0287: CLINICAL PHARMACOLOGY**

**STREAM: Y2S3**

**TIME: 2 HOURS**

**DAY: MONDAY, 12:00 – 2:00 PM**

**DATE: 12/09/2022**

**INSTRUCTIONS**

***1. Do not write anything on this question paper.***

**PART 1: SECTION A- SAQs [60 marks]**

***Answer all questions***

***Each question carries 10 marks***

1. Write short notes on Furosemide [10 marks]
2. Describe two drugs that are used as osmotic diuretics [10 marks]
3. Write short notes on antipruritics. [10 marks]
4. Write short notes on hydrochlorothiazide. [10 marks]
5. Briefly discuss the cell cycle indicating the points where antineoplastic agents act. [10 marks]
6. Write short notes on mechanism of antiseptics. [10 marks]

**PART 1: SECTION B – LAQs [40 marks]**

***Answer any two questions***

***Each question carries 20 marks***

1. Discuss the pharmacological actions of diuretics. State five uses diuretics. [20 marks]

2. Using appropriate examples and illustrations discuss antibiotic drugs that are employed in cancer chemotherapy. [20 marks]
3. Discuss antifungals and state topical antibiotics drugs. [20 marks]

**PART 2: SECTION A – MCQs[15 marks]**

***Answer ALL questions***

***Choose the most correct answer.***

1. Which of the following neoplastic diseases is almost curable by chemotherapy:
- A. Bronchogenic carcinoma
  - B. Choriocarcinoma
  - C. Malignant melanoma
  - D. Colorectal carcinoma.
2. The following does **not** apply to cancer chemotherapy:
- A. Each treatment with a cytotoxic drug kills a constant number of malignant cells
  - B. Drugs are generally used at maximum tolerated doses
  - C. The same regimen which is palliative for a large solid tumour may be curative after surgical removal of the tumour
  - D. Combination regimens using several drugs in succession are superior to single drug used continuously
3. Select the cell cycle nonspecific antineoplastic drug:
- A. Vincristine
  - B. Bleomycin
  - C. Methotrexate
  - D. 5-Fluorouracil
4. Mesna is administered with cyclophosphamide and ifosfamide to:
- A. Potentiate their cytotoxic action
  - B. Retard their renal excretion
  - C. Block their emetic action
  - D. Ameliorate cystitis caused by them
5. The Na<sup>+</sup>-Cl<sup>-</sup> symport in the early distal convoluted tubule of the kidney is inhibited by:
- A. Thiazides
  - B. Metolazone
  - C. Xipamide
  - D. All of the above

6. Intravenous saline infusion is the treatment of choice for the following complication(s) of vigorous furosemide therapy:
- A. Dilutional hyponatremia
  - B. Acute saline depletion
  - C. Hypokalemia
  - D. All of the above
7. Select the diuretic that can cause gynaecomastia, hirsutism and menstrual disturbance as a side effect on long-term use:
- A. Amiloride
  - B. Spironolactone
  - C. Metolazone
  - D. Acetazolamide
8. Which of the following is most sensitive to vasopressin?
- A. Renal collecting ducts
  - B. Intestinal smooth muscle
  - C. Vascular smooth muscle
  - D. Uterus
9. Which of the following peptides is a selective vasopressin V2 receptor agonist:
- A. Arginine vasopressin
  - B. Desmopressin
  - C. Lypressin
  - D. Terlipressin
10. A 65-year-old patient was scheduled for surgery to remove a glioma located on his left parietal lobe. Which of the following drugs would be most appropriately given before and after surgery to prevent increased intracranial pressure?
- A.** Mannitol
  - B.** Hydrochlorothiazide
  - C.** Triamterene
  - D.** Verapamil
11. A 70-year-old retired businessman is admitted with a history of recurrent heart failure and metabolic derangements. He has marked peripheral edema and metabolic alkalosis. Which of the following drugs is *most* appropriate for the treatment of his edema?
- A** Acetazolamide
  - B** Digoxin
  - C** Dobutamine
  - D** Eplerenone
12. Which of the following is an important effect of chronic therapy with loop diuretics?
- A** Decreased urinary excretion of calcium

- B** Elevation of blood pressure
- C** Elevation of pulmonary vascular pressure
- D** Metabolic alkalosis

13. A graduate student is planning to make a high-altitude climb in South America while on vacation. He will not have time to acclimate slowly to altitude. A drug that is useful in preventing high-altitude sickness is

- A Acetazolamide
- B Amiloride
- C Demeclocycline
- D Desmopressin

14. Furosemide acts by inhibiting the following in the renal tubular cell:

- A.  $\text{Na}^+ - \text{K}^+ - 2\text{Cl}^-$  cotransporter
- B.  $\text{Na}^+ - \text{Cl}^-$  symporter
- C.  $\text{Na}^+ - \text{H}^+$  antiporter
- D.  $\text{Na}^+ \text{ K}^+$  ATPase

15. Diuretics acting on the ascending limb of loop of Henle are the most efficacious in promoting salt and water excretion because:

- A. Maximum percentage of salt and water is reabsorbed in this segment
- B. Reabsorptive capacity of the segments distal to it is limited
- C. This segment is highly permeable to both salt and water
- D. This segment is responsible for creating corticomedullary osmotic gradient

## **PART 2: SECTION B – T/Fs [75 marks]**

***Answer ALL questions***

***For each question indicate if the option is TRUE (T) or FALSE (F)***

1. The following is true cancer chemotherapy:

- (a.) Anticancer drugs increase the risk of developing leukaemias and lymphomas several years later
- (b.) All anticancer drugs are highly emetogenic
- (c.) Growth fraction of cancers is higher than any normal tissue of the body
- (d.) All of the above are correct
- (e.) None of the above is correct

2. Anticancer drugs weaken host defence by:

- (a.) Damaging respiratory and gut epithelia
- (b.) Inducing granulocytopenia
- (c.) Altering resident microbial flora
- (d.) Both 'A' and 'B' are correct
- (e.) None of the above

3. Alkylating agents exert cytotoxic action by inducing:

- (a.) Breakage of DNA strand
- (b.) Cross linking of DNA strands
- (c.) Abnormal pairing of purine and pyrimidine bases
- (d.) Separating DNA structures
- (e.) All of the above.

4. Methotrexate has the following attributes except:
- (a.) It is cell cycle specific and kills cells in the S phase
  - (b.) Its toxicity primarily affects bone marrow and epithelial structures
  - (c.) Folic acid reverses its toxic effects
  - (d.) It is the drug of choice for choriocarcinoma
  - (e.) All of the above
5. The following antineoplastic drug is a mitotic inhibitor and causes metaphase arrest:
- (a.) Busulfan
  - (b.) Vincristine
  - (c.) Cytarabine
  - (d.) Procarbazine
  - (e.) All of the above
6. The following cytotoxic drug acts by inhibiting depolymerization of tubulin and thus producing abnormal arrays of microtubules:
- (a.) Paclitaxel
  - (b.) Vinblastine
  - (c.) Etoposide
  - (d.) Mitoxantrone
  - (e.) None of the above
7. Which of the following are ADH antagonists?
- (a) Desmopressin
  - (b) Etoposide
  - (c) Colvaptan
  - (d) Demeclocycline
  - (e) Lithium
8. Following potassium sparing diuretic inhibits action of aldosterone
- (a) Amiloride
  - (b) Triamterene
  - (c) Spironolactone
  - (d) Frusemide
  - (e) All of the above
9. The following potassium sparing diuretic is a mineralocorticoid receptor antagonist
- (a) Amiloride
  - (b) Triamterene
  - (c) Spironolactone
  - (d) Acetazolamide

(e) All of the above

10. Spironolactone can be usefully combined with the following diuretics except:

- (a). Furosemide
- (b). Amiloride
- (c). Hydrochlorothiazide
- (d). Chlorthalidone

(e). Indapamide

11. Which of the following chemotherapeutic agents is classified as an alkylating agent?

- (a) Cyclophosphamide
- (b) Etoposide
- (c) Mechlorethamine
- (d) Paclitaxel
- (e) Cyclophosphamide and mechlorethamine

12. Which of the following chemotherapy agents acts by intercalation?

- (a) Vincristine
- (b) Paclitaxel
- (c) Doxorubicin
- (d) Vincristine and paclitaxel
- (e) Topotecan

13. How do antimetabolites exert their cytotoxic effect?

- (a) Inhibiting DNA synthesis by sliding between DNA base pairs
- (b) Inhibiting RNA synthesis by sliding between RNA base pairs
- (c) Acting as false metabolites in the microtubules
- (d) Acting as false substitutions in the production of nucleic acids
- (e) Promoting microtubule assembly and stabilization

14. Which statement regarding phasespecific chemotherapeutic agents is correct? They

- (a) Are most effective in one phase of the cell cycle
- (b) Are effective in all phases of the cell cycle
- (c) Are only effective in G0 phase
- (d) Include the alkylating agents
- (e) Include the antitumor antibiotics

15. Which of the following diuretics are steroid derivatives?

- (a) Spironolactone
- (b) Eplerenone
- (c) mannitol
- (d) indapamide
- (e) All of the above