

UKA TARSADIA UNIVERSITY

030020202 - Organic Chemistry I (THEORY) at the B.Pharm. (2nd Semester)

Subject :030020202 - Organic Chemistry I

Duration: 3 Hours

Max. Marks: 70.

Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.
5. Draw diagrams/figures whenever necessary.

Section-1

Q-1 (A) Do as directed:

[07]

- I) Give statement for Pauli exclusion principle.
- II) Define polar and nonpolar covalent bond.
- III) Define inductive effect with example.
- IV) Give reason: CCl_4 has zero dipole moment value.
- V) Write electronic configuration of sodium(11) and nitrogen(7)
- VI) What is hybridised state of carbon in ethene?
- VII) What is tetrahedral angle of NH_3 molecule?

Q-1 (B) Answer the following in brief: (Any 4)

[08]

- I) What is intermolecular and intra molecular hydrogen bonding?
- II) Define carbocation and give its stability order.
- III) Define resonance and write resonance contributors of aniline.
- IV) How will you synthesize n-nonane from Corey-House synthesis method?
- V) Write structure for a) Isopentane b) Neopentane c) n-hexane d) 2-Pentyne
- VI) Define singlet and triplet carbenes.

Q-2 Answer the following:

[10]

- A) Define carbanion and give methods for generation of carbanion.

OR

- A) Define free radicals and give methods for generation of free radicals.
B) Explain sp^3 , sp^2 and sp hybridization of carbon with example.

OR

- B) Explain Markovnikovs and anti -Markovnikovs rule with suitable example.

Q-3 Answer the following in detail. (Any 2)

[10]

- A) Explain in detail molecular orbital theory.
- B) Give methods for preparation of alkenes.
- C) Write reaction of butyne with a) hydrogen b)halogens C) water and H_2SO_4 .

Section-2

Q-4 (A) Do as directed:

[07]

- I) Define Metamers with example.
- II) Give reason why alcohols boil at higher temperature as compared to alkanes of same same carbon number.
- III) Write structure for 1-Phenyl ethan-1-ol.
- IV) What is Lucas reagent?
- V) Define epoxide giving example.
- VI) Define symmetrical and unsymmetrical ethers.
- VII) Write the structure for a) 1,3-cyclopentadiene b) 1,2-Cyclohexanediol

Q-4 (B) Answer the following in brief: (Any 4)

[08]

- I) Draw all possible conformation of n-butane and explain which conformer is more stable with help of energy profile diagram?
- II) Define the terms with suitable examples a) Geometrical isomers b) Optical isomers.
- III) Draw all possible stereoisomer's for 3-chloro-2-butanol.
- IV) Classify structural isomers.
- V) Define dienes. Give types of dienes with suitable examples.
- VI) Write product of reaction when cyclopropane allow to react with Conc.H₂SO₄.

Q-5 Answer the following:

[10]

A) Write methods for preparation of ethers.

OR

A) How alkyl halides are prepared from alcohols and alkenes.

B) Write methods for preparation of cycloalkanes.

OR

B) Explain stereoselective and stereospecific reaction with suitable example.

Q-6 Answer the following in detail. (Any 2)

[10]

- A) Differentiate the terms with suitable example
 - a) Dextro and levo rotatory isomers
 - b) E and Z isomers
 - c) R and S isomers
- B) Explain in detail along with stereochemistry, substitution nucleophilic unimolecular reaction of alkyl halides.
- C) Explain principles of green chemistry.