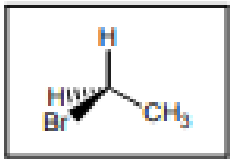
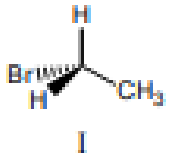
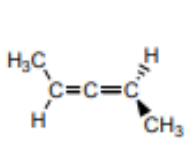
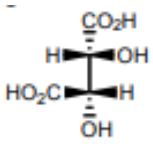
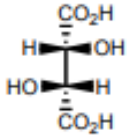
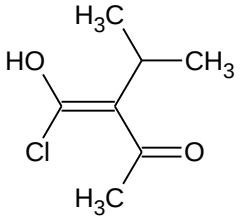
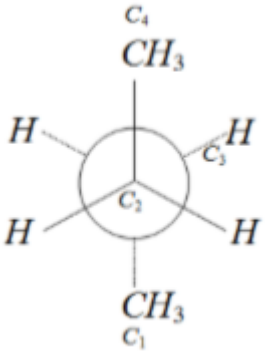
Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

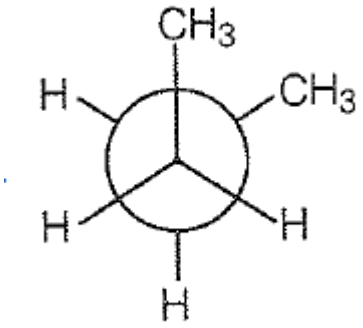
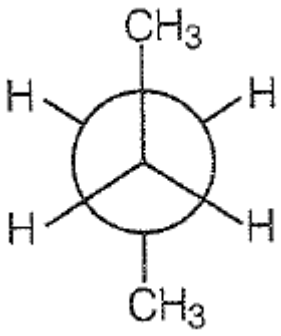
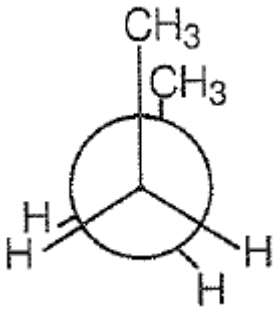
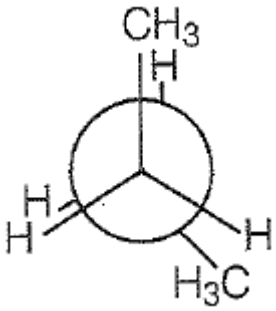
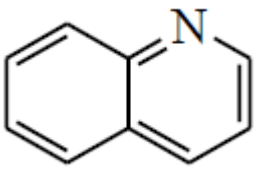
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Theory Examination, May 2021

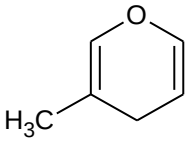
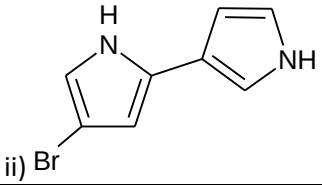
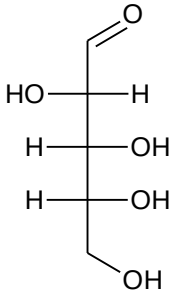
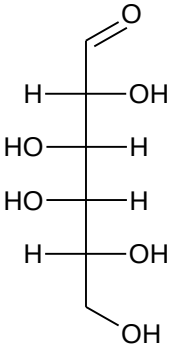
Course: Pharmaceutical Organic Chemistry-III
Semester: IV
Program: B.Pharm **Time 03 hrs.**
Course Code: BP401T **Max. Marks: 75**
Instructions: Read the Question Paper Carefully.

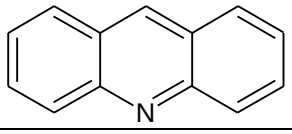
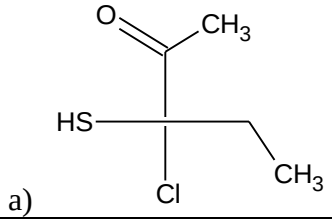
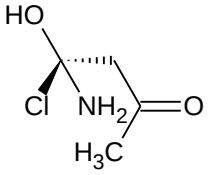
SECTION A

S. No.	CO	Objective type Questions (20X1)	Marks
Q1			**20**
1	CO5	The catalyst used in Claisen Schmidt reaction is …….	1
2	CO5	True or false? $NaBH_4$ can reduce esters but not ketones.	1
3	CO1	Which of the following (I, II or III) is the enantiomer of the following substance (Squared) ?  **A**  I  II  III a) I b) II c) III d) None of the above	1
4	CO3	Hantzsch-Widman nomenclature is used for…….compounds.	1
5	CO2	The number of degrees of rotation observed if 1dm tube is used and concentration of compound is 1g/mL a) Geometrical rotation b) Optical rotation c) Specific rotation d) Conformation	1
6	CO3	The IUPAC name of a nitrogen containing five membered saturated heterocyclic ring is ……	1
7	CO1	Which of the following molecules is achiral?  I  II  III  IV a)I b) II c) III d) IV	1

8	CO4	Madelung synthesis is used for a) Pyrrole b) Indole c) Quinoline d) All of the above	1
9	CO2	Assign E/Z configuration to the following:  	1
10	CO1	(2R,4S) –2,4–Dichloropentane and (2S,4R)-2,4-dichloropentane are: a) Enantiomers b) Diastereomers c) Identical d) Constitutional isomers	1
11	CO2	In the given conformation C2 is rotated about C2-C3 bond anticlockwise by an angle of 120^0, then the conformation obtained is  a) Fully eclipsed b) Partially eclipsed c) Gauche d) Staggered	1
12	CO5	The catalyst used in Clemmensen's reduction is……..	1
13	CO3	The IUPAC name of an oxygen containing six membered unsaturated heterocyclic ring is ……	1
14	CO1	Enantiomers are: a) Molecules that have a mirror image. b) Molecules that have at least one stereogenic center. c) Non-superimposable molecules. d) Non-superimposable molecules that are mirror images of each other.	1
15	CO2	In the following the most stable conformation of butane is	1

		a)  b)  c)  d) 	
16	CO5	$LiAlH_4$ will reduce amides to ……	1
17	CO4	Suggest suitable catalyst for the following reaction Succinamide → pyrrole	1
18	CO4	Pyrrole undergoes electrophilic substitution reaction at a) C-1 position b) C-2 Position c) C-3 Position d) None of the above	1
19	CO1	Which of the following is true for any (S)-enantiomer? a) It rotates plane-polarized light to the right. b) It is a racemic form. c) It is the mirror image of the corresponding (R)-enantiomer. d) It has the highest priority group on the left.	1
20	CO4	Identify the following compound  a) Indole b) Isoindole c) Quinoline d) Isoquinoline	1

SECTION B			
Long Answers (Answer two out of 3) 2X10			
Q2			**20**
1	CO2	i) Explain conformational isomerism in cyclohexane with suitable examples. Mark all the axial and equatorial position in a cyclohexane molecule. ii) Draw the energy profile diagram to show the energy of the different conformations of cyclohexane.	5+5
2	CO4	Comment on a) Which is more basic: pyridine or pyrrole? Explain with suitable structures. b) Medicinal uses of azepines c) What is the preferable position for electrophilic substation in pyridine. Explain your choice with suitable resonating structures.	5+2+3
3	CO3	1) Write two methods of synthesis of Furan 2) Explain the aromaticity in thiophene with the help of molecular orbitals.	5+5
SECTION C			
Short Answers (Answer 7 out of 9) 7X5			
Q3			**35**
1	CO3	Write IUPAC name of the following: i)  ii) 	5
2	CO2	Illustrate atropisomerism with a suitable example.	5
3	CO5	How Oppenauer-oxidation is useful in pharmaceutical industry. Explain the reaction with mechanism.	5
4	CO1	i) Draw structure of the molecule that is used as reference for D/L nomenclature. ii) Assign D/ L nomenclature to the following: a)  b) 	1+4
5	CO5	Explain the mechanism of reaction between acetone and hydrazine followed by a treatment with an alkali at high temperature. Name the reaction.	5

6	CO1	Compare stereospecific and stereo-selective reaction.	5
7	CO4	Write synthesis and medicinal uses of following compound:  	5
8	CO5	Comprehend the reduction of benzene in presence of sodium and liquid ammonia in ethanol with a suitable mechanism.	5
9	CO1	Write R-S nomenclature of the following. Mark the priority of the groups.  a)  b)	5
		Total	**75**