

[71/72]

No. of printed pages : 03

SARDAR PATEL UNIVERSITY

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

Saturday, 1st December,

2012

10.30 a.m. to 1.30 p.m.

Organic Chemistry : PS01CIGB02/IGBT-102

Total Marks : 70

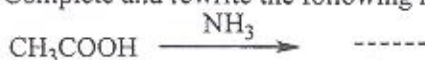
Note : (i) All questions are to be attempted. (ii) Figures to the right indicate marks.

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

- (i) Compound having molecular formula C_4H_8 shows..... isomers.
(a) 3 (b) 2 (c) 1 (d) 4
- (ii) Diradical carbon is known as.....
(a) carbocation (b) ylied (c) carbene (d) free radical
- (iii) The general molecular formula for alkyne series compound is
(a) C_nH_{2n} (b) C_nH_{2n+2} (c) C_nH_{2n-2} (d) $C_{2n}H_{2n}$
- (iv) The compound having non-superimposable mirror images are known as.....
(a) diastereomers (b) enantiomers (c) tautomers (d) isomer
- (v) 2-butene showsisomerism.
(a) optical (b) geometrical (c) structural (d) conformational
- (vi) Reagent used in oxidative cleavage of alkenes is.....
(a) $O_3/Zn, H_2O$ (b) BH_3/H_2O_2 (c) cold $KMnO_4$ (d) cold $KMnO_4/NaIO_4$
- (vii)is a heterocyclic compound.
(a) benzene (b) salicylic acid (c) aniline (d) furan
- (viii) Ammonia isthan pyridine.
(a) more basic (b) less basic (c) acidic (d) none of these

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

- (i) Define: (a) Free radical (b) Homolytic cleavage.
- (ii) Write structure formulas and IUPAC name for
(a) pentyl alcohol (b) t-Butyl bromide
- (iii) Write Wagner-Meerwein rearrangement.
- (iv) Explain : Alkanes are relatively less reactive.
- (v) What do you mean by conformational isomers ?
- (vi) State Markonikov's rule with an example.
- (vii) Write the name and structure of an alkene, which upon ozonolysis produces 2 moles of acetone.
- (viii) Distinguish between : Sandmeyer reaction and Gattermann reaction.
- (ix) Complete and rewrite the following reaction :

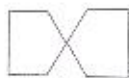


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Q.3

[A] Answer the following :

(i) Write the IUPAC name for :

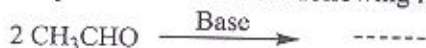


(a)



(b)

(ii) Complete and rewrite the following reaction, and give its mechanism :



[B] Answer the following :

(i) Write molecular formula and structural formula for :

(a) benzaldehyde

(b) *p*-dichlorobenzene

(ii) Define Ylides. Write synthesis of 1,2-diphenylethene via Wittig reaction.

OR

[B] Do as directed :

(i) Give correct IUPAC name for the following:

(a) $\text{CH}_2=\text{CH}-\text{C}(\text{CH}_3)=\text{CH}_2$ (b) $\text{CH}_3-\text{CH}_2-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{CH}_3$

(ii) Write the name of intermediate formed during chain reaction. Also explain mechanism for chain reaction using suitable example.

Q.4

[A] Answer the following :

(i) What is optical activity? What are the necessary conditions for the molecule to be optical active?

(ii) Write the synthesis of *n*-propane from methane using Corey-House reaction.

[B] Answer the following :

(i) Define angle strain. Discuss Bayer angle strain theory.

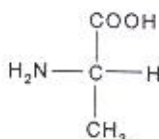
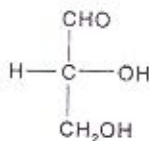
(ii) Draw all the possible conformational isomers of cyclohexane. Explain the stability order of it.

OR

[B] Do as directed :

(i) Write a note on : Kolbe electrolysis reaction.

(ii) Assign R and S configuration to each of the following compound.



Q.5

[A] Answer the following :

(i) What do you mean by dienes? Give its classification with an example.

(ii) Discuss the structure of ethene in term of hybridization, bond angle and geometry.

[B] Explain the following :

(i) Any two preparation method for alkenes.

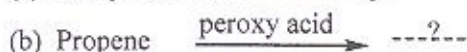
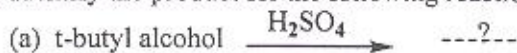
(ii) *trans*-2-butene have higher melting point than *cis*-2-butene.

OR

[B] Do as directed :

[6]

(i) Identify the product for the following reactions :



(ii) Write a note on : Diels-Alder reaction.

Q.6

[A] Answer the following :

[6]

(i) How will you distinguish between 1^o, 2^o and 3^o amines using Hinsberg test ?

(ii) Write reaction mechanism for alkaline hydrolysis of ester.

[B] Answer the following :

[6]

(i) Write the product for the reaction of benzoic acid with:



(ii) Write a note on : Transesterification.

OR

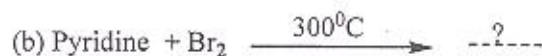
[B] Do as directed :

[6]

(i) Draw all the possible isomers for the compound having molecular formula

 $\text{C}_5\text{H}_{11}\text{Cl}$ and write their correct IUPAC name.

(ii) Complete and rewrite the following reactions :



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