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[35]



No. of Printed Pages: 02

SARDAR PATEL UNIVERSITY

Bachelor of Science (Semester – 5) Final Examination October- 2025

US05MAICH01: Advance Organic Chemistry

Date: 04/10/2025, Saturday

Time: 10:00 AM to 12:30 PM

Total: 50 Marks

NOTE: Figure to the right indicate full marks of the questions.

Q-1 Write the answer of following multiple-choice questions. (All are compulsory) [10]

1. In the Pinacol-Pinacolone rearrangement, the starting compound is...
(a) A vicinal diol (c) An aldehyde
(b) A ketone (d) An ester
2. The Baeyer-Villiger oxidation converts...
(a) Alcohols into aldehydes (c) Alkenes into epoxides
(b) Carboxylic acids into aldehydes (d) Ketones into esters
3. Lithium Aluminium Hydride (LiAlH_4) is commonly used to...
(a) Oxidize alcohols to aldehydes (c) Convert ketones to alkenes
(b) Reduce aldehydes to alcohols (d) Halogenate alkanes
4. N-Bromosuccinimide (NBS) is used for...
(a) Bromination at allylic and benzylic positions
(b) Oxidation of primary alcohols
(c) Reduction of aldehydes
(d) Esterification of carboxylic acids
5. Which of the following is a polynuclear aromatic hydrocarbon?
(a) Toluene (c) Anthracene
(b) Cyclohexane (d) Phenol
6. Nitration of naphthalene at low temperature gives mainly...
(a) 1-Nitronaphthalene (c) 3-Nitronaphthalene
(b) 2-naphthalene sulfonic acid (d) 4-Nitronaphthalene
7. Sulfonation of naphthalene is an example of...
(a) Nucleophilic substitution reaction (c) Addition reaction
(b) Electrophilic substitution reaction (d) Free radical substitution
8. Which spectroscopy is also termed as vibrational spectroscopy?
(a) UV spectroscopy (c) NMR spectroscopy
(b) MASS spectroscopy (d) IR spectroscopy
9. Protons in same chemical environments are called...
(a) nonequivalent protons (c) Spin-Spin protons
(b) equivalent protons (d) germinal protons
10. How many ^1H NMR signals does $\text{CH}_3\text{CH}_2\text{COOH}$ show?
(a) 1 (c) 3
(b) 2 (d) 5



- Q-2 (A) Discuss about 'Hofmann-Loeffler reaction'. [5]
(B) Write a note on 'Baeyer Villiger Oxidation reaction'. [5]

OR

- Q-2 (A) Explain 'Pinacol-Pinacolone rearrangement'. [5]
(B) Write a note on 'Benzilic acid rearrangement'. [5]



- Q-3 (A) Write a note on ' LiAlH_4 ' as a reagent. [5]
(B) Write a note on 'Osmium tetroxide' as a reagent. [5]

OR

- Q-3 (A) Write a preparation and applications of 'N-Bromosuccinimide'. [5]
(B) Write a preparation and applications of 'Aluminium isopropoxide'. [5]

- Q-4 (A) Discuss the electrophilic aromatic substitution reactions in naphthalene. [5]
(B) Write a note on Haworth synthesis of naphthalene. [5]

OR

- Q-4 (A) Discuss the synthesis of Phenanthrene. [5]
(B) Write a note on the electrophilic aromatic substitution reactions in Anthracene. [5]

- Q-5 Write a detail note on ^1H NMR spectroscopy. [10]

OR

- Q-5 Write a note on Ultraviolet-Visible (UV-Vis) spectroscopy. [10]
