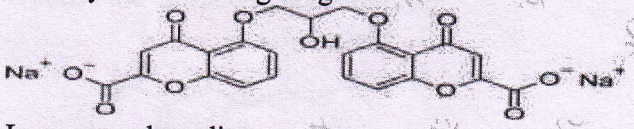
T.Y.B.Pharm
Sem – V
21/11/2025

Duration: 3 hours **Total marks: 75**

N.B. : 1. All questions are compulsory
2. Figures to right indicate full marks

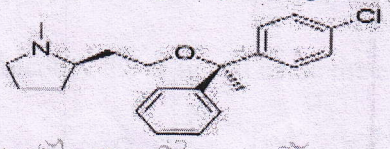
Q. 1 Choose the appropriate option for following multiple choice based questions. 20 Marks

1 Identify the following drug



a Lansoprazole sodium
b Pantoprazole sodium
c Cromolyn sodium
d Rabeprazole sodium

2 The following drug belongs to the _____class of antihistamines



a Amino alkyl ethers
b Ethylenediamines
c Propylamines
d Dibenzocycloheptenes

3 Ranitidine is a
a Partial H_1 receptor agonist
b Partial H_2 receptor agonist
c H_2 receptor antagonist
d H_1 receptor antagonist

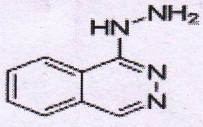
4 Identify the drug

a Busulfan
b Cyclophosphamide
c Cisplatin
d Mechorethamine

5 Organoplatinum anticancer agents have --------.
a Square planar geometry
b Pyramidal geometry
c Tetrahedral geometry
d No geometry

6 Recognise ACE inhibitor with benzazepine heterocyclic ring
a Captopril
b Benazepril
c Lisinopril
d Enalapril

7 Identify the following structure of the drug.



a Hydralazine
b Diazoxide
c Clonidine
d Minoxidil

8 Mechanism of action of dipyridamole is
a Phosphodiesterase 3 (PDE3) inhibitor
b Potassium channel blocker
c Sodium channel blocker
d ACE inhibitor

9 Identify a prodrug potassium sparing diuretic which gives active metabolite as canrenone from the following.
a Spironolactone
b Amiloride
c Triamterene
d Mannitol

10 Which of the following pair of antiarrhythmic drugs is an example of bioisosteric replacement.
a Encainide and Mexiletine
b Lidocaine and Tocainide
c Procaine and Procainamide
d Encainide and Tocainide

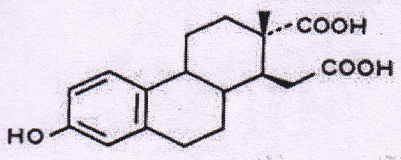
11 Anti-hyperlipidemic agent statins mimic .....
a Mevalonic acid
b Tetrahedral intermediate in mevalonic acid pathway
c HMG CoA
d Mevastatin

12 Select the incorrect statement
a Digoxin has longer duration of action than digitoxin
b Cardenolides contain five-membered lactone ring
c Ring fusion in cardiac glycosides is cis/trans/cis
d Rhamnose is one of the sugar in cardiac glycosides

13 Menadione is also known as _____.

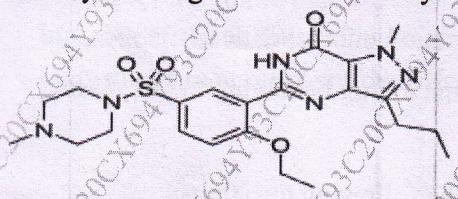
a Vitamin A
b Vitamin K2
c Vitamin K3
d Vitamin C

14 Choose the correct nomenclature for:



a 3-Hydroxy-17, 18-secoestra-1,3,5(10)-triene-16,17-dioic acid
b 3-Hydroxy-16, 17-secoestra-1,3,5(10)-triene-16,17-dicarboxylic acid
c 3-Hydroxy-15, 16-secoestra-1,3,5(10)-triene-16,17-dioic acid
d 3-Hydroxy-16, 17-secoestra-1,3,5(10)-triene-16,17-dioic acid

15 Identify the drug and name the enzyme inhibited:



a Sildenafil, PDE3
b Tadalafil, PDE5
c Nandrolone, Aromatase
d Sildenafil, PDE5

16 Dexamethasone is characterised by the presence of

a 9ß-Fluoro, 11α-hydroxy and 16 α -methyl
b 9 α -Fluoro, 11 α -hydroxy and 16 α -methyl
c 9 α -Fluoro, 11 ß -hydroxy and 16 ß -methyl
d 9 ß -Fluoro, 11 ß -hydroxy and 16 ß -methyl

17 Mifepristone is a

a Progesterone agonist
b Estrogen agonist
c Progesterone antagonist
d Estrogen antagonist

18 Choose the incorrect statement about thiazolidinedione class of antidiabetics.

a They are selective PPAR-gamma agonist.
b They have phenyl ring attached to thiadiazole with a methyl spacer
c They are insulin sensitizer
d They act by blocking ATP-K^+ channel

19 _____ group in glinides is responsible for binding to sulphonyl urea receptor

a Pendant-like hydrophobic group
b Urea
c Sulphonamide
d Sugar moiety

20 Which local anesthetic lacks tertiary amine in its structure

a Procaine
b Benzocaine
c Lidocaine
d Propoxycaine

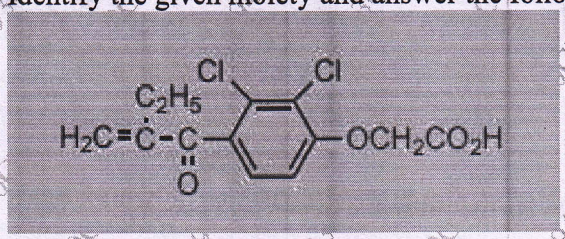
I. Long Answers **(Answer any 2 out of 3)** **20 Marks**

