* A - 1 4 8 1 *

A-1481

M.Sc. (Sem. III) (SF) (Industrial Chemistry) Examination

March / April – 2015

Paper - IV : Rearrangements & Synthetic Approach

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

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. (SEM. III) (SF) (INDUSTRIAL CHEMISTRY)

Name of the Subject :

☛ PAPER - IV : REARRANGEMENTS & SYNTHETIC APPROACH

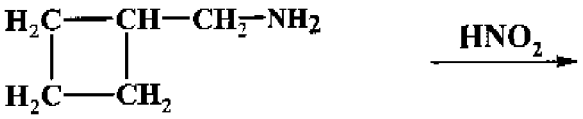
☛ Subject Code No. : 1 4 8 1 ☛ Section No. (1, 2,.....) : Nil

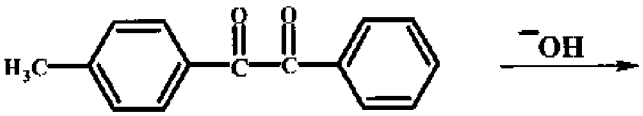
Seat No. :

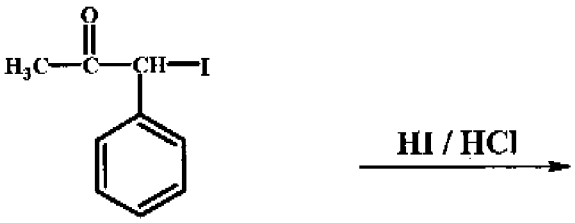
Student's Signature

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

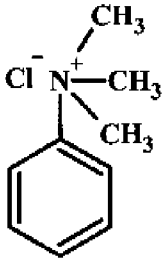
1. Give name of the rearrangement, end product(s) and offer suitable mechanism with supporting explanation briefly of any four of the following: **18**

(i) 

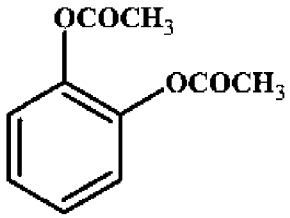
(ii) 

(iii) 

(iv)



(v)



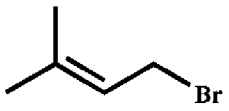
2 Answer any THREE of the following: 18

(a) What is meant by disconnection? Explain the following terms with suitable examples:
   (i) Retrosynthetic arrow (ii) Retrosynthetic analysis
   (iii) Synthetic equivalent (iv) Reagent

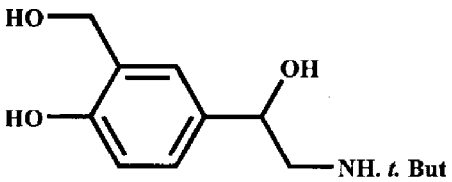
(b) Explain the following transformation using appropriate reagents:
   (i) 4-Bromo acetophenone → 4-Acetyl benzylacohol
   (ii) Cyclohex-2-en-1-one → 3-Acetyl cyclohexanone
   (iii) Furfuraldehyde → 5-Benzoyl furan-2-carbaldehyde
   (iv) Leucine + Glycine → Leucyl glycine

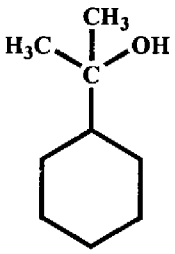
(c) Give the disconnection and plan the synthesis for the following molecules:

(i)



(ii)



(iii) 

(d) What are needs of protective group in organic synthesis ? Give the characteristics of an ideal protective groups. State the different protective groups used for the protection of hydroxyl group. Discuss tetrahydropyranyl ether as protecting group. Discuss their advantages and disadvantages. How will overcome it ? Give the synthesis of :

(i) 2-Nitro glycerol (ii) L (+) Ascorbic acid.

3 Answer any THREE of the following: **18**

(a) Discuss the application of organozinc compounds in organic synthesis.

(b) Give the preparation of 9-BBN. How will you prepare the following using organoborane compounds?

(i) Ketone, (ii) Tertiary alcohol (iii) Amine

(c) Give methods for the perparation of dialkylcuparate. Explain the reactions of lithium dialkylcuparate with vinylhalide and allyl acetate giving equations.

(d) Give synthetic application of organopalladium compounds.

4 Answer any THREE of the following: **16**

(a) Give mechanism and synthetic applications of Jacobsen rearrangement.

(b) Give methods of preparation of organolithium compounds and give its important reactions.

(c) Give mechanism and synthetic applications of Claisen rearrangement.

(d) Give an account of synthetic equivalent groups.
