

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
M.Sc. Winter 2018-19 Examination

Semester: 1
Subject Code: 11205101
Subject Name: Organic Chemistry-1

Date: 01/12/2018
Time: 10:30am to 1:00pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1. A) Write Brief note on (Each of 04 marks) (08)

- (a) Explain Markovnikov's and anti-Markovnikov's Rule for reaction of HBr with ethene.
- (b) Explain diol formation reaction and mechanism from ethene with osmium tetroxide.

Q.1. B) Answer the following questions (Any two)

- (a) Do as Directed (Each of 02 marks) (04)
 1. Explain stability of methyl, 1^o, 2^o and 3^o carbocations.
 2. Explain homolytic and heterolytic bond fission with examples.
- (b) Explain shape, hybridization and stability of carbanions. (04)
- (c) Explain Wagner-Meerwein reaction with mechanism. (04)

Q.2. A) Answer the following questions.

- (a) Do as Directed (Each of 02 marks) (04)
 1. Give hydrolysis reaction of Ethene and Propene.
 2. Explain effect of solvent on Nucleophilic substitution reaction.
- (b) Explain conditions and methods of generation of free radicals. (04)

Q.2. B) Answer the following questions (Any two)

- (a) Fill in the blanks. (Each of 01 marks) (03)
 1. In substitution reaction, transition state is formed in.....mechanism.
 2. When the solvent acts as nucleophile in SN1 reaction, process is called as.....
 3. In Elimination reaction of Alcohols are formed.
- (b) What are Carbenes? Explain their generation. (03)
- (c) Explain with reaction and mechanism of Tiffeneau-Demyanov reactions. (03)

Q.3. A) Write Brief note on: (Each of 04 marks) (08)

- (a) Explain SN1 reaction with their mechanism & stereochemistry involved.
- (b) Explain Elimination reaction of Halides and Alcohols.

Q.3. B) Answer the following questions (Any two)

- (a) Do as directed (Each of 02 marks) (04)
 1. Explain the rate equation for SN1 reactions.
 2. Explain the geometry of olefinic carbon.
- (b) Explain the stability of carbanions formed on sp³, sp² and sp hybridized carbons. (04)
- (c) Explain hydrohalogenation mechanism of alkynes. (04)

Q.4. A) Answer the following questions.

- (a) Short note (Each of 02 marks) **(04)**
1. Why iodide is a better leaving group than chloride?
 2. Why protic solvents are used in SN1 mechanism?
- (b) Give chemical reaction for Benzidine rearrangements and Curtius reaction. **(04)**

Q.4. B) Answer the following questions (Any two)

- (a) Do as directed. (Each of 01 marks) **(03)**
1. In which mechanism racemic product is formed?
 2. Name the product obtained by condensation of two molecules of Acetaldehyde in NaOH.
 3. All molecule/ions can act as Nucleophile if they have.....
- (b) Explain singlet and triplet states of carbenes. **(03)**
- (c) Explain how electron donating and withdrawing groups affect the stability of carbocations? **(03)**