


**NAVVRACHANA  
UNIVERSITY**
*a UGC recognized University*

**School:** School of Science  
**Program/s:** B.Sc. Chemistry  
**Year:** 3<sup>rd</sup> **Semester:** 5th  
**Examination:** End Semester Examination  
**Examination year:** December 2022

**Course Code:** CH311 **Course Name:** Organic Chemistry-III

**Date:** 02/12/2022

**Time:** 14:30 pm to 16:30 pm

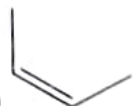

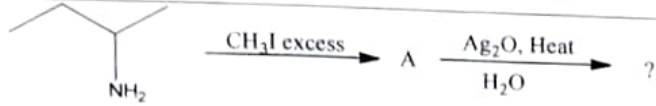

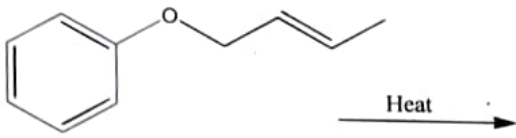
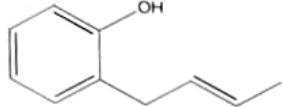
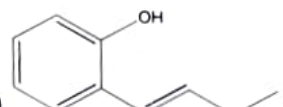
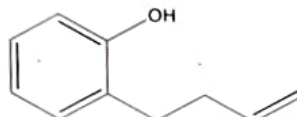
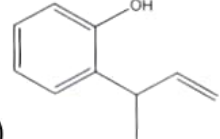
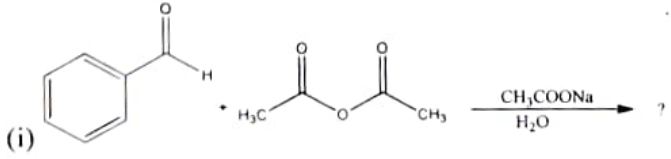
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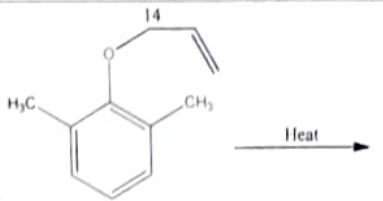
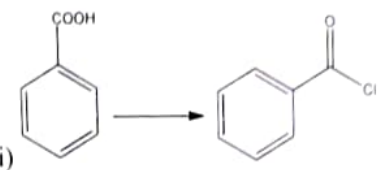
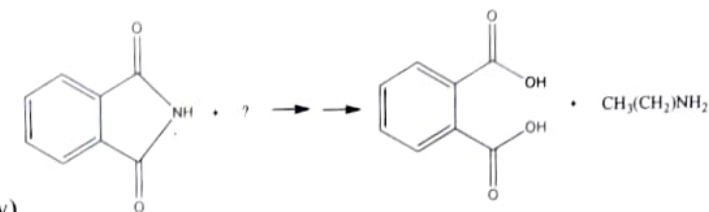
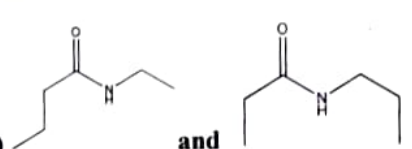
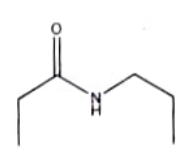
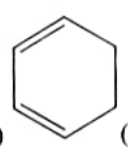
**Total Pages:** 3

**Instructions:**

- Write each answer on a new page.
- Use of a calculator is permitted
- Please read the instructions carefully before attempting the Exam
- All questions are compulsory

Q. No.	Details	Marks	COs*	BTL#
Q.1	<p><b>Choose the most appropriate answer from the options provided</b></p> <p>1. Among the following which has the lowest pKa value:</p> <p>(a) CH<sub>3</sub>COOH (b) HCOOH</p> <p>(c) (CH<sub>3</sub>)<sub>2</sub>CHCOOH (d) CH<sub>3</sub>—CH<sub>2</sub>—OH</p> <p>2. The IUPAC name of the following compound is ____</p> <div style="text-align: center;"> </div> <p>(a) 2-Formylhex-2-ene-3-one (b) (E)-2-methyl-3-oxohex-4-enal</p> <p>(c) (E)-4-methyl-3-oxohex-4-enal (d) (Z)-2-methyl-3-oxohex-4-enal</p> <p>3. Which of the following reactions will not result in the formation of carbon-carbon bond?</p> <p>(a) Cannizzaro's reaction (b) Aldol reaction</p> <p>(c) Friedel craft reaction (d) Reimer Tiemann reaction</p> <p>4. Which of the following amine shows prominent intermolecular association?</p> <p>(a) CH<sub>3</sub>NHCH<sub>3</sub> (b) CH<sub>3</sub>NHPh</p> <p>(c) (CH<sub>3</sub>)<sub>3</sub>N (d) CH<sub>3</sub>NH<sub>2</sub></p> <p>5. Predict the major product in the following reaction.</p>	6	CO1 CO2 CO3 CO4 CO5	BT1 BT2 BT3 BT4 BT5

<p>(a) </p> <p>(c) </p>	<p></p> <p>(b) </p> <p>(d) None of the above</p> <p>6. Which of phenols (a)-(d) is the main product of the following thermal rearrangement?</p> <p></p> <p>a) </p> <p>b) </p> <p>c) </p> <p>d) </p>			
<p><b>Q.2</b></p>	<p><b>How will you convert the following?</b></p> <p>(Note: write only chemical reaction, no reaction mechanism is needed)</p> <p>(i) Phenol to Salicylaldehyde</p> <p>(ii) Acetophenone to ethyl benzene</p> <p>(iii) Ethanal to ethyl-3-hydroxy butanoate</p> <p>(iv) Benzamide to aniline</p> <p>(v) Aniline to p-bromoaniline and o-bromoaniline</p>	<p>5</p>	<p>CO1</p> <p>CO2</p> <p>CO4</p>	<p>BT1</p> <p>BT2</p> <p>BT3</p>
<p><b>Q.3</b></p>	<p><b>Illustrate the following reactions on the basis of chemical equations and reaction mechanism:</b></p> <p>(i) Lossen rearrangement</p> <p>(ii) Hell-Volhard-Zelinsky halogenation</p>	<p>4</p>	<p>CO1</p> <p>CO2</p> <p>CO3</p> <p>CO4</p>	<p>BT1</p> <p>BT2</p> <p>BT3</p> <p>BT4</p>
<p><b>Q.4</b></p>	<p><b>Complete the following reactions with suitable reaction mechanism</b></p> <p>(Any Three)</p> <p>(i) </p>	<p>9</p>		

	<p>(ii) </p> <p>(iii) </p> <p>(iv) </p>		CO1 CO2 CO3 CO4 CO5	BT1 BT2 BT3 BT4
Q.5	<p><b>How will you synthesize following compounds with suitable reaction mechanism?</b></p> <p>a)  and </p> <p>c)  (thermal and photochemical)</p>	6	CO1 CO2 CO3 CO4 CO5	BT1 BT2 BT3 BT4
Q.6	<p><b>Justify the following:</b></p> <p>1. The <math>\Pi</math> orbital diagram for the 1,3,5-hexatriene have the HOMO, LUMO, GS, ES, mirror plane, and axis of symmetry.</p> <p>2. Ethylbenzene is generally prepared by acetylation of benzene followed by reduction and not by direct alkylation.</p>	6	CO1 CO2 CO4 CO5	BT1 BT2 BT3 BT4 BT5
Q.7	<p><b>Explain in brief (Any Two)</b></p> <p>(i) Diels-Alder reaction</p> <p>(ii) Hinsberg's method for the separation of 1°, 2°, 3° amines</p> <p>(iii) Role of DCC in carboxylic acid and amine reaction</p>	4	CO1 CO2 CO3 CO4 CO5	BT1 BT2 BT3 BT4

\*\*\*\*\*End of Question Paper\*\*\*\*\*