



**SB-3501**

**M. Sc. (Part - II) Examination**

**March / April - 2011**

**Organic Chemistry : Paper - I**

**(Natural & Advanced Organic Chemistry)**

Time : 3 Hours]

[Total Marks : 70

**Instructions :**

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवही पर अवश्य लभवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="M. SC. (PART - II)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="ORGANIC CHEMISTRY : PAPER - I"/>	<input type="text"/>
Subject Code No. : <input type="text" value="3"/> <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="1"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="1&amp;2"/>	
Student's Signature	

- (2) Answers to the **two** sections should be written in **separate** answer books.
- (3) Figures to the **right** indicate full marks of the questions.

**SECTION - I**

- 1 (a) Discuss the geometry and aromatic character of porphin. Discuss relationship between rhodoporphyrin, pyroprophyrin and phylloporphyrin. **12**
- (b) Give the reductive products obtained by the reduction of haemin under different conditions. Which products are obtained by the oxidation of haemin ? Give inferences for the structure of haemin from them.
- (c) Discuss the position of hydroxyl, methoxy and carboxyl group in reserpic acid giving suitable reaction.

**OR**

- 1 (a) Discuss the relationship between morphine, codeine and thebaine giving suitable reaction. **12**

- (b) Explain the importance of following reactions in proving the structure of lysergic acid :
- (i) Fusion with potassium hydroxide
  - (ii) Oxidation
- (c) Give the synthesis of opsopyrrole, cryptopyrrole and cryptopuyrrole carboxylic acid.
- 2** (a) What is Barbier-Wieland degradation ? How is it useful in determining the nature of the side chain in cholesterol ? **12**
- (b) Give the synthesis of 7-Methoxy-3,3'-dimethyl-1,2-cyclopenteno phenanthrene and show what light it throws in determining the structure of Oestrone.
- (c) Prove that ergosterol has two double bond in the same ring and one double bond in the side chain.

**OR**

- 2** (a) Giving suitable reaction discuss the stereochemistry of nucleus present in Cholesterol. **12**
- (b) Explain the chemical relationship and interconversion among oestrone, oestradiol and oestriol.,
- (c) Prove that bile acids are hydroxyl derivatives of 5- $\beta$ -cholanolic acid or - $\alpha$ -cholanolic acid. Give the synthesis of Diel's hydrocarbon.
- 3** (a) Prove that acid compound obtained on decomposition of vitamin -B<sub>1</sub> by sodium sulphite solution saturated with sulphur dioxide is 4-amino-2-methyl-pyrimidine-5-methyl sulphonic acid. **11**
- (b) Prove that cadinene has two double bonds in different rings and isopropyl group on 4<sup>th</sup> position in ring-A.
- (c) Give the synthesis of eudalene.

**OR**

- 3 (a) Give analytical evidences for the structure of retinol. 11
- (b) Discuss the reaction for transformation of farnesol to geranyl acetone and farnesenic acid and show what light they throw in determining the structure of farnesol.
- (c) Give the synthesis of thiamine hydrochloride.

## SECTION – II

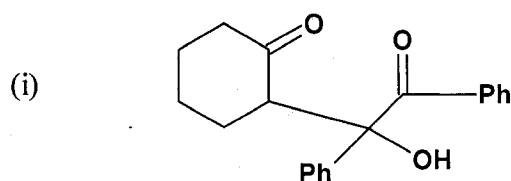
- 4 Answer any **three** of the following : 12
- (a) What are ionic liquids ? Write their properties and applications.
- (b) Differentiate conventional and microwave synthesis. Give a brief account of biodegradable polymers.
- (c) Define supercritical fluids. Discuss applications of supercritical CO<sub>2</sub> in dry cleaning and decaffeination of coffee.
- (d) Write the green synthesis for :
- (i) Paracetamol
- (ii) Methyl methacrylate.
- 5 (a) What are the characteristics of an ideal protective group ? Mention different protective groups used to protect hydroxyl group. Discuss tetrahydropyranyl ether as protecting group. Discuss its advantages and disadvantages. How will you overcome its disadvantages? 12

(b) Explain the following transformations using appropriate reagents :

(i) Alanine + Glycine  $\rightarrow$  Glycylalanine.

(ii) 2-phenyl cyclohexanone  $\rightarrow$  2-methyl 6-phenyl cyclohexanone

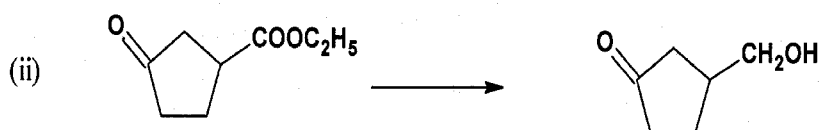
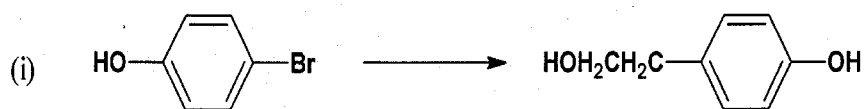
(c) What is disconnection ? Give the disconnection and plan the synthesis for the following molecules :



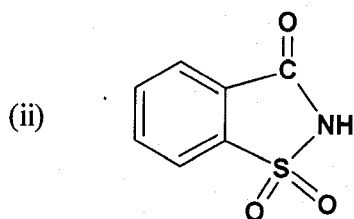
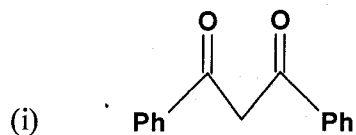
OR

5 (a) Discuss the various amino protective groups which are used in the synthesis of peptides. Compare their merits and demerits. 12

(b) Explain the following transformations using appropriate reagents :

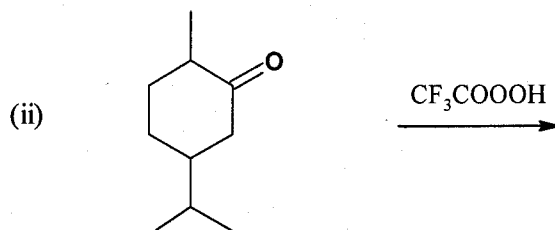
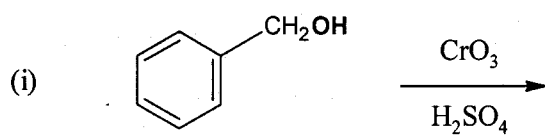


- (c) Give the disconnection and plan the synthesis for the following molecules :

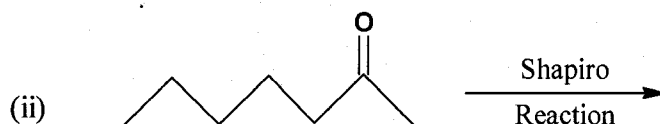
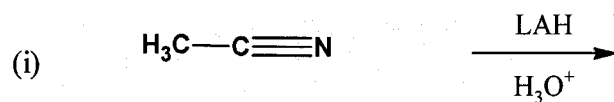


- 6 (a) Complete the following reactions and give their mechanism :

11



(b) Complete the following reactions and give their mechanism :

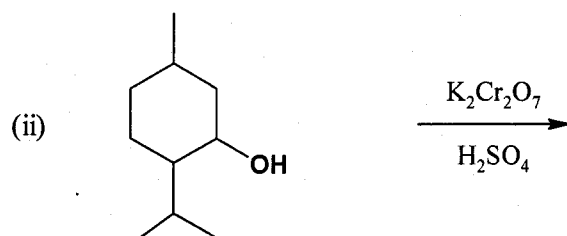
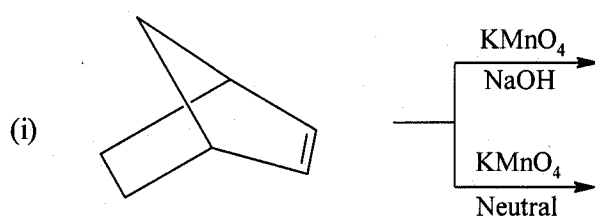


(c) What is combichem ? Discuss the solid phase techniques giving suitable illustrations.

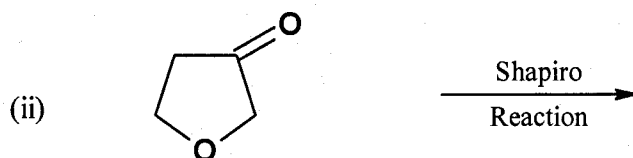
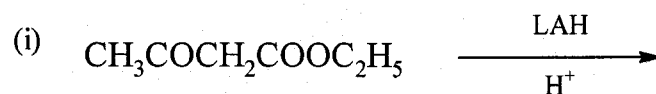
OR

6 (a) Complete the following reactions and give their mechanism.

11



(b) Complete the following reactions and give their mechanism :



(c) Give general introduction and limitation of combinatorial synthesis.

Define and explain the following terms :

- (i) Parallel synthesis
- (ii) Mix and Split synthesis.

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