
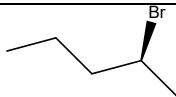


Name:			
Enrolment No:			
<p style="text-align: center;"><b>UPES</b> <b>End Semester Examination, May 2025</b></p> <p><b>Course: Pharmaceutical Organic Chemistry-III</b> <b>Program: B. Pharm</b> <b>Course Code: BP401T</b></p> <p style="text-align: right;"><b>Semester: IV</b> <b>Duration: 03 Hours</b> <b>Max. Marks: 75</b></p> <p><b>Instructions:</b> No additional material like graph paper, log table, <i>etc</i> is allowed for this examination.</p>			
<b>SECTION A</b> <b>(20 Q x 1 M = 20 Marks)</b>			
<b>S. No.</b>	<b>Attempt all questions from section A.</b>	<b>Marks</b>	<b>COs</b>
<b>Q 1</b>	Which is not an aromatic heterocycle moiety? (a) Pyrrole (b) Thiophene (c) Furan (d) Tetrahydrofuran	<b>1</b>	<b>CO1</b>
<b>Q 2</b>	Synonym of Quinoline is: (a) Benz-imidazole (b) Benz-pyridine (c) Benz-pyrrole (d) Benz-oxazole	<b>1</b>	<b>CO1</b>
<b>Q 3</b>	What is the position of nitrogen in isoquinoline ring? (a) 1 <sup>st</sup> (b) 2 <sup>nd</sup> (c) 1 <sup>st</sup> and 2 <sup>nd</sup> both (d) None of the above	<b>1</b>	<b>CO1</b>
<b>Q 4</b>	How many nitrogen atoms are present in pyrazole? (a) 1 (b) 2 (c) 3 (d) 4	<b>1</b>	<b>CO1</b>
<b>Q 5</b>	A compound that rotates plane-polarized light to the right is called: (a) Racemic (b) Dextrorotatory (c) Levorotatory (d) Achiral	<b>1</b>	<b>CO2</b>
<b>Q 6</b>	Which of the following amino acids does not contain a chiral center? (a) Glycine (b) Alanine (c) Serine (d) Valine	<b>1</b>	<b>CO2</b>
<b>Q 7</b>	Meso compounds are optically inactive due to: (a) Absence of chiral center (b) Internal compensation (c) External compensation (d) None of these	<b>1</b>	<b>CO2</b>
<b>Q 8</b>	 Identify the following compound:  (a) (S)-2-bromopentene (b) (R)-2-bromopentane	<b>1</b>	<b>CO2</b>

	(c) (S)-2-bromopentane (d) None of the above		
<b>Q 9</b>	Which of the following is least stable? (a) Anti conformation (b) Gauche conformation (c) Staggered conformation (d) Eclipsed conformation	<b>1</b>	<b>CO3</b>
<b>Q 10</b>	Which is the most stable conformation of cyclohexane? (a) Chair (b) Boat (c) Half chair (d) Twist boat	<b>1</b>	<b>CO3</b>
<b>Q 11</b>	Which of the following is an important reaction of pyrrole? (a) Electrophilic substitution (b) Nucleophilic substitution (c) Free radical substitution (d) Carbene mediated reactions	<b>1</b>	<b>CO3</b>
<b>Q 12</b>	Which heteroatom is present in furan? (a) Nitrogen (b) Oxygen (c) Sulfur (d) Phosphorus	<b>1</b>	<b>CO3</b>
<b>Q 13</b>	In Clemenson reduction ketone reduced to: (a) Alkane (b) Alkene (C) Alkyne (d) Alcohol	<b>1</b>	<b>CO4</b>
<b>Q 14</b>	Acid catalysed conversion ketoxime or aldoxime to N-substituted amides is called (a) Beckmann rearrangement (b) Hoffmann rearrangement (c) Schmidt Reaction (d) Dakin oxidation	<b>1</b>	<b>CO4</b>
<b>Q 15</b>	Which reaction proceeds in the presence of hydrazoic acid? (a) Dakin reaction (b) Beckmann rearrangement (c) Wolff Kishner reaction (d) Schmidt reaction	<b>1</b>	<b>CO4</b>
<b>Q 16</b>	In Beckmann rearrangement, oxime is converted into? (a) Nitro compounds (b) Amide (c) Amine (d) Nitrile	<b>1</b>	<b>CO4</b>
<b>Q 17</b>	Predict the product when sodium succinate reacts with phosphorus trisulphide? (a) Pyrrole (b) Furan (c) Thiophene (d) Pyridine	<b>1</b>	<b>CO5</b>
<b>Q 18</b>	Which heterocyclic ring is present in Indomethacin? (a) Quinoline (b) Indole (c) Purine (d) Benz-imidazole	<b>1</b>	<b>CO5</b>
<b>Q 18</b>	Which of the following heterocycles is a component of DNA? (a) Pyrrole (b) Pyrimidine (c) Thiophene (d) Furan	<b>1</b>	<b>CO5</b>
<b>Q 20</b>	Which is a six-membered heterocyclic ring? (a) Pyrrole (b) Pyridine (c) Furan (d) Pyrazole	<b>1</b>	<b>CO5</b>

SECTION B (20 Marks) (2 Q x 10 M = 20 Marks)			
	Attempt any two questions from section B.	Marks	
Q 1	What is resolution? Explain the different methods of resolution in detail with suitable examples.	(2+8)= 10	CO2
Q 2	Explain the different methods to determine configuration of geometrical isomers based on physical and chemical properties?	10	CO3
Q 3	Explain the electrophilic substitution reaction (ESR) and nucleophilic substitution reactions (NSR) of quinoline and isoquinoline in detail?	10	CO5
SECTION-C (35 Marks) (7 Q x 5 M = 35 Marks)			
	Attempt any seven questions from section C.	Marks	
Q 1	Explain the resonating structures of pyrrole and furan.	5	CO1
Q 2	Explain any five electrophilic substitution reactions (ESR) of furan with suitable example.	5	CO1
Q 3	Explain any five electrophilic substitution reactions (ESR) of thiophene with a suitable example.	5	CO1
Q 4	Define diastereomers. Provide a suitable example and discuss their properties in detail.	5	CO2
Q 5	Define geometrical isomerism? Explain the nomenclature of geometrical isomerism with suitable example?	5	CO3
Q 6	Explain Schmidt rearrangement and Dakin Reaction with suitable examples.	5	CO4
Q 7	Explain Claisen Schmidt Reaction. Draw the mechanism of this reaction using benzaldehyde and acetophenone.	5	CO4
Q 8	Explain the electrophilic substitution reactions of acridine?	5	CO5
Q 9	Discuss the structure and uses of quinoline and isoquinoline with suitable examples?	5	CO5