* A C - 1 5 6 5 *

AC-1565

M. Sc. (Sem. IV) Examination

April / May - 2015

Organic Chemistry : Paper - III

(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. IV)**

Name of the Subject :

☛ **Organic Chemistry : Paper - III**

☛Subject Code No. : **1 5 6 5** ☛Section No. (1, 2,.....) : **Nil**

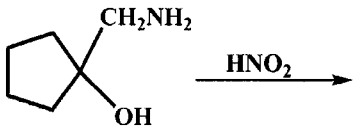
Seat No. :

Student's Signature

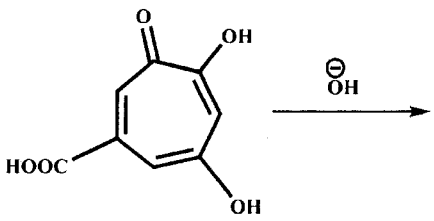
(2) Figures to the right indicate full marks of the quesitons.

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

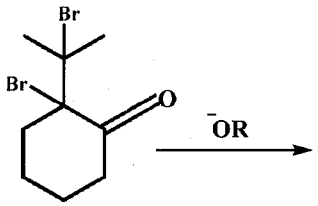
(i)



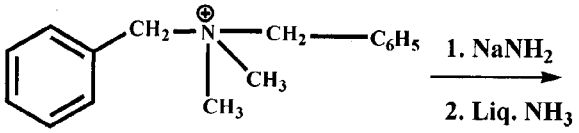
(ii)



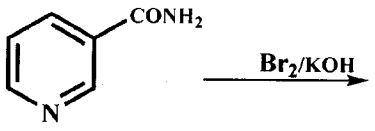
(iii)



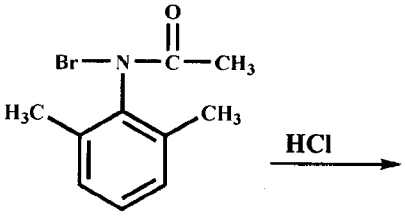
(iv)



(v)



(vi)



2. Answer any **THREE** of the following: **18**

(a) What is meant by multistep synthesis? Explain giving suitable illustration. Describe different protecting groups used in peptide synthesis. Discuss their merits and demerits.

(b) Explain the following transformation using appropriate reagents:

(1) Methyl 2, 2-dimethyl-oxocyclohexane-1-caboxylate ⟶ (2, 2-dimethyl-6-oxocyclohexyl acetate)

(2) Methyl-9,10,16-trihydroxy hexadecanoate ⟶ 7,8-dihydroxy-16-methoxy-16-oxohexodecanoic acid

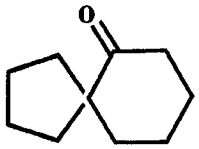
(3) Cyclopentanone ⟶ 1-(1-hydroxycyclopentyl) ethan-1-one

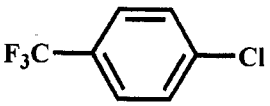
(c) What is retrosynthesis? Explain the following terms giving suitable examples:

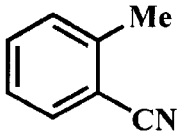
(I) TM **(II)** Retrosynthetic arrow

(III) Synthon **(IV)** FGI

(d) Give the disconnection and plan the synthesis of following molecules:

(I)  **(Use Pinacolone)**

(II) 

(III) 

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

(a) Formulate the following reactions stating clearly the reaction conditions and nature of missing products.

(I) 1-bromopropane + Li $\xrightarrow{\text{Ether}}$ A $\xrightarrow{\text{CuI}}$ B $\xrightarrow{\text{1-bromobutane}}$ C

(II)  $\xrightarrow{B_2H_6}$ A $\xrightarrow{H_2C{=}CHCOCH_3}$ B $\xrightarrow{H_2O}$ C

(III) 2-Methyl-1-butene + CH_2I_2 + Zn(Cu) $\xrightarrow{\text{Ether}}$ D

(b) What is TMEDA? How is it useful in organolithium compounds? How will you prepare alcohol, aldehyde and telomere from organolithium compounds?

(c) Describe the preparation of the following giving reaction conditions, reagents and give their applications:

(1) Disiamyl borane (2) Texyl borane (3) 9-BBN

(d) Give preparation and synthetic applications of organocopper compounds.

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

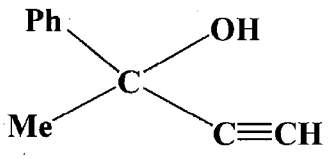
(a) Give mechanism and three synthetic applications of Claisen rearrangement.

(b) Give preparation and synthetic applications of organozinc compounds.

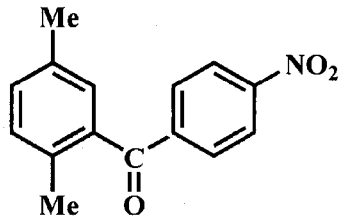
(c) Give mechanism and three synthetic applications of Fischer-Hepp rearrangement.

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

(I)



(II)



(III)