

M.Sc. Part-I (Semester-I) (C.B.C.S. Scheme) Examination

CHEMISTRY (OLD) (UPTO SUMMER-2018)

ORGANIC CHEMISTRY—I

Paper—II

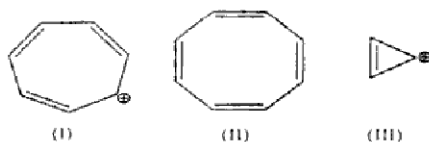
Time : Three Hours]

[Maximum Marks : 80

Note :— ALL questions are compulsory and carry equal marks.

UNIT—I

1. (a) Classify the following compounds into aromatics, anti-aromatics and non-aromatics compounds giving reasons. 6



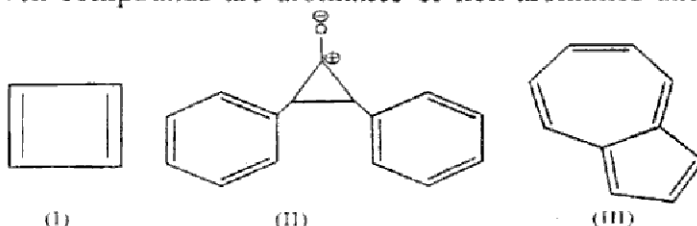
- (b) Explain the terms :

- (i) Annulenes
(ii) Cross conjugation.

- (c) Discuss with examples alternant and non-alternant hydrocarbons. 4

OR

- (p) The given compounds are aromatics or non-aromatics and why ? Explain. 6



- (q) Write an account of :

- (i) Bonding in Fullèrene
(ii) Homo-aromaticity.

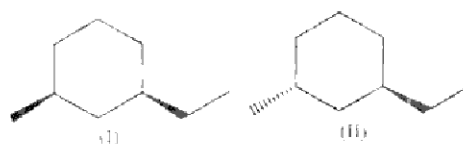
- (r) Discuss Tropone with the help of preparation and properties. 4

UNIT—II

2. (a) Discuss the terms :

- (i) Plane of symmetry
(ii) Enantiotopic faces.

- (b) Draw the chair conformational structures of each of the following compounds. Indicate which isomer is more stable and why ? 6



- (c) Explain optical activity of biphenyl. 4

OR

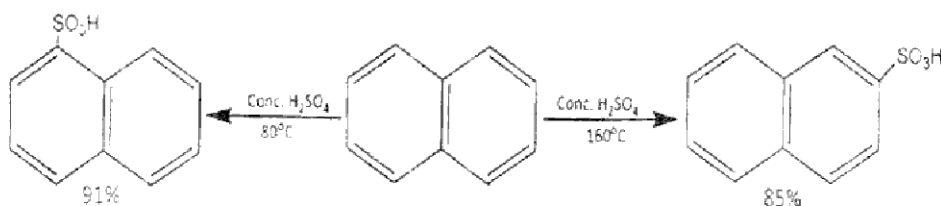
- (p) What are stereoselective and stereospecific reactions ? Discuss it with examples. 6
- (q) Discuss with examples stereochemistry and optical activity of compounds containing nitrogen atom. 6
- (r) Explain the optical activity of allenes. 4

UNIT—III

3. (a) Explain the terms :
 (i) Isotopic effect
 (ii) Reaction constant. 6
- (b) How does Hammond postulate help in establishing the structure of transition state in exothermic and endothermic reactions ? Explain with suitable examples. 6
- (c) Explain Hammett equation with Linear free energy relationship. 4

OR

- (p) Explain the thermodynamic and kinetic control observed in the following reactions with the help of potential energy diagram. 6



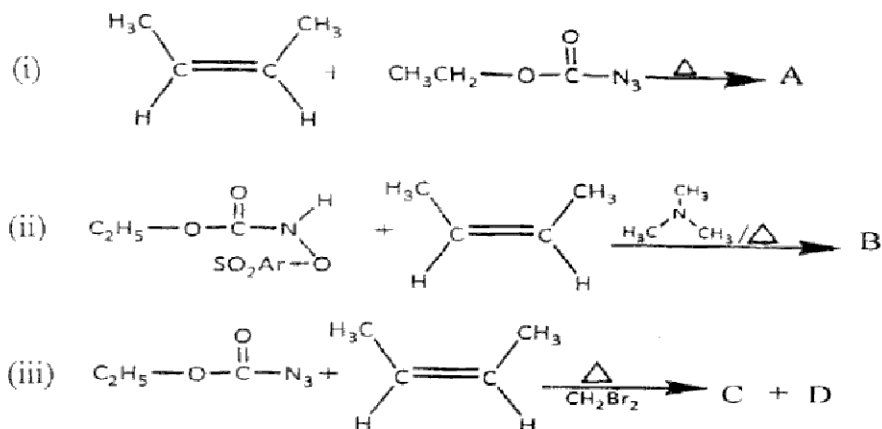
- (q) What are the methods of determining reaction mechanism ? Discuss one in detail. 6
- (r) Explain the terms :
 (i) Field effect
 (ii) Substituent constant. 4

UNIT—IV

4. (a) Discuss Meyer's synthesis of Aldehyde and Ketones. 6
- (b) What are nitrenes ? Discuss their preparations and reactions. 6

(c) Complete the following reactions :

4



OR

(p) Write in brief :

- (i) Ambient nucleophile
(ii) Stability of carbocations.

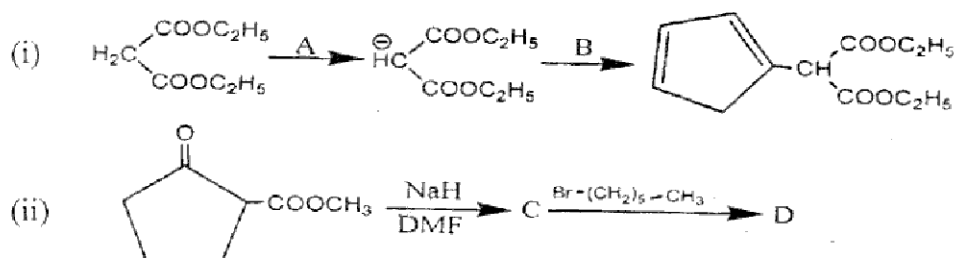
6

(q) Explain reaction, mechanism and stereochemistry of SN^1 reaction.

6

(r) Complete the following reactions :

4

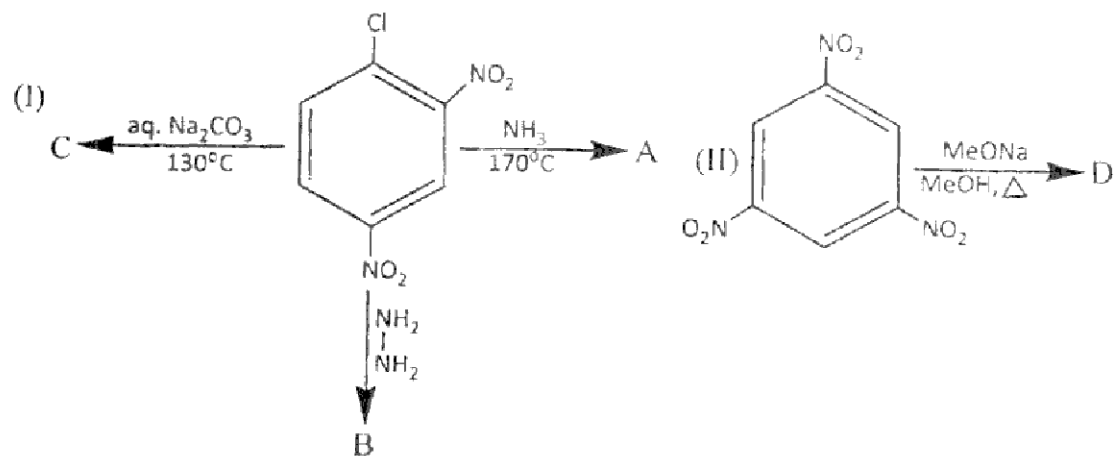


UNIT—V

5. (a) What is meant by cine substitution ? Explain Benzyne mechanism with evidence in support. 6
- (b) "When aromatic nitro compounds are treated with cyanide ion, nitro group is displaced and a carboxyl group enters always ortho to displaced group" from above statement identify the name reaction and write reaction and mechanism. 6

(c) Complete the following reactions :

4



OR

- (p) Explain how substrate structure, leaving group and attacking nucleophile affect the reactivity. 6
- (q) Discuss mechanism and stereochemistry in pyrolytic elimination. 6
- (r) Complete the following reactions : 4

