

SARDAR PATEL UNIVERSITY

B.Sc. (SEMESTER – III) Examination

Course No **US03ECHE04** (Organic Chemistry - I)4th December 2012

Time: 10:30am to 12:30pm

Notes: Figures to the right indicate full marks.

Total marks: 70

Q.1 Answer the following MCQs (All are Compulsory)**(10)**

- The correct decreasing order for stability of alkyl free radicals is.....
 - $3^{\circ} > 2^{\circ} > 1^{\circ}$
 - $1^{\circ} > 2^{\circ} > 3^{\circ}$
 - $2^{\circ} > 3^{\circ} > 1^{\circ}$
 - $1^{\circ} > 3^{\circ} > 2^{\circ}$
- The decreasing order of acid strength in 1) CH_3COOH , 2) $\text{CH}_3\text{CH}_2\text{COOH}$ 3) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ is
 - $3 > 2 > 1$
 - $1 > 2 > 3$
 - $2 > 3 > 1$
 - $1 > 3 > 2$
- Phenol is used _____
 - In alcoholic beverages
 - As anesthetic
 - In antiseptics
 - As mouth repellent
- Rank the following molecules in decreasing order of boiling points
(1) Phenol (2) o-catechol (3) Resorcinol
 - $(3) > (2) > (1)$
 - $(2) > (3) > (1)$
 - $(3) > (1) > (2)$
 - $(2) > (1) > (3)$
- Cyclic ethers with three-membered ring are called
 - Lactones
 - Oxiranes
 - Alkoxides
 - Epoxy resins
- Ketones are prepared by oxidation of
 - Primary alcohol
 - Secondary alcohol
 - Tertiary alcohol
 - None of these
- Acetaldehyde on treatment with Tollen's reagent gives precipitate of
 - Ag
 - AgNO_3
 - Cu_2O
 - None of these
- Check the incorrect statement of the following:
 - Acetic acid is present in sour milk
 - Formic acid present in insect bites
 - Tartaric acid is present in grapes
 - Citric acid is tricarboxilic acid
- A reaction of $\text{CH}_3\text{CH}_2\text{Cl} + (\text{CH}_3)_2\text{NH}$ gives _____ as a major product.
 - Primary amine
 - Secondary amine
 - Tertiary Amine
 - Amide
- Aliphatic primary amines react with cold nitrous acids to form
 - Alcohols
 - Diazonium salts
 - Nitriles
 - Nitroalkanes

Q.2 Answer the following short questions. (ANY TEN) (20)

1. Triphenyl methyl cation is more stable than benzyl cation. Explain.
2. Why, *p*-nitro phenol has higher melting point than *o*-nitro phenol.
3. Between bromoacetic acid and chloro acetic acid, which is a stronger acid and why?
4. Give a reaction of acid catalyzed dehydration of alcohol.
5. Write a reaction for the addition of Grignard reagent in carbonyl compound for preparation of alcohol.
6. Ring substitution in Phenol is ortho-para directing, Explain.
7. What is a difference between Cannizzaro and cross-cannizzaro reaction.
8. Explain the acidity of α - hydrogen of aldehydes.
9. The lower aldehyde and ketones are appreciable soluble in water, Explain.
10. Write a reaction for Hofmann elimination.
11. Write synthesis for *p*-bromo aniline from aniline
12. Outline the uses of Sandmeyer Reaction.

Q. 3 Write notes on Inductive effect and Resonance effect. (10)

OR

Q.3

a) Write a Theories of acids and bases. (05)

b) What are Carbnions and Carbocations? How they are generated? Mention few reactions involving them. Illustrate your answer with suitable examples. (05)

Q.4 Discuss the following: (10)

- a) Acidity of phenol.
- b) Structure and physical properties of ethers.

OR

Q.4 Write a notes on: (10)

- a) Williamson Synthesis of ethers.
- b) Base catalyzed cleavage of epoxide.

Q.5 Discuss the reaction, mechanism and uses of Aldol and cross-Aldol condensation. (10)

OR

Q.5 Discuss the structure of carbonyl compounds and write about Nucleophilic addition reaction in it. (10)

Q.6

a) Explain advantages of Reductive amination over Amonolysis reaction. (04)

b) Write notes on Hofmann degradation of amides. (06)

OR

Q.6

a) Discuss the direct method of diazotization. (04)

b) Give Synthesis of following: (06)

1. *m*- bromophenol from Nitrobenzene.
2. 1,2,3-tribromobenzene from *p*-Nitroaniline.

— x — x —

- Q3. Explain on: Linear regression and correlation coefficient. [10]
- OR**
- Q3. Define: accuracy and discuss the methods for determination of accuracy. [10]
- Q4. Discuss the neutralization curve for strong acid vs. strong base titration and show how pH changes during the titration. [10]
- OR**
- Q4. Discuss the types of reactions involved in titrimetric analysis. [10]
- Q5. Discuss the role of KI (potassium iodide) in the preparation of iodine solution. [10]
- OR**
- Q5. Discuss the detection of the end point in iodine solution. [10]
- Q6. Explain the significance of washing the precipitates in gravimetric analysis. [10]
- OR**
- Q6. Differentiate between: Lyophobic colloids and lyophilic colloids. [10]