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Sardar Patel University

B. Sc. (Semester – III) Examination

Date: 18-6-2022, Saturday

Time: 12:00 – 2:00 P.M.

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	C. R-O-R
B. R-SH	D. R-CO-R
- Arrange the following atoms in decreasing order of electro negativity. 1. Cl, 2. Br, 3. I

A. 3>2>1	C. 3>1>2
B. 1>2>3	D. 2>1>3
- Which of the following is most stable carbocation?

A. CH ₃ ⁺	C. (Ph) ₃ C ⁺
B. (H ₃ C) ₃ C ⁺	D. CH ₃ -CH ₂ ⁺
- Which of the following has the highest boiling point?

A. CH ₂ CH ₂ CH ₂ CH ₂ Cl	C. CH ₃ CH ₂ CH ₂ CH ₂ OH
B. OHCH ₂ CH ₂ CH ₂ CH ₂ OH	D. CH ₃ CH ₂ OCH ₂ CH ₃
- Which of the following compound has the highest boiling point?

A. CH ₃ CH ₂ CHO	C. CH ₃ COCH ₃
B. CH ₃ CH ₂ CH ₂ OH	D. CH ₃ CH ₂ OCH ₃
- Which of the following has the highest boiling point?

A. CH ₃ CH ₂ OH	C. CH ₃ OH
B. CH ₃ CH ₂ CH ₂ CH ₂ OH	D. CH ₃ CH ₂ CH ₂ OH
- Acetone contains.....

A. Nine σ bond plus one π bond
B. Ten σ bonds
C. Eight σ bond plus two π bond
D. Nine π bond plus one σ bond
- Which of the following will have the highest boiling point?

A. Methanal	C. Propanal
B. Ethanal	D. Butanal
- Consider a 1°, 2° and 3° amine, all of equivalent molecular weight. Which amine is most likely to have lowest boiling point

A. 1° amine
B. 2° amine
C. 3° amine
D. Not enough information to determine
- Which of the following will have highest boiling point?

A. Methylamine	C. Ethylamine
B. Diethylamine	D. Ammonia

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

(08)

1. A free radical is Neutral in character. True / False?
2. Hemolytic cleavage of a bond generates Free radical. True / False?
3. Grain alcohol is the other name for "Ethyl alcohol". True / False?
4. Lucas reagent is HCl/ZnCl₂. 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. Aliphatic primary amines react with cold nitrous acids to form "Diazonium salts". True / False?
8. Hinsberg's reagent are "Benzene-sulfonyl chloride". True / False?

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

(20)

1. Acetic acid is a weaker acid than formic acid? Explain.
2. 2-chlorobutanoic acid is a stronger acid than butanoic acid, explain.
3. p-nitro phenol has higher melting point than o-nitro phenol.
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. Write note on "Resonance effect".
2. Discuss the "Theories of acids and bases".
3. Compare Oxymercuration-demercuration and Hydroboration-Oxidation in detail.
4. Discuss acid catalyzed dehydration of alcohol.
5. Write a note on "Transesterification reaction".
6. Discuss the "Grignard synthesis of a Carboxylic Acid".
7. Discuss the reactions of Amine with Nitrous Acid.
8. Write a note on "Hinsberg Test".

— X —

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