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## SARDAR PATEL UNIVERSITY

T.Y. B.Sc. Industrial Chemistry SEMESTER – V  
 EXAMINATION -2022  
 Advance organic Chemistry  
 SUB CODE: US05CICH21

DATE: 10/11/2022

DAY: Thursday

TIME: 10.00 AM TO 01.00 PM

TOTAL MARKS: 70

Q. 1 Choose the correct answer.

[10]

- (1) The isomers of substance must have same \_\_\_\_\_
- (A) Molecular weight (C) Structure formula  
 (B) Chemical property (D) None of these
- (2) A molecule is said to be chiral \_\_\_\_\_
- (A) If it contain plane of system (C) If it contain center of system  
 (B) If it cannot be super imposed on its mirror image (D) If be super imposed on its mirror image
- (3) The carbon bonded to four different atoms or groups is called.
- (A) Symmetric (C) Asymmetric  
 (B) Optical (D) None of these.
- (4) Diazomethane is \_\_\_\_\_ reagent.
- (A) Reducing (C) oxidizing  
 (B) Methylating (D) Bromating.
- (5) Diazomethane is also known as.
- (A) Diazirine (C) Methylamine  
 (B) Diarine (D) None of these.
- (6) The oxidation of ketone into ester with the help of per-acid is known as.
- (A) Benzoin condensation (C) Bayer villager oxidation  
 (B) Backman rearrangement (D) Favorski reaction.
- (7) Hydrogen bonding in organic compounds shifts the ultraviolet absorptions to:
- (A) shorter frequencies (C) remain unchanged  
 (B) shorter wavelength (D) none of these
- (8) The effect of the ultraviolet radiation on organic compound is to cause.
- (A) bond vibrations in the molecule (C) electronic transitions  
 (B) rotation in the molecule (D) all of these
- (9) How many signals of Butanone would you see in NMR Spectra.
- (A) 1 (C) 4  
 (B) 2 (D) 3
- (10) The Multiplicity of CH<sub>3</sub> Signal in Toluene.
- (A) Singlet (C) Triplet  
 (B) Doublet (D) Multiple

C.P.T.O.)

- Q.2 Answer the following.(attempt ten) [20]**
- (1) What is specific rotation?
  - (2) What is racemic mixture and resolution?
  - (3) Distinguish between : Enantiomers and Diastereomers.
  - (4) Explain.  $\text{NaBH}_4$  is less reactive than  $\text{LiAlH}_4$ .
  - (5) Examples specific uses of the Aluminium isopropoxide.
  - (6) Define Benzilic acid rearrangement
  - (7) Why is methanol a good solvent for UV but not for IR determination?
  - (8) Write a short note on finger print region.
  - (9) Explain quantization of energy.
  - (10) Explain about equivalent and non-equivalent Proton.
  - (11) Write a note on chemical shifting ( $\delta$ ).
  - (12) Write down on spin-spin coupling.
- Q.3 (A) Explain Enantiomers, Diastereomers and meso compounds in 2,3-dibromobutane. [05]**  
**(B) State and explain sequence rules with suitable examples. [05]**
- OR**
- Q.3 Write a note on "The Polarimeter". [10]**
- Q.4 (A) Explain Benzilic acid rearrangement. [05]**  
**(B) Write about Aluminium isopropoxide. [05]**
- OR**
- Q.4 (A) Explain Diazo methane. [05]**  
**(B) Write about Pinacol-pinacolone rearrangement. [05]**
- Q.5 (A) Write a detailed account of the various types of transitions involved in the ultra-violet spectrum. [05]**  
**(B) Define Infra-red spectroscopy. Describe the various molecular vibrations in the technique. [05]**
- OR**
- Q.5 (A) Explain single beam and double beam spectroscopy. [05]**  
**(B) Discuss the inductive and the mesomeric effects influencing the carbonyl absorption frequency. Give examples. [05]**
- Q.6 (A) Explain shielded and deshielded proton. [05]**  
**(B) Discuss the principle and application of NMR and IR Spectroscopy in Structure determination of organic compound. [05]**
- OR**
- Q.6 (A) Explain about Coupling Constant. [05]**  
**(B) Explain the following. [05]**  
 (i) Equivalent and Non-Equivalent proton  
 (ii) Enantiotopic and Diastereotopic.

— X —