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RE-3551-52

M. Sc. (Part - II) Examination

April / May – 2010

Organic Chemistry : Paper - I

(Natural & Advanced Organic Chemistry)

Time : **3** Hours] [Total Marks : **70**

RE-3551

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ M. SC. (PART - 2)

Name of the Subject :

☛ ORGANIC CHEMISTRY - 1

☛ Subject Code No. : 3 5 5 1 ☛ Section No. (1, 2,.....) : 1

Seat No. :

Student's Signature

(2) Answer to the two sections should be written in separate answer books.

(3) Figures to the right indicate full marks of the questions.

1 (a) How is it established that Haemin contains vinyl group and propionic acid residue? **12**

(b) What is meant by bile pigment? Prove the constitution of Billirubin by analytical evidences.

(c) Discuss the position of hydroxyl, methoxy and carboxyl group in reserpic acid giving suitable reaction.

OR

1 (a) Prove the presence of >N-CH_3 group and ether linkage in morphine. **12**

(b) Give the synthesis of unsymmetrical dipyrryl methane and cryptopyrrole.

(c) Discuss all the degradation products of chlorine-e and give the skeleton structure of chlorine-e.

2 (a) Discuss the position of angular methyl groups in cholesterol. **12**

(b) Prove that bile acids are hydroxyl derivatives of 5-β-cholanic acid or 5-α-cholanic acid. Give the synthesis of Diel's Hydrocarbon.

(c) What are adrenocortical hormones? Explain their importance. Give structures of four such hormones.

OR

2 (a) "Cholesterol has ethylenic double bond either between C_4 and C_5 or C_5 & C_6 while hydroxyl group at C_3". Justify **12**

(b) Give the evidences for the position of phenolic -OH group and benzenoid ring in Oestrone.

(c) What are sex hormones? Classify them giving one example of each. Give the synthesis of Testosterone.

3 (a) Alkaline solution of Riboflavin when exposed to light yields Lumilactoflavin. Discuss the structure of Lumilactoflavin. **11**

(b) Discuss the biochemical importance of Vitamin B_{12}.

(c) Discuss Ruzicka's work to confirm the position of carboxyl group and angular methyl group in abietic acid.

OR

3 (a) Give the evidences for the nature of nucleus and position of double bond in zingiberene. **11**

(b) Prove that vitamin K_1 is 2-methyl-3-phytyl-1, 4-naphthaquinone.

(c) Give the synthesis of eudalene.

RE-3552

Instructions :

(1)

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Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **M. SC. (PART - 2)**

Name of the Subject :

☛ **ORGANIC CHEMISTRY - 1**

☛ Subject Code No. : **3 5 5 2** ☛ Section No. (1, 2,.....) : **2**

Seat No. :

Student's Signature

(2) Answer to the two sections should be written in separate answer books.

(3) Figures to the right indicate full marks of the questions.

4 (a) Discuss the principles and concept of green chemistry. **12**

(b) Explain the following aqueous phase reaction :

(i) Baeyer-Villager oxidation

(ii) Knoevenagel condensation.

(c) Give the manufacture and uses of the following using greener technology :

(i) Paracetamol

(ii) Adipic acid.

OR

4 (a) What are ionic liquids? Classify them and discuss their applications in Heck reaction. **12**

(b) Explain the following aqueous phase reaction :

(i) Claisen-Schmidt condensation

(ii) Diels-Alder reaction.

(c) Give the manufacture and uses of the following using greener technology :

(i) Methyl methacrylate

(ii) Catechol

5 (a) Explain the following transformation using appropriate reagents : **12**

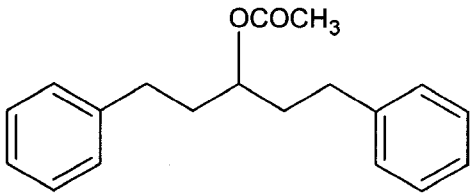
(i) p-bromo phenol $\rightarrow$ p-hydroxy benzoic acid

(ii) Methyl-3-oxocyclohexane carboxylate $\rightarrow$ 3-(1-hydroxyl-1-methyl ethyl) cyclohexanone.

