PG – 228

II Semester M.Sc. Degree Examination, June/July 2014
(NS) (2010-11 and Onwards)
CHEMISTRY
C - 202 : Organic Chemistry – II

Time : 3 Hours Max. Marks : 80

Instruction : *Answer Question No.* ***1*** *and* ***any five*** *of the remaining questions.*

1. Answer **any ten** of the following. **(10×2=20)**

a) What is ipso attack ? Give an example.

b) Predict the product and propose mechanism for the following

 $+ Zn(CN)_2 \xrightarrow[ii)\ Hydrolysis]{i)\ HCl} ?$

c) Suggest suitable mechanism for the following transformation

$$CH_3-CH=CH-\overset{\overset{O}{\|}}{C}-CH_3 \xrightarrow[ii)\ H_2O/\overset{\ominus}{O}H]{i)\ LAH} CH_3-CH=CH-\overset{\overset{OH}{|}}{CH}-CH_3$$

d) What is Mannich reaction ? Formulate its mechanism.

e) Suggest suitable mechanism for the following transformation

$$C_2H_5-C\equiv C-C_2H_5 \xrightarrow{Na/NH_3\ (l)} \begin{matrix} H & & Et \\ & C=C & \\ Et & & H \end{matrix}$$

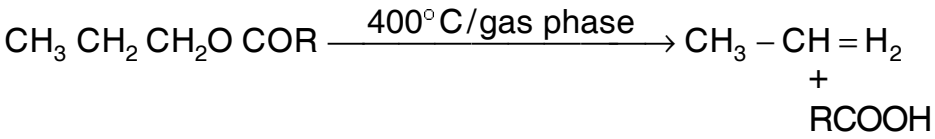
f) Formulate the mechanism of E2C reaction by taking appropriate example.

g) Write the structures of products (A) and (B) and label them as major/minor. Justify your answer :

$$CH_3-CH_2-\overset{\overset{Br}{|}}{C}H-CH_3 + \overset{\ominus}{O}Et \xrightarrow{EtOH} A + B$$

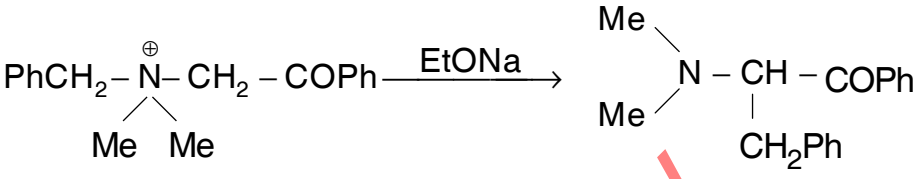
P.T.O.

h) Suggest suitable mechanism for the following reaction



i) What is Wolff rearrangement ? Give its mechanism.

j) Suggest suitable mechanism for the following transformation



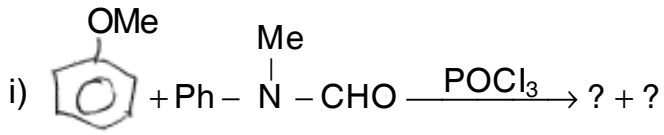
k) Outline a synthesis of biotin.

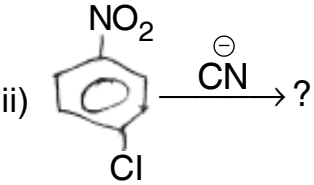
l) What are molecular receptors ? Give their significance.

