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Sardar Patel University

B. Sc. (Semester – V) Examination

Date: 24-12-2020, Thursday

Time: 02:00pm - 04:00pm

Industrial Chemistry Vocational

COURSE NO: US05CICV21 (Organic Chemistry)

Notes: Figures to the right indicate full marks.

Total marks: 70

Q.1 Answer the following Multiple-Choice Questions. (All are compulsory)

(10)

- Which of the following is not a five membered ring?

A. Pyridine	C. Furan
B. Pyrrole	D. Thiophene
- Which of the following five membered rings is most resonance stabilized?

A. Furan	C. Pyrrole
B. Thiophene	D. Pyridine
- What is the product when thiophene reacts with Br₂ in benzene?

A. 2-bromothiophene	C. 2,5-dibromothiophene
B. 3-bromothiophene	D. 3,4-dibromothiophene
- Which of the following is an alkane which can exhibit optical activity?

A. Neopentane	C. 3-Methylpentane
B. Isopentane	D. 3-Methylhexane
- Hexane and 3-methylpentane are examples of.....

A. Enantiomers.	C. Diastereomers.
B. Stereoisomers.	D. Constitutional Isomers.
- Selenium dioxide is an importantreagent

A. Reducing	C. Brominating
B. Oxidizing	D. Methylating
- Sodium borohydride is an importantreagent

A. Reducing	C. Brominating
B. Oxidizing	D. Methylating
- Osmium Tetroxide is an importantreagent

A. Reducing	C. Hydroxylating
B. Oxidizing	D. Methylating
- The decrease in wavelength due to substitution on a chromophore is known as _____ shift in UV-VIS spectroscopy.

A. Red shift	C. Blue shift
B. Hyperchromic shift	D. Hypochromic shift
-spectroscopy is also termed as vibrational spectroscopy.

A. UV spectroscopy	C. MASS spectroscopy
B. IR spectroscopy	D. NMR spectroscopy

Q.2 Are the following statements true or false? (All are compulsory) (08)

1. Pyridine undergoes nucleophilic substitution with NaNH_2 at 100°C to form "2-Aminopyridine" – T/F.
2. Furan reacts with ammonia in the presence of alumina at 400°C to give "Pyrrole" - T/ F.
3. If a molecule has a plane of symmetry it cannot have an enantiomer -T/F.
4. In some cases, constitutional isomers are chiral - T/F.
5. Pinacol is a compound which has two hydroxyl groups, each attached to a vicinal carbon atom. T/F
6. The Hunsdiecker reaction is a name reaction in whereby silver salts of carboxylic acids react with a halogen to produce an organic halide. T/F.
7. When the magnetic moment of an atom blocks the full induced magnetic field from surrounding nuclei then shielding is observed. T/F.
8. Better understanding of the nuclei is possible with the help of a mathematical translator called the Fourier transfer algorithm. T/F.

Q.3 Answer the following short questions (Attempt Any 10 out of 12) (20)

1. Define term "Heterocyclic compound", give examples of six-member heterocyclic compounds.
2. Write a synthesis of Pyrrole.
3. Discuss the rule for naming mono heterocyclic compound with suitable examples.
4. Define term "Enantiomers".
5. Define term "Diastereomers".
6. Define term "Geometrical isomerism".
7. Write synthesis and uses of "Lead tetra acetate".
8. Write synthesis and uses of "Lithium aluminum hydride".
9. Write synthesis and uses of "Selenium dioxide".
10. Write an application of IR-spectroscopy.
11. Predict the signal pattern of the $-\text{CH}_3$ protons in the H-NMR spectra of the CH_3CHBr_2 .
12. Enlist the information obtained from H1NMR Spectroscopy.

Q.4 Answer the following Long questions (Attempt Any 04) (32)

1. Important properties of Pyridine and discuss its constitution.
2. Write "Skraup synthesis of Quinoline".
3. Write note on "Enantiomers".
4. What is an optical activity? How is it measured.
5. Describe the mechanism and important applications of "Baeyer Villiger Oxidation reaction".
6. Describe the mechanism and important applications of "Benzoin condensation reaction".
7. Write a note on "NMR spectroscopy in structure determination of organic compounds".
8. Write the principle of IR spectroscopy and discuss the applications of IR-Spectroscopy.