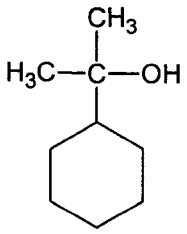
(iii) Cyclopentanone $\rightarrow$ 1-hydroxy-1-acetyl cyclopentane

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

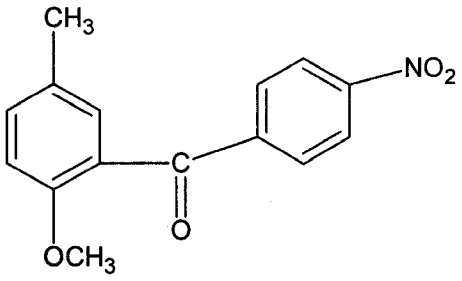
(i)



(ii)



(iii)



OR

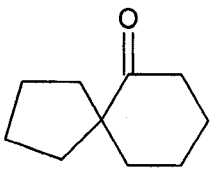
5 (a) Explain the following transformation using appropriate reagents : 12

(i) p-bromo acetophenone $\rightarrow$ p-acetyl benzyl alcohol

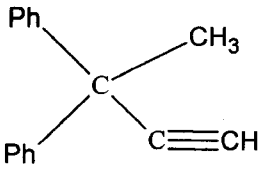
(ii) cyclohexanone $\rightarrow$ 1-hydroxy-1-acetyl cyclohexane

(ii) Valine + Glycine $\rightarrow$ Valinylglycine

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

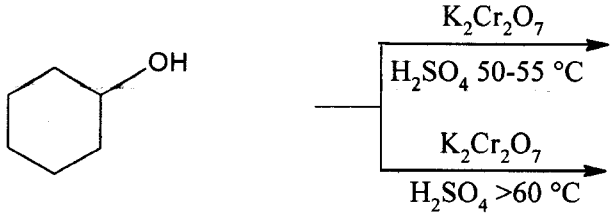
(i) 

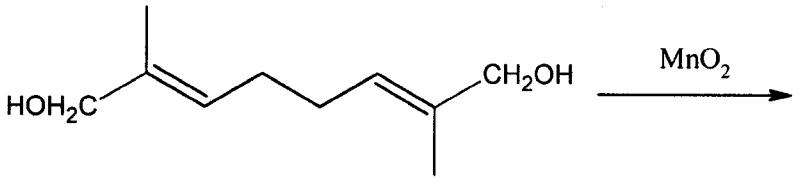
(Use of Pinacolone rearrangement)

(ii) 

(iii) $Ph\text{-}CH_2\text{-}CH(COOEt)_2$

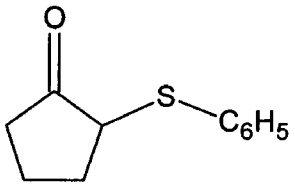
6 (a) Complete the following reactions and give their mechanism : 11

(i) 

(ii) 

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

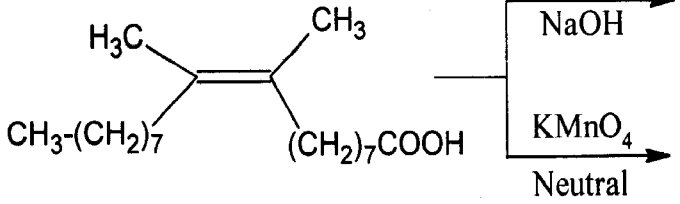
(i) $(C_6H_5)_2$-C=N-OH $\xrightarrow[\text{Ether}]{\text{LAH}}$

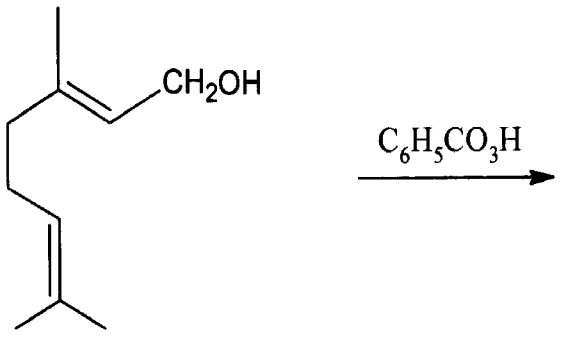
(ii)  $\xrightarrow[\text{Reaction}]{\text{Shapiro}}$

(c) Discuss the Houghton's tea bag procedure of parallel synthesis and give the limitation of combinatorial synthesis.

OR

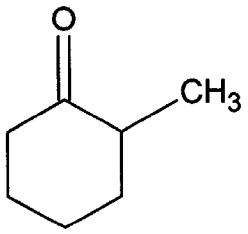
6 (a) Complete the following reactions and give their mechanism: **11**

(i) 

(ii) 

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

(i) $C_6H_5\text{-}CH{=}CH\text{-}COOC_2H_5 \xrightarrow[H^+]{LAH}$

(ii) 

$\xrightarrow[\text{Reaction}]{\text{Shapiro}}$

(c) Define the term combichem. Discuss the solid phase techniques and the anchor-linker concept.
