UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2021
Set-A

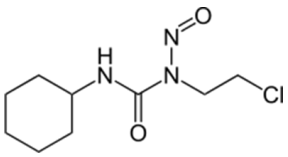
Course: Medicinal Chemistry II Theory **Semester : V**
Program: B.Pharm **Duration : 03 Hours**
Course Code: BP501T **Max. Marks : 75**

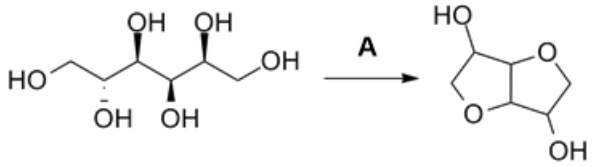
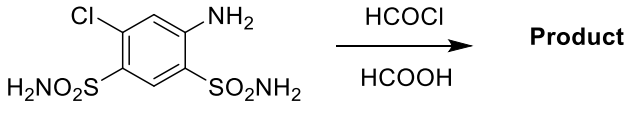
Instructions: Read each question carefully. Attempt all questions under Section A (20 x 1 marks). Attempt any two questions out of three under Section B (2 x 10 marks). Attempt any seven questions out of nine under Section B (7 x 5 marks).

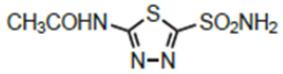
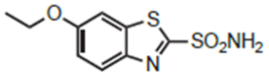
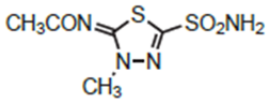
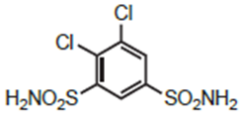
SECTION A

Multiple choice questions

(20Qx1M=20 Marks)

S. No.		Marks	COs
Q1	Which of the following is a topoisomerase II inhibitor? A) Colchicine B) Vincristine C) Podophyllotoxin D) Paclitaxel	**1**	**CO1**
Q2	Which of the following H_1 antihistamine contains piperazine substructure? A) Promethazine B) Azelastine C) Meclizine D) Clemastine	**1**	**CO1**
Q3	Methylamine is reacted with Oxirane at an ambient temperature to afford which one of the following product? A) *bis*-(2-chloroethyl)methylamine B) *bis*-(2-hydroxyethyl)methylamine C) 2-aminooxirane D) 2-amino-3-methyloxirane	**1**	**CO4**
Q4	Which of the following is the correct name of the drug with the following structure.  A) Melphalan B) Lomustine C) Carmustine D) Nitroglycerin	**1**	**CO1**
Q5	The correct IUPAC name of Captopril is: A) (2*S*)-1-[(2*S*)-3-methyl-2-sulfanylpropanoyl]pyrrolidine-2-carboxylic acid B) (2*S*)-1-[(2*S*)-2-methyl-3-sulfanylpropanoyl]pyrrolidine-2-carboxylic acid C) (2*R*)-1-[(2*R*)-3-methyl-2-sulfanylpropanoyl]pyrrolidine-2-carboxylic acid D) (2*R*)-1-[(2R)-2-methyl-3-sulfanylpropanoyl]pyrrolidine-2-carboxylic acid	**1**	**CO1**

Q6	The myocardial oxygen demand can be decreased by: A) Organic Nitrates B) Sodium channel blockers C) Calcium channel blockers D) All of the above	**1**	**CO2**
Q7	In case of dihydropyridine class of calcium channel blockers, which of the following statement is not correct? A) 1,4-dihydropyridine ring is essential for the activity. B) Substitutions of alkyl groups at C2 and C6 positions of 1,4-dihydropyridine increase duration of action. C) The carboxylic groups at C3 and C5 positions of 1,4-dihydropyridine must be protected with ester functional groups. D) The C4 position of 1,4-dihydropyridine ring should be substituted with an aromatic ring with electron donating group(s).	**1**	**CO3**
Q8	ACE enzyme converts the inactive decapeptide angiotensin I to the active octapeptide angiotensin II by removing which of the following dipeptides? A) Tyr-Phe B) His-Phe C) Tyr-Leu D) His-Leu	**1**	**CO1**
Q9	Biphenyl group is present in the chemical structure of which of the following drugs? A) Losartan B) Telmisartan C) Irbesartan D) All of the above	**1**	**CO1**
Q10	Aliskiren is an inhibitor of: A) ACE B) AT1 C) Renin D) *L*-amino acid decarboxylase	**1**	**CO1**
Q11	Guanabenz is an agonist of: A) α2 adrenergic receptor B) β2 adrenergic receptor C) Dopamine receptor D) Histamine receptor	**1**	**CO1**
Q12	Identify the reagent A in the following reaction:  A) Sulphonyl chloride B) Nitric acid C) DCCD D) *para*-Toluenesulfonic acid	**1**	**CO4**
Q13	What will be the product of this reaction?  A) Chlorthiazide B) Hydrochlorothiazide C) Hydroflumethiazide	**1**	**CO4**

