

(3 hours)

70 marks

N.B: All questions are compulsory.

Q.1. Answer the following questions.

- (i) Write generic name and structure for 1, 3-bis(2-chloroethyl)-1-nitrosourea [1]
- (ii) Name an acyclic nucleoside antiviral agent [1]
- (iii) Give an example of a thiazolidinedione antidiabetic agent. [1]
- (iv) Predict the structure and therapeutic use of the following: [1]  
7-chloro-3-methyl-2H-1,2,4-benzothiazepine-1,1-dioxide [1]
- (v) Give an example with structure of a loop diuretic. [1]
- (vi) Name two sugars present in cardiac glycosides [1]
- (vii) Name the enzyme inhibited by omeprazole [1]
- (viii) Write the structure of a prodrug belonging to fibrate class of antihyperlipoproteinemics and indicate the chiral centre. [1]
- (ix) Give mechanism of action of aliskiren. [1]
- (x) Name selective  $\alpha_1$  blocker and mention its use [1]
- (xi) Name 2 chemical classes of calcium channel blockers used in cardiac arrhythmia. [1]
- (xii) Explain mechanism of action of Isosorbide dinitrate. [1]
- (xiii) Give the structures of 2 metabolites of gemfibrozil [1]
- (xiv) Write the structure of a drug belonging to indanedione class [1]
- (xv) Give an example with structure of alkylating agent. [1]

Q.2. (a) List different classes of antimetabolites antineoplastic giving one example from each class. [4]

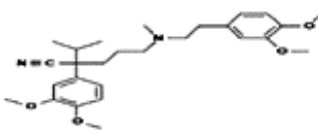
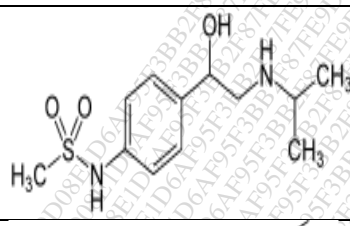
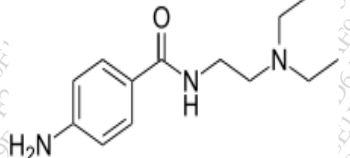
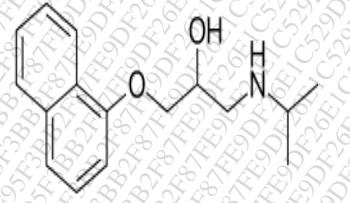
(b) Justify the following statements. (any 2) [4]

- (i) Esmolol is shortest acting  $\beta$  blocker.
- (ii) C<sub>3</sub> and C<sub>5</sub> positions in 1,4 DHP class are not equivalent.
- (iii) Enalaprilat is given as a prodrug.

(c) Outline the synthesis of benzocaine along with reaction conditions and necessary reagents. [3]

Q.3. (a) Discuss the mechanism of action of the diuretics acting at different sites along the nephron. Give one example (with structure) from each class. [4]

(b) Match the columns [4]

Name	Structure	Mechanism
A. procainamide	 a.	i. $\beta$ blocker
B. propranolol	 b.	ii. Potassium channel blocker
C. Amiodarone	 c.	iii. Calcium channel blocker
D. Verapamil	 d.	iv. Sodium channel blocker

(c) Outline the synthesis of nifedipine along with reaction conditions and necessary reagents. [3]

OR

Classify the following antiplatelet drugs on the basis of mechanism of action.

- (i) Indobufen (ii) clopidogrel, (iii) abciximab

Q.4 (a) Discuss the rationale for development of 2<sup>nd</sup> generation H<sub>1</sub> antihistaminic and give at least 2 examples. [4]

(b) Discuss SAR and development of HMG CoA reductase inhibitors. [4]

(c) Outline the synthesis of ethacrynic acid along with reaction conditions and necessary reagents. [3]

Q.5. (a) Classify the following antiviral drugs on the basis of mechanism of action (structure necessary).

Idoxuridine, nevirapine, Azidothymidine, Saquinavir [4]

(b) (i) Write a note on volatile anaesthetics [2]

(ii) Discuss SAR of angiotensin II receptor blockers. [2]

(c) Outline the synthesis of chlorambucil along with reaction conditions and necessary reagents. [3]

Q.6. (a) Discuss the mechanism of action and SAR of sulfonylurea class of hypoglycemic with suitable examples. [4]

(b) State whether True or False with justification. Correct if false. (any 2). [4]

(i) Long term use of procainamide is associated with lupus syndrome.

(ii) Reduction of the double bond between C3 and C4 leads to reduction in activity of thiazide diuretics.

(iii) Nimodipine is used in the treatment of hypertension.

(c) Classify local anaesthetics given below into different chemical classes: [3]

Procaine, bupivacaine, dyclonine, Eugenol, pramoxine, lidocaine