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BP 501 T

2024

B.Pharm. 5th Semester End-Term Examination

MEDICINAL CHEMISTRY — II

Full Marks – 75 Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following (Multiple Choice Questions) : 1 × 20

(i) Which one of the following drugs is a Potassium sparing Diuretics?

(a) Acetazolamide (b) Amiloride

(c) Spironolactone (d) Both (b) and (c)

(ii) Which drug is used as an anti-emetic and is an H1-antagonist?

(a) Promethazine hydrochloride (b) Cimetidine

(c) Vincristine sulphate (d) Levocetirrizine

(iii) Which drug belongs to the biguanide class of antidiabetic agents?

(a) Glipizide (b) Tolbutamide

(c) Metformin (d) Repaglinide

(iv) Which of the following is a non-sedating H1-antagonist?

(a) Diphenhydramine hydrochloride

(b) Chlorpheniramine maleate

(c) Promethazine Hydrochloride

(d) Loratadine

(v) Which of the following alkylating agents forms cross-links in DNA, inhibiting DNA replication and transcription?

(a) Cyclophosphamide (b) Methotrexate

(c) Vincristine sulphate (d) Fluorouracil

(vi) What is the primary site of action for Bumetanide?

(a) Distal convoluted tubule (b) Proximal convoluted tubule

(c) Loop of Henle (d) Collecting duct

[Turn over

(vii) What is the mechanism of action of Cisplatin as an anticancer agent?

(a) Inhibits DNA synthesis by inhibiting dihydrofolate reductase

(b) Alkylates DNA, forming inter-and intra-strand cross-links

(c) Topoisomerase inhibition

(d) Microtubule inhibition

(viii) Which of the following local anesthetics is an ester-type anesthetic?

(a) Lignocaine (b) Procaine

(c) Mepivacaine (d) Prilocaine

(ix) Which of the following drugs is a Nitrogen Mustard?

(a) Cyclophosphamide (b) Mercaptopurine

(c) Cisplatin (d) Etoposide

(x) Which of the following is an orally active antiplatelet agent that irreversibly inhibits P2Y12 ADP receptors?

(a) Warfarin (b) Clopidogrel

(c) Acetomenadione (d) Anisindione

(xi) Which of the following drugs acts as a phosphodiesterase type 5 (PDE5) inhibitor, used in the treatment of erectile dysfunction?

(a) Sildenafil (b) Testosterone

(c) Betamethasone (d) Mifepristone

(xii) Which of the following antiarrhythmic drugs is classified as a class III antiarrhythmic due to its prolong action potential across a wide range of heart rates?

(a) Quinidine sulphate (b) Amiodarone

(c) Phenytoin sodium (d) Digitalis

(xiii) Which of the following is a Glucosidase inhibitor used as antidiabetic agent?

(a) Metformin (b) Glipizide

(c) Tolbutamide (d) Acarbose

(xiv) Which cardiac glycoside, derived from animals have a 6-membered lactone ring with two conjugated double bonds (generally referred to as α-pyrone)?

(a) Cardenilides (b) Cardenolides

(c) Bufadienolides (d) Both (a) and (b)

(xv) The one who was not involved in the discovery of insulin is

(a) Frederick Banting (b) Charles Herbert Best

(c) John J.R. Macleod (d) Dr. Paul Langerhans

(xvi) In Benzoic acid derivatives, there is an increase in local anaesthetic activity when we place electron withdrawing group at _____.

(a) ortho (b) meta

(c) para (d) both (a) and (c)

(xvii) Which of the following thyroid drugs works by inhibiting the enzyme thyroid peroxidase, preventing the synthesis of thyroid hormones?

(a) L-Thyroxine (b) Prophylthiouracil

(c) L-Thyronine (d) All of the above

(xviii) Which of the following histamine receptors increase the gastric acid secretion?

(a) H1 (b) H2

(c) H3 (d) H4

(xix) Which of the following is a peptide?

(a) Nesiritide (b) Digitoxin

(c) Tezosentan (d) Bosentan

(xx) The anticancer agent which shows its action by inhibiting the microtubule assembly which disrupts the formation of the mitotic spindle essential for cell division

(a) Etoposide (b) Vinblastine

(c) Doxorubicin (d) 6-Mercaptopurine

2. Short answers. (Answer any *seven*) 7×5

(a) Discuss the mechanism of action of vasodilators and calcium channel blockers with a suitable diagram. **[CO-1]**

(b) Discuss the SAR of local anesthetics in details. **[CO-3]**

(c) Write down the synthesis of any TWO drugs : **[CO-4]**

(i) Isosorbide Dinitrate

(ii) Diphenhydramine hydrochloride

(iii) Tolbutamide. $2.5 + 2.5$

(d) Give the structure and uses of any TWO drugs. **[CO-1]**

(i) Sildenafil

(ii) Metformin

(iii) Cyclophosphamide. 2.5 + 2.5

(e) Discuss briefly about the nomenclature of steroids. **[CO-1]**

(f) Describe anti-metabolites. Give the structure and uses of 5-fluouracil. **[CO-1]**

3 + 2

(g) What are HMG-CoA reductase inhibitors? Discuss their role in hyperlipidemia and give the uses of lovastatin. **[CO-2]**

1 + 2 + 2

(h) Define hyperthyroidism. Discuss the mechanism of action of anti-thyroids by taking an example of any anti-thyroid drug. **[CO-1]**

1 + 4

(i) Name one natural source which is used for the treatment of congestive heart failure. Discuss the uses and mechanism of action of Digoxin with a suitable diagram. **[CO-2]**

1 + 4

3. Long answer. (Answer any *two*) 2 × 10

(a) Differentiate pantoprazole and cimetidine. Discuss the SAR of gastric proton pump inhibitors. Give the structure and uses of Cimetidine and Omeprazole. **[CO-3]**

1 + 4 + 5

(b) Define anti-anginals. Classify anti-hypertensive agents. Give the structure and uses of Sodium Nitroprusside or Methyldopate Hydrochloride. Write the synthesis of Isosorbide Dinitrate. **[CO-4]**

1 + 4 + 3 + 2

(c) Classify oral hypoglycemic agents with suitable examples along with their structures. Explain the role of insulin in metabolism. Discuss about two insulin preparations. **[CO-1]**

6 + 2 + 2