	D) Cyclothiazide		
Q14	Which of the following chemical structure belongs to Ethoxazolamide? A)  B)  C)  D) 	**1**	**CO1**
Q15	The IUPAC name of Lignocaine is: A) *N*-(2,6-dimethylphenyl)alaninamide B) (*RS*)-1-(2,6-dimethylphenoxy)propan-2-amine C) 2-(diethylamino)-*N*-(2,6-dimethylphenyl)acetamide D) 5,5-diphenylimidazolidine-2,4-dione	**1**	**CO1**
Q16	Which of the following drug is a Class 2 antiarrhythmic agent? A) Amiodarone B) Sotalol C) Quinidine D) Phenytoin	**1**	**CO2**
Q17	Identify the name of the HMG-CoA inhibitor having quinoline ring in its chemical structure. A) Atorvastatin B) Lovastatin C) Pitavastatin D) Fluvastatin	**1**	**CO1**
Q18	Identify the name of drug, which lowers plasma cholesterol levels by inhibiting the absorption of cholesterol at the brush border of the small intestine. A) Cholestyramine B) Simvastatin C) Ezetimibe D) Clofibrate	**1**	**CO1**
Q19	Which of the following is 19-nortestosterone? A) Estradiol B) Methandrostenolone C) Nandrolone D) Oxandrolone	**1**	**CO1**
Q20	Which of the following is a Xenoesterogen? A) Estrone B) Estradiol C) Estriol D) Diethylstilbestrol	**1**	**CO1**

SECTION B (20 Marks)

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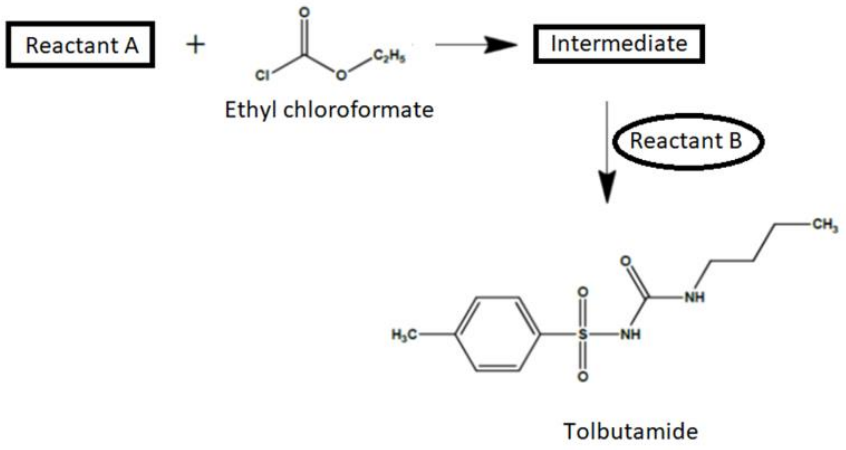
(2Qx10M=20 Marks)

Attempt 2 Question out of 3

Q1	Describe the chemical structure, mechanism of action and important uses of the following drugs: (a) Losartan (b) Cytarabine (c) Enalapril (d) Clonidine	**2.5 x 4**	**CO1**
Q2	Explain the structure-activity relationships of β-adrenergic blocker considering the propranolol as a prototype. Describe the synthesis of any two of the following drugs: (a) Methyldopa (b) Triamterene (c) 5-fluorouracil	**4+(2x3)**	**CO3, CO4**
Q3	(a) Define and classify the H_1 antihistaminic agents with suitable examples. (b) Consider the reaction with the following scheme:  In the above scheme: (i) Give the chemical structure and IUPAC name of the Reactant A. (ii) Give the chemical structure and IUPAC name of the Intermediate. (iii) What is the chemical structure and name of the Reactant B to afford Tolbutamide?	**4+6**	**CO1, CO5**

SECTION-C (35 Marks)

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(7Qx5M=30 Marks)

Attempt 7 Question out of 9

Q1	Define and classify diuretics with suitable examples. Draw the chemical structure of at least one diuretics.	**(3+2)**	**CO1**
Q2	Describe the mechanism of action and structure-activity relationship of Warfarin.	**(2+3)**	**CO3**
Q3	Illustrate the basis of design of HMG-CoA reductase inhibitors.	**(5)**	**CO1**
Q4	Describe the mechanism of action of alkylating agents. Write the scheme for synthesis of Azathioprine.	**(2+3)**	**CO1, CO2**
Q5	Describe the synthesis and mechanism of action of Methotrexate.	**(3+2)**	**CO4**
Q6	Describe the Vaughan Williams classification of antiarrhythmic agents with suitable examples. Write the chemical structure of any one antiarrhythmic agent.	**(3+2)**	**CO1, CO4**
Q7	Describe the chemical structure, mechanism of action and use of any one of the following: (a) Hydralazine (b) Minoxidil.	**(5)**	**CO1**
Q8	Define and classify the antianginal agents with suitable examples. Describe the synthesis of an antianginal agent.	**(3+2)**	**CO1, CO4**
Q9	Write the chemical structure and uses of L-Thyronine. Discuss on the metabolism of Testosterone.	**(2 x 2.5)**	**CO1, CO5**