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SEAT No. _____



No. of Printed Pages : 02

Sardar Patel University

B. Sc. (Semester – V) Examination

Date: 23-11-2021, Tuesday

Time: 03:00-05:00pm

Industrial Chemistry Vocational

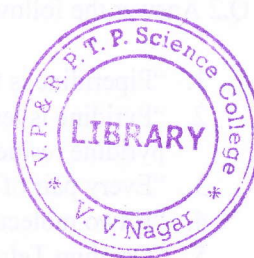
COURSE NO: US05CICV21 (Organic Chemistry)

Notes: Figures to the right indicate full marks.

Total marks: 70

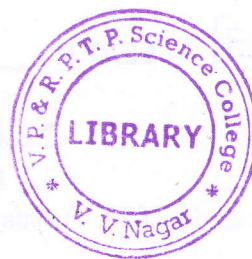
Q.1 Answer the following Multiple-Choice Questions. (All are compulsory) (10)

- Which of the following is not a five membered ring?
 - Pyridine
 - Pyrrole
 - Furan
 - Thiophene
- What is the product when thiophene reacts with Br₂ in benzene?
 - 2-bromothiophene
 - 3-bromothiophene
 - 2,5-dibromothiophene
 - 3,4-dibromothiophene
- Which of the following is an alkane which can exhibit optical activity?
 - Neopentane
 - Isopentane
 - 3-Methylpentane
 - 3-Methylhexane
- Hexane and 3-methylpentane are examples of...
 - Enantiomers.
 - Stereoisomers.
 - Diastereomers.
 - Constitutional Isomers.
- Which of the following is NOT true of enantiomers? They have the same...
 - Boiling point.
 - Melting point.
 - Specific rotation.
 - Density.
- Heterolytic cleavage of a carbon-carbon bond produces ...
 - Two carbonium ions
 - Two free radicals
 - One cation and one anion
 - A free radical and carbanion
- Which of the following carbocation has the least stability?
 - Methyl
 - Ethyl
 - Tert-butyl
 - Isopropyl
- Lead tetra acetate is an important reagent for...
 - Oxidizing
 - Acetoxyating
 - Methylating
 - All of these



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(P.T.O.)



9. Finger print region generally shows ... type of vibrations.
 - A. Stretching
 - B. Bending
 - C. Unique and complex
 - D. Stretching & bending
10. NMR is the study of absorption of ... by nuclei in a magnetic field?
 - A. Radioactive radiation
 - B. IR radiation
 - C. Radio frequency radiation
 - D. Microwaves

Q.2 Answer the following. (To be judged as true or false; All are compulsory) (08)

1. "Piperidine is the heterocyclic compounds, which is not aromatic in nature".
2. "Pyridine is less basic than trimethylamine because the lone-pair of electrons on N-atom pyridine resides in sp^2 hybrid orbital".
3. "Every pair of enantiomers consists of mirror images".
4. "If two molecules are mirror images, they must be enantiomers".
5. "Osmium Tetroxide is an important Hydroxylating reagent".
6. "In Meerwein-Ponndorf-Verley reduction reaction $(Me_2CHO)_3Al$ is used as catalyst".
7. "Chemical shifts are larger when shielding effects are greater".
8. "NMR spectrum is the plot of frequencies of absorption peak against frequency".

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

1. Define term "Heterocyclic compound"
2. Write a synthesis of "Pyrrole".
3. Discuss the rule for naming mono heterocyclic compound with suitable examples.
4. Define term "Stereoisomers".
5. Define term "Racemic modification".
6. Define term "Specific rotation".
7. Write a definition and chemical reaction for "Favorskii Rearrangement".
8. Write a definition and chemical reaction for "Benzilic acid Rearrangement".
9. Write a definition and chemical reaction for "Pinacol-Pinacolone rearrangement".
10. What are the characteristics of TMS?
11. Define term shielding and deshielding effects.
12. What are germinal protons?

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

1. Discuss the structure of "Pyrrole".
2. Write a note on "Nucleophilic substitution in Pyridine".
3. Describe R, S notations used in fixing the positions of groups in an optically active compound, with an example.
4. Write note on "Enantiomers and Optical activity".
5. Write note on "Aluminium isopropoxide".
6. Write note on "Osmium tetroxide".
7. Discuss an application of IR-Spectroscopy.
8. Giving a principle of 1H NMR and discuss the main parts of NMR spectrometer.

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