91035

B. Sc. 1st Semester (Hons.) Examination,
November–2014
CHEMISTRY
Paper–III
Organic Chemistry

Time allowed : 3 hours] *[Maximum marks : 40*

Note : *Attempt **five** questions in all. **Question No. 1 is compulsory**. Selecting **one** question from each section.*

1. (a) Which reaction intermediate can show hyperconjugation : Carbocation or carbanion or both. Give reason. 1×8=8

(b) Write Simmons-Smith reaction.

(c) Why alkynes do not show geometrical isomerism.

(d) What is R-configuration.

(e) Which isomeric form of cyclohexane is least stable ? Give reason.

(f) In which reaction intermediate, the hybridisation of central C-atom is 'sp' ?

(g) Which isomerism is possible with molecular formula C_2H_6O ?

(h) Convert ethanoic acid into methane.

Section–I

2. (a) Define Resonance. What is the need of resonance? Write the characteristics of Resonance. 4,4

(b) Define with example :

(i) Tautomerism

(ii) Meso compounds

(iii) Stereogenic centre

(iv) Enantiomers

3. (a) Give *two* differences in between : 4,4

(i) Intramolecular and intermolecular H-bond

(ii) Resonance and Hyperconjugation

(b) Define with an example :

(i) Plane of symmetry

(ii) Centre of symmetry

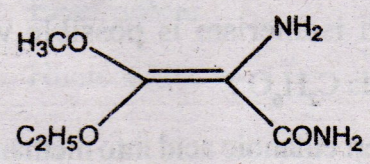
(iii) Charge transfer complexes

(iv) Hybridisation

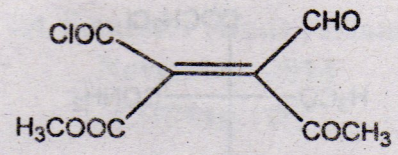
Section–II

4. (a) Assign the following as 'E' and 'Z' isomer : 4,4

(i)



(ii)



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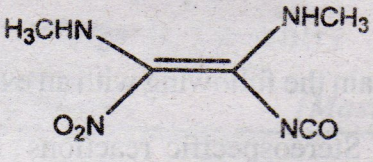

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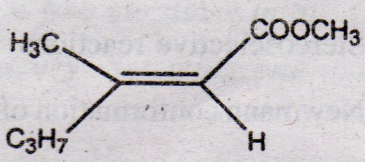
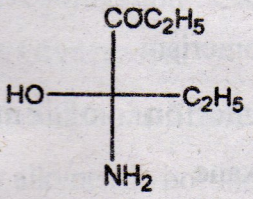
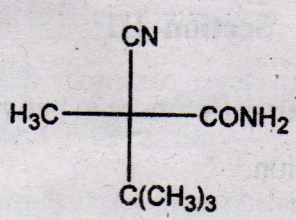


(b) Assign the following as 'R' and 'S' configuration:

(i)



(ii)



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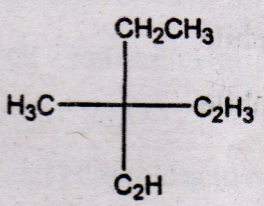
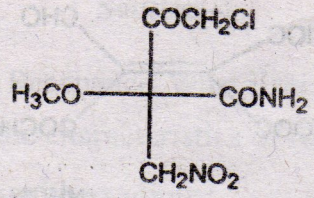


(iv) 

5. (a) Explain the following with an example : 4,4

(i) Stereospecific reactions

(ii) Stereoselective reactions

(iii) Newmann conformation of butane

(iv) Geometrical isomerism.

(b) Write a note on the following with an example :

(i) Atropisomerism

(ii) Conformation of monosubsituted cyclohexane

Section–III

6. (a) Give the four differences in between Carbocation and Carbanion. 2,4,2

(b) Define with an example :

(i) Electrophile

(ii) Nucleophile

(iii) Electrophilic substitution reaction

(iv) Reaction intermediates.

(c) Explain the stability order among primary, secondary, tertiary carbocation.

7. (a) Write a note on : 4,4

(i) Product analysis method to determine the reaction mechanism.

(ii) Thin layer chromatography

(b) Explain the following with an example :

(i) Formal Charge

(ii) Kinetic method to determine the reaction mechanism

Section–IV

8. (a) Explain the following reactions : 6,2

(i) Ziegler-Thorpe reaction

(ii) Diels Alder reaction

(iii) Dieckman condensation

(b) Explain the Mechanism of free radical halogenation of alkanes

9. (a) How can you prepare : 6,2

(i) Ethane from methane

(ii) Ethane from Ethanoic acid

(iii) Propane from methane

(iv) Methane from Ethanal

(v) Ethane from Ethanol

(vi) Ethane from sodium ethanoate

(b) Explain the following reactions :

(i) Wurtz reaction

(ii) Kolbe's reaction.