2. a) Explain the ortho/para ratios in aromatic electrophilic substitution reactions using appropriate examples.

b) Discuss the effect of leaving group and substrate structure on aromatic SN1 reactions.

c) Predict the product(s) and propose mechanism for the following :

i) 

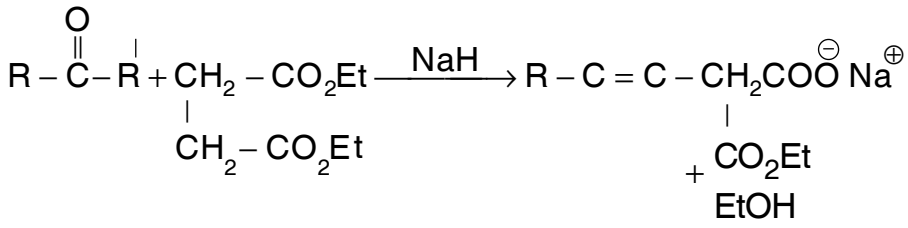
ii) 

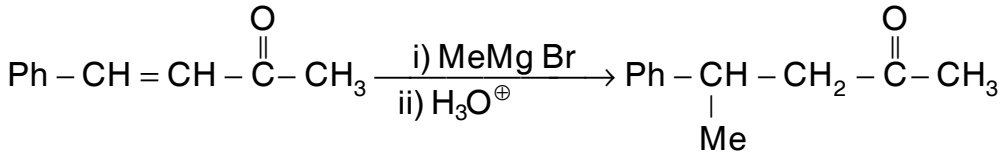
(3×4=12)

3. a) What is ene synthesis ? Discuss its mechanism with the help of suitable example.

b) Explain why cis z-butene given (dl) mixture of 2, 3-dibromobutane on addition of bromine.

c) Suggest the suitable mechanism for the following transformations

i) 

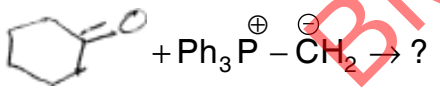
ii) 

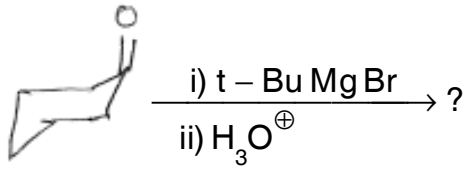
(3×4=12)

4. a) What is Chugaev reaction ? Explain its mechanism using appropriate example.

b) Discuss the effect of attacking base and leaving group on E1 and E2 reactions.

c) Predict the product(s) and formulate the mechanism for the following transformations :

i) 

ii) 

(3×4=12)

5. a) Discuss the mechanism of Fritsch-Buttenberg-Wiechell rearrangement using suitable example.

b) Give the comparative account of Hoffmann, Curtius and Lossen rearrangements.

c) Write notes on :

i) Qienone-phenol rearrangement

ii) Benzidine rearrangement. **(3×4=12)**

6. a) Give the biological importance of pantothenic acid outline its synthesis.

   b) What are molecular tweezers ? Give their applications.

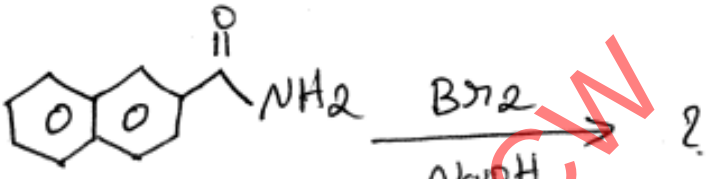
   c) i) Give the synthesis of Vitamin – C.

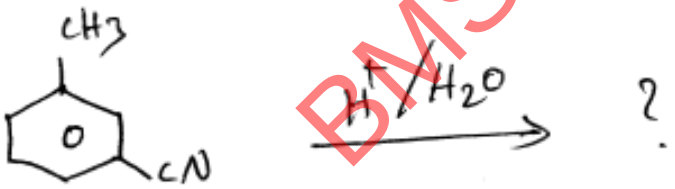
      ii) Discuss the applications of cyclophanes. **(3×4=12)**

7. a) Explain the mechanism of Gatterman-Koch reaction with the help of suitable example.

   b) Discuss the benzyne mechanism.

   c) Predict the products and give the mechanisms

i) 

ii) 

(3×4=12)