

SARDAR PATEL UNIVERSITY

M.Sc. (Integrated) Biotechnology, First Semester Examination

Wednesday, 19th October

2016

10.00 a.m. to 1.00 p.m.

Organic Chemistry: PS01CIGB02

Total Marks : 70

Note : (i) All questions are to be attempted. (ii) Figures to the right indicate marks.

Q.1 Choose the correct option for the following : [8]

- (i) Upon heterolytic bond cleavage of C—C single bond is formed.
 (a) carbocation (b) free radical (c) carbocation and carbanion (d) ylides
- (ii) Carbanion is reactive intermediate of reaction.
 (a) aldol condensation (b) hydrogenation (c) chain reaction (d) oxidation.
- (iii) Alkanes can be synthesized by reaction.
 (a) claisen condensation (b) Kolbe electrolysis (c) elimination (d) addition.
- (iv) Hydrocarbons are consisting of
 (a) C, H (b) C, H, N (c) C, H, N, (d) C, H, S
- (v) General molecular formula for alkene is
 (a) C_nH_{2n} (b) C_nH_{2n-2} (c) C_nH_n (d) C_nH_{2n+2}
- (vi) dienes are more stable.
 (a) isolated (b) conjugated (c) allenes (d) all
- (vii) Benzoyl chloride upon hydrolysis produce
 (a) Benzamide (b) Benzoic acid (c) Benzene (d) all
- (viii) Which one is a heterocyclic compound ?
 (a) Pyridine (b) Anthracene (c) Ethylene (d) Cyclohexane

Q.2 Answer the following (Attempt any seven): [14]

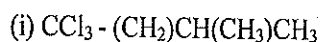
- (i) Write the structural formula and IUPAC name for :
 (a) Toluene & (b) Picric acid.
- (ii) Define : Homolytic and heterolytic cleavage.
- (iii) Write synthesis for butane using Corey-House reaction.
- (iv) Discuss the structure of ethane in terms of hybridization and bond angle.
- (v) State and explain Markonikov's rule giving suitable example.
- (vi) Define the terms : (a) Optical activity (b) Free radical
- (vii) Write E, Z- notation for 1-bromo-1,2-dichloroethene.
- (viii) Draw all possible isomers for compound having C_3H_7Cl molecular formulae.
- (ix) Complete and rewrite the following reaction:
 (a) Ammonolysis of acetyl chloride \rightarrow
 (b) Reduction of furane \rightarrow

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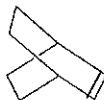
Q.3

[A] Answer the following: [6]

(a) For the given structural formulas write correct IUPAC name.



(ii)



(b) Write Chain reaction and its mechanism.

[B] Answer the following: [6]

(a) Write structural formula for the following compounds :

(i) Isooctane (ii) Vinyl Chloride (iii) Isopentyl bromide

(b) Define reactive intermediates. Write aldol condensation reaction with its mechanism taking suitable reactant for the reaction.

OR

[B] Do as directed: [6]

(a) Write the structure and molecular formulae for the following:

(i) Salicylic acid (ii) o-nitroaniline

(b) Define ylides. Write Wittig reaction for alkene synthesis.

Q.4

[A] Do as directed : [6]

(i) Draw all possible conformational isomers of n-butane.

(ii) Write preparation of hexane via Wurtz reaction.

[B] Answer the following : [6]

(i) Define enantiomers and diastereomers giving two examples of each.

(ii) Explain cyclopropane is less stable.

OR

[B] Write a note on: Bayer's strain theory. [6]

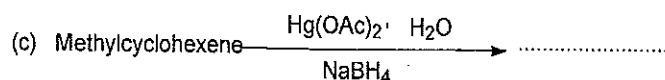
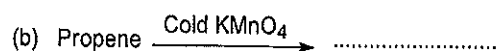
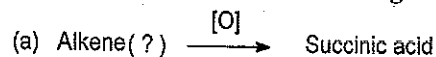
Q.5

[A] Answer the following: [6]

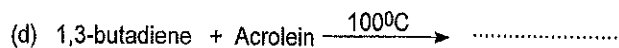
(i) Write reaction mechanism for the dehydration of alcohol for alkene synthesis.

(ii) Define Dienes. Write Ozonolysis reaction of alkene.

[B] Complete and rewrite the following reaction : [6]



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OR

[B] Answer the following :

[6]

(i) Melting point of cis-2-butene is lower than its trans isomer.

(ii) Define saytzeff's rule with suitable illustration.

Q.6

[A] Answer the following :

[6]

(i) Define heterocyclic compound. Write the name and structure of any three heterocyclic compounds.

(ii) How 1° , 2° and 3° amines can be distinguish ?

[B] Answer the following :

[6]

(i) Write esterification and *trans*-esterification reaction.

(ii) Explain : Aniline is weaker base than ammonia.

OR

[B] Answer the following :

[6]

(i) Distinguish between : $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reaction.

(ii) Complete and rewrite the following reaction :

