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No. of printed pages: **02**

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SARDAR PATEL UNIVERSITY

M.Sc. (Integrated) Biotechnology, First Semester Examination
Wednesday, 22nd April,
2015
10.30 a.m. to 1.30 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 : **[08]**

(i) A tertiary carbon is bonded directly to.....
(a) Two hydrogen (b) Three carbon (c) Three hydrogen (d) Four carbon

(ii) Free radical is produces upon..... bond cleavage.
(a) Heterolytic (b) Homolytic (c) Heating (d) 'a' & 'b' both

(iii) Alkanes have the general molecular formula .....
(a) C_nH_{2n+2} (b) C_nH_{2n-2} (c) C_nH_n (d) C_nH_{2n}

(iv) Butane shows..... conformational isomers.
(a) 2 (b) 6 (c) 3 (d) 4

(v) Isomer having ..... molecular and ..... strutural formula.
(a) same, different (b) same, same (c) different, same (d) different, different

(vi) Alkene undergo.....reaction.
(a) substitution (b) addition (c) elimination (d) condensation

(vii) Benzamide is a derivative of .....
(a) acetic acid (b) benzoic acid (c) propanoic acid (d) phthaleic acid

(viii) The correct molecular formula for benzene is.....
(a) $C_{10}H_8$ (b) C_6H_6 (c) $C_{10}H_{20}$ (d) $C_{10}H_{22}$

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

(i) Write the structural formula for the following :
(a) Isobutane (b) Vinyl alcohol.

(ii) Write molecular formula of benzoic acid and aniline.

(iii) Distinguish between : structural- and stereo-isomers.

(iv) Define : carbocation, carbene, carbanion.

(v) Explain the structure of methane

(vi) Define Saytzeff rule with suitable illustration.

(vii) Write any two synthesis of alkyl halide.

(viii) Write isomers of C_3H_9N and assign their IUPAC name.

(ix) Identify the name and structure of an alkene, which upon ozonolysis gives the following products :

$$\text{alkene} \xrightarrow{\text{Ozonolysis}} CH_3CHO + CH_3CHO$$

Q.3 (A) Do as directed : **[6]**

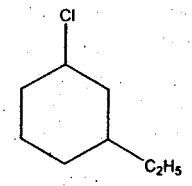
(i) For the given structural formula's write correct IUPAC name.
(a) $CH_3 - (CH_2)_2 - CH(CH_3)CH_3$ (b) $CH_3 - CH(Br)CH = CH - CH_3$

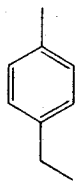
(ii) Write Aldol condensation reaction. Also write its reaction mechanism.

P.T.O.

(B) **Do as directed :** [6]

(i) Write correct IUPAC name for the following :

(a) 

(b) 

(ii) Discuss Clasein condensation reaction with suitable example and mechanism.

OR

(B) **Answer the following:** [6]

(i) Define chain reaction. Write its mechanism with suitable example.

(ii) Explain that singlet carbene is more stable than triplet carbene.

Q.4 (A) **Answer the following:** [6]

(i) Discuss Wurtz synthesis and its limitation.

(ii) Kolbe's synthesis of alkanes.

(B) Discuss about Bayer's angel strain theory in detail. [6]

OR

(B) Define conformational isomers. Draw conformers of ethane and explain its stability. [6]

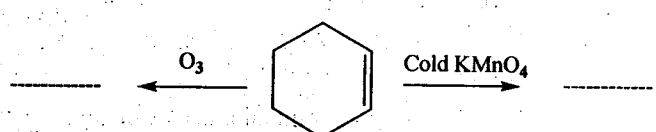
Q.5 (A) **Answer the following:** [6]

(i) Discuss the structure of ethene.

(ii) Write Markonikovs rule with suitable illustration.

(B) **Do as directed :** [6]

(i) Complete and rewrite the following equation.



(ii) Write any two preparation methods for alkenes.

OR

(B) **Answer the following :** [6]

(i) Define diene. Classify it with example.

(ii) Write Deils-Alder reaction and its mechanism.

Q.6 (A) **Answer the following :** [6]

(i) Define heterocyclic compound. Draw structure of furane and pyrrole.

(ii) Write Hinsberg test for the analysis of amines.

(B) **Answer the following :** [6]

(i) Write esterification and trans esterification reaction of carboxylic acid.

(ii) Distinguish between S_N1 and S_N2 reactions of alkyl halide.

OR

(B) **Answer the following :** [6]

(i) Write Sandmeyer reaction and Gattermann reaction.

(ii) Explain : Pyridine is basic in nature.

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