

SEAT No. _____

No of printed pages: 02

[25]

SARDAR PATEL UNIVERSITY
M.Sc. (Chemistry) Semester-I Examination
Wednesday, 11th April 2018
Organic chemistry-I: PS01CCHE02

Time: 10:00 am to 01:00 pm

Marks: [70]

Note: Right hand figures indicate marks

Q-1 [A] Select the correct answer from the option given below. [08]

- Allenes exhibit optical activity due to the presence of _____.
(a) cumulated double bonds (b) conjugated double bonds
(c) isolated double bonds (d) all of above
- Acrylonitrile + HBr \longrightarrow ?
(a) 1-Bromo-1-cyanoethane (b) 2-Bromo-1-cyanoethane (c) Both (a) & (b) (d) None of these
- For 1,1-elimination reaction _____ are not required.
(i) very strong base (ii) weak base
(iii) electronegative departing group (iv) electro releasing departing group
(a) (ii) & (iv) (b) (ii) & (iii) (c) (i) & (iv) (d) (i) & (iii)
- Homomorphous groups should be _____.
(a) of the same constitution and configuration (b) achiral and absent in the molecule
(c) exchangeable by symmetry of I-kind (d) attached to identical ligating centers
- Sommet-Hauser rearrangement involves _____ sigmatropic shift.
(a) 1,2- (b) 3,3- (c) 1,3- (d) 2,3-
- _____ is used for homologation of carboxylic acid.
(a) Demjanov Rearrangement (b) Sommet Rearrangement
(c) Arndt-Eistert Synthesis (d) Dieckman Condensation
- _____ is used as a solvent in Friedal-Craft reaction.
(a) Benzene (b) Xylene (c) Toluene (d) Nitrobenzene
- Aniline upon nitration in the presence of H₂SO₄ gives _____ as the major product.
(a) o-Nitroaniline (b) m-Nitroaniline (c) p-Nitroaniline (d) 2,4-dinitroaniline

Q-1 [B] Answer the following (Any Seven) [14]

- Show that DL \neq dl.
- Explain the rules to determine chirality descriptor for a compound with chiral axis.
- "The product of sulphonation of naphthalene depends on temperature" justify.
- Explain Bredt's rule with example.
- Give the proof for involvement of molozonide in ozonolysis.
- What is meant by *ipso* substitution and give the factors favouring *ipso* substitution.
- How mass spectroscopy can confirm the existence of benzyne intermediate?
- Why Friedal-Craft acylation followed by reduction is more favourable than alkylation for synthesis of alkyl benzene?
- Give the method to trap nitrenes.

- Q-3 [A] Answer the followings. [06]
1. Write necessary requirements of allenes and Ansa compounds to be chiral.
 2. All chirogenic centers are stereogenic but reverse is not true, justify.

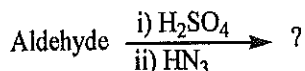
- [B] Answer the followings. [06]
1. Find out the number of stereoisomer and describe their configuration for the given molecule: $\text{CH}_3\text{-(CHOH)}_4\text{-COOH}$.
 2. Explain atropisomerism by citing the example of a biphenyl compound.

OR

- [B] Answer the followings. [06]
1. Explain the limitations of Fischer projection formula.
 2. Explain the term pseudo-chirogenicity by citing proper example.

- Q-4 [A] Answer the followings. [06]
1. Show that Dieckmann condensation is intramolecular Claisen condensation.
 2. Explain Benzil-benzilic acid rearrangement with reaction mechanism.

- [B] Answer the followings. [06]
1. Discuss nitration of benzene using primary kinetic isotope effect.
 2. Complete the reaction with suitable mechanism.



OR

- [B] Write a note on [06]
1. Pinacole-Pinacolone rearrangement.
 2. Bayer-Villiger oxidation.

- Q-5 [A] Give detailed synthesis and application of Dimedone. [06]

- [B] Answer the followings. [06]
1. What are the differences between Chugaev reaction and cope elimination reaction.
 2. Discuss the factors favouring E1 mechanism

OR

- [B] Answer the followings. [06]
1. Give the difference between Saytzeff elimination and Hofmann elimination.
 2. "Bromination of *trans*-2-butene is stereoselective reaction" justify.

- Q-6 [A] "Nitration of toluene occurs at ortho and para position while nitration of nitrobenzene occurs at meta position" Justify the statement. [06]

- [B] Justify the followings. [06]
1. Benzene gives deuterobenzene in presence of DCl/AlCl_3 , but not the product of addition reaction.
 2. Explain H_2SO_4 acts as a catalyst in nitration reaction.

OR

- [B] Answer the followings. [06]
1. Justify electrophilic substitution on naphthalene at C-1 is more favourable than C-2 position.
 2. What is Michael addition reaction? Discuss the cyanoethylation reaction with its importance.