Q1 Answer the following with respect to anticancer agents

a. Explain the mechanism of action and activation of Omeprazole. Mention the therapeutic use of Omeprazole. 6 marks

b. Give an account of the structural features of anthracycline antibiotics and explain their mechanism of action. Name a drug belonging to this class. 4 marks

Q2 A. Identify the given moiety and answer the following questions: 4 Marks

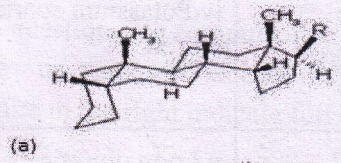


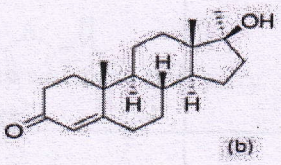
a. Identify the drug and the chemical class.
b. Name the enzyme/symporter it acts on
c. Highlight the structural feature responsible for interaction with the symporter/enzyme.
d. Name any other drug that acts on the same enzyme/symporter.

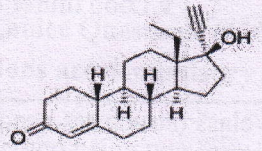
B. Discuss the mechanism of action of Nesiritide and Bosentan 4 Marks

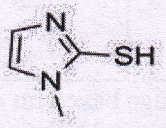
C. Give schematic representation of interactions between ACE inhibitors/substrate and angiotensin converting enzyme 2 Marks

Q3 A. Based on the structures below answer the following questions: 4 Marks


(a)


(b)

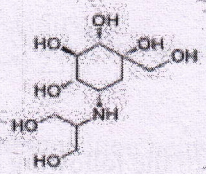

(c)


(d)

i. Write the stereochemistry of the A/B, B/C and C/D ring fusions in (a)
ii. Identify the group responsible for oral activity of (b)
iii. Write the generic name and therapeutic use of (c)
iv. Identify (d) and discuss its mechanism of action

B. Answer the following 4 Marks

i. Identify the anti-diabetic drug and give its mechanistic class. Mention its advantage over other antidiabetic agents



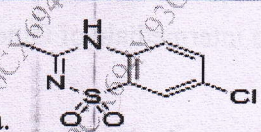
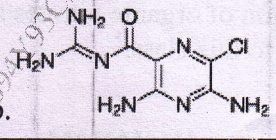
ii. Give the metabolism of lidocaine and mark the metabolites as active, inactive and reactive.

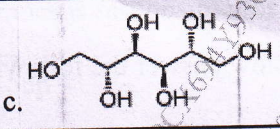
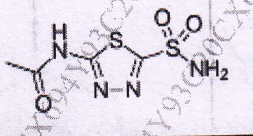
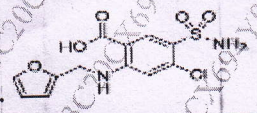
C. Trans-DES has 10-fold the estrogenic potency of its cis isomer. Justify. 2 marks

II. Short Answers (Answer 7 out of 9) **35 Marks**

Q1 Write the activation pathway for: (Structures required) 5 Marks
i) Cyclophosphamide ii) 6-Mercaptopurine

Q2 a)Match the following: 5 Marks

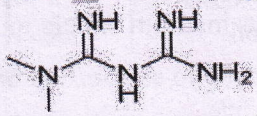
Name	Structure	Mechanism of Action
A. Furosemide	 a.	i.Carbonic anhydrase inhibitor
B.Acetazolamide	 b.	ii.Osmotic diuretic

C.Amiloride	c. 	iii.Vasodilator
D.Mannitol	d. 	iv.Potassium sparing diuretic
E.Diazoxide	e. 	v.Loop diuretic

Q3 Classify the following drugs based on mechanistic class (structures needed) 5 Marks
i)Clofibrate ii) Phenytoin iii) Sotalol iv)Lovastatin v) Amiodarone

Q4 Discuss the SAR of hydrocortisone with suitable examples to bring out the change in glucocorticoid and mineralocorticoid activity 5 Marks

Q5 a. Answer the following 3 Marks

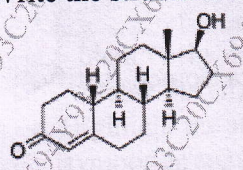


i.Identify the drug
ii. Give the mechanism of action.
iii. Give the prominent adverse effect

b. Give the importance of terminal amino group in the structure of local anaesthetics. 2 marks

Q6 Give the mechanism of action and mention the therapeutic use of the following drugs 5 Marks
1. Clopidogrel 2. Cholestyramine

Q7 a) Write the structure/ nomenclature for the following: 3 Marks



i.
ii. Estra-1,3,5(10)-triene-3 ß,17 ß -diol
iii. Give the generic name and structure of an oral contraceptive 2 Marks

b) Name the long-acting insulin preparation. Mention their structural difference from human insulin.

Q8 a) Give the synthesis of disopyramide mentioning the reagents & reaction conditions. 3 Marks

b) Write the structure of the active intermediate of Omeprazole and name the enzyme inhibited. 2 Marks

Q9 a) Write synthesis of Methyldopate mentioning the reagents & reaction conditions. 3 Mark
b) Outline the mechanism of action of organic nitrates and give an example and structure of a drug belonging to this class. 2 Mark

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