

SEAT No. _____

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Sardar Patel University

B. Sc. (Semester – III) Examination

Date: 6-01-2021, Wednesday

Time: 2:00 – 4:00 PM

Industrial Chemistry Vocational

COURSE NO: US03CICV22 (Fundamentals of 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 molecule from the below give intermolecular H-bond?
A. R-OH
B. R-SH
C. R-O-R
D. R-CO-R
- Arrange the following atoms in decreasing order of electro negativity. 1. Cl, 2. Br, 3. I
A. 3>2>1
B. 1>2>3
C. 3>1>2
D. 2>1>3
- Which of the following is most stable carbocation?
A. CH₃⁺
B. (H₃C)₃C⁺
C. (Ph)₃C⁺
D. CH₃-CH₂⁺
- Phenol is used in
A. As moth repellent
B. In alcoholic beverages
C. As anesthetic
D. In antiseptics
- Which of the following compound is Aspirin?
A. Methyl Salicylate
B. Salicylic Acid
C. Phenyl Salicylate
D. Acetyl Salicylic Acid
- Sodium phenoxide reacts with CO₂ at 125°C under 5 atm pressure to give salicylic acid is known as
A. Kolbe's Reaction
B. Perkins Reaction
C. Wurtz Reaction
D. HVZ Reaction
- The carbonyl group is
A. Sp Hybridized
B. Sp² Hybridized
C. Sp³ Hybridized
D. None Of These
- Which statement about the carbonyl compound is NOT true?
A. The carbonyl carbon is sp² hybridized
B. The bond angles among the three atoms attached to carbonyl carbon is 120.
C. The three atoms attached to the carbonyl carbon forms a nonplaner symmetry
D. The carbonyl group forms resonance structures
- Which of the following compound is a secondary amine?
A. CH₃-CH(NH₂)-CH₃
B. H₂NCH₂CH₂NH₂
C. CH₃CH₂NHCH₃
D. (CH₃)₃N
- A sample of pure amine molecules is found to possess no intermolecular H-bonding the amine is most likely:
A. Primary amine
B. Secondary amine
C. Tertiary amine
D. All of the above

(1)

(PT-0)

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

1. Homolytic cleavage occurs between atoms of "Same electronegativity". True / False?.
2. Alkyl radical has _____ type structure.
3. Methanol is known as Wood alcohol. True / False?
4. Rectified spirit is 90% Ethanol. True / False?
5. The melting points aldehydes and ketones tend to "Increase with increasing molecular weight". True / False?
6. Ketones are prepared by oxidation of "Secondary alcohol". True / False?
7. Amines are generally classified as "Weak bases". True / False?
8. Alkyl halides react with ammonia in presence of base to form "Primary amines". True / False?

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

1. Explain why HF has a higher boiling point than HCl?
2. Acetic acid is a weaker acid than formic acid? Explain.
3. 2-chlorobutanoic acid is a stronger acid than butanoic acid, explain.
4. m- & p- Nitrophenol have high boiling point and higher water solubility than o- Nitrophenol. Why?
5. o-Nitrophenol is steam volatile. Explain.
6. Give reaction for synthesis of Alcohols.
7. Discuss the structure and physical properties of ketones.
8. Carboxylic acids are more acidic than Alcohols, explain.
9. Why acid derivatives are hydrolyzed more readily in acidic/alkaline than neutral medium?
10. An aliphatic amine is more basic than ammonia, explain.
11. Explain, effect of substituent on basicity of aromatic amines.
12. Write synthesis of "p- bromo aniline from aniline".

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

1. Discuss the effect of hydrogen bonds on physical properties of organic compounds.
2. Write note on "Inductive effect" and "Electromeric effect".
3. Write a note on "Oxymercuration-demercuration" for preparation of alcohol.
4. Write a note on the addition of Grignard reagent in carbonyl compound for preparation of alcohol.
5. Discuss the "Nucleophilic addition to aldehydes and ketones can be catalyzed by acid".
6. Discuss the "Acidity of α - hydrogen of aldehydes and ketones".
7. Write a note on "Direct method of Diazotization".
8. Discuss the "Sandmeyer Reaction".

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