Paper Code : 11124

B.Sc. I Semester Degree Examination (NEP), April 2022
Subject : CHEMISTRY
Paper : Analytical and Organic Chemistry – 1
Paper : DSC – 1

Time : 2 Hours | Max. Marks : 60

***Instruction** : Answer **all** Sections.*

SECTION – A

Answer **any five** of the following. **(5×2=10)**

1. a) Distinguish between absolute error and relative error.
   b) What is meant by mean and median ?
   c) Define mole fraction and molarity.
   d) Calculate the mole fraction 60 grams of urea (NH_2CONH_2) in 180 grams of water.
   e) How are sigma bonds and π bonds formed ?
   f) Give IUPAC name of

   I. $CH_3 - CH = CH - CH_3$

   II. $CH_3 - CH_2 - CH_2 - \underset{\displaystyle H}{\overset{\displaystyle H}{\overset{|}{\underset{|}{C}}}} - OH$

   g) Write two factors affecting S_N1 reaction.

SECTION – B

Answer **any four** of the following. **(4×5=20)**

2. How are errors minimised ?
3. Explain the determination of Hardness of water.

P.T.O.

4. Explain the relative strength of aliphatic and aromatic carboxylic acids.

5. What are SN^{Ar} and benzyne reactions ? Give the mechanism of benzyne reaction with example.

6. Balance the redox reaction
$KMnO_4 + FeSO_4 + H_2SO_4 \longrightarrow MnSO_4 + Fe_2(SO_4)_3$.

7. Explain the mechanism of t_1, t_2 reactions.

SECTION – C

Answer **any three** of the following. **(3×10=30)**

8. a) How is calibration of pipette, burette and volumetric flask carried out ? **5**
   b) What are the first aid precautions taken while handling toxic chemicals, acids and organic solvents ? **5**

9. a) What is the basic principle involved in titrimetric analysis ? **5**
   b) Define complexometry titration. Explain the theory of metal ion indicators. **5**

10. a) Explain the concept of resonance, inductive effect and electrometric effect. **6**
    b) What are Wurtz and Wurtz fitting reactions explain with example. **4**

11. Explain the electrophilic reaction mechanism of I halogination II nitration III Friedel craft is acylation reactions. **10**

12. a) What are the factors influencing precipitation in gravemetry ? **5**
    b) Explain the titration curve for strong acid and strong base. **5**

Paper Code : 11124

B.Sc. I Semester Degree Examination (NEP), April 2023
Subject : CHEMISTRY (Paper – I)
Paper – DSC – I : Analytical and Organic Chemistry

Time : 2 Hours

Max. Marks : 60

***Instruction** : Answer **all** Sections.*

SECTION – A

1. Answer **any five** questions. **(5×2=10)**

   a) Distinguish between precision and accuracy.

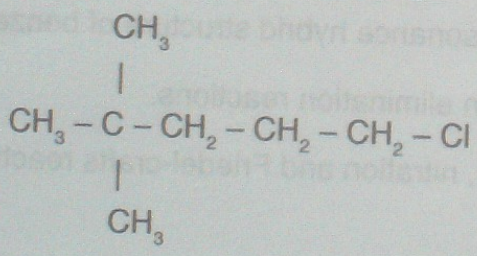
   b) What is range and mode ?

   c) Define normality and molarity.

   d) Calculate mole fraction 4 grams of NaOH (mol.mass = 40) in 36 grams of water.

   e) How are sigma and π bond formed ?

   f) Give IUPAC name of the following.

   i)


   ii) $CH_3 - C = C - CH_3$

   g) Give an example for alicyclic and Hetero cyclic compound.

SECTION – B

Answer **any four** of the following. **(4×5=20)**

2. What are determinate errors ? Explain.
3. Explain the determination of calcium in hard water.
4. Discuss the formation of alkenes from elimination reaction.

P.T.O.

5. How are the mechanism in E_1 and E_2 reactions studied ?

6. Balance the reaction

$$Cr_2O_7^{-2} + Fe^{+2} \xrightarrow{H^+} 2cr^{+3} + Fe^{+3} .$$

7. What type of mechanism observed in tert-butyl bromide and methyl chloride with alkali ? Explain mechanism.

SECTION – C

Answer **any three** of the following. **(3×10=30)**

8. a) Discuss the calibration methods of volumetric flask, burette and pipette. 5

   b) Calculate mean, median, mode and range of the following. 5
   16,14,16,18,20.

9. a) Explain Volhrd's method of precipitation titration. 5

   b) Advantages of organic reagents over inorganic reagents in gravometry analysis. Explain. 5

10. a) What is resonance ? Explain the resonance hybrid structure of benzene. 5

    b) Write a note on sytzeff and Hoffman elimination reactions. 5

11. Explain the mechanism of chlorination, nitration and Friedel-crafts reactions of benzene. 10

12. a) Wurtz and Wurtz-fittig reactions explain with examples. 5

    b) Explