



[9]

# Sardar Patel University

B. Sc. (Semester – III) Examination

Date: 21/11/2022

Time: 10:00 to 01:00

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 MCQs. (All are compulsory)

[10]

- Which compound has highest boiling point?
  - n-Butane
  - n-Propyl alcohol
  - n-propyl amine
  - n-propane
- Homolytic cleavage of a carbon-carbon bond produces.....
  - Two carbonium ions
  - One cation and one anion
  - Two free radicals
  - A free radical and carbanion
- What is the state of hybridization of carbon in carbanion?
 

(a) sp	(c) $sp^2$
(b) $sp^3$	(d) $sp^3d$
- Which of the following compound is aspirin?
  - Methyl salicylate
  - Salicylic acid
  - Phenyl salicylate
  - Acetyl salicylic acid
- The compound most capable of hydrogen bonding is
  - $CH_3OCH_2CH_3$
  - $CH_3CH_2CH_2CH_3$
  - Phenol
  - $CH_2CH_3-S-S-CH_2CH_3$
- What does  $CH_3-CH_2-CO-CH_2-CH_2-CH_3$ 's name stand for?
 

(a) Hexan-1-one	(c) Pentan-3-one
(b) Butan-3-one	(d) Hexan-3-one
- When benzaldehyde and formaldehyde are heated in an aqueous NaOH solution, they produce
  - sodium formate + benzyl alcohol
  - methanol + sodium benzoate
  - ethanol + benzyl alcohol
  - sodium formate + sodium benzoate
- Ketones are prepared by oxidation of
 

(a) Primary alcohol	(d) None of these
(b) Secondary alcohol	
(c) Tertiary alcohol	
- Which of the following compound is a tertiary amine?
 

(a) $CH_3-CH(NH_2)-CH_3$	(d) $(CH_3)_3N$
(b) $H_2NCH_2CH_2NH_2$	
(c) $CH_3CH_2NHCH_3$	

[4]

(P.T.O.)

10. Amines are generally classified as....

- (a) Weak acids
- (b) Strong acids
- (c) Weak bases
- (d) Strong bases

Q.2 Answer the following short question (Any 10 out of 12)

[20]

1. What are Carbanions and Carbocations?
2. Define hyperconjugation.
3. Explain why HF has a higher boiling point than HCl?
4. Discuss on 'Williamson Synthesis' of ethers.
5. Give any two preparations of alcohols.
6. Why boiling point of alcohol is higher than comparable ether and Aldehyde?
7. Discuss about Transesterification.
8. Define Aldol condensation reaction.
9. Write any two preparations of carboxylic acids.
10. Write any two preparations of Amine.
11. Write a reaction for Bechamp reduction.
12. Define term "Hinsberg Test".

Q.3

- A. Write a note on Resonance effect. [05]  
B. Discuss free radicals with respect to formation, evidence, structure and detection. [05]  
OR

- A. Write a note on Inductive effect. [05]  
B. Write a note on Hydrogen bonds. [05]

Q.4

- A. Discuss acid catalyzed dehydration of alcohol. [05]  
B. Write note on ether cleavage in details. [05]  
OR

- A. Explain ring substitution of phenol in details. [05]  
B. Write a note on "Oxymercuration-demercuration" for preparation of alcohol. [05]

Q.5

- A. Write a short note on Cannizaro reaction. [05]  
B. Write down Grignard reaction for Aldehyde and Ketone. [05]  
OR

- A. Discuss the Hell-Volhard-Zelinsky reaction. [05]  
B. Write a note on Dicarboxylic acid. [05]

Q.6

- A. Write a note on Sandmeyer Reaction. [05]  
B. Write a note on Reductive amination. [05]  
OR

- A. Discuss the effects of substituent on basicity of aromatic amines. [05]  
B. Discuss the reactions of amine with nitrous acid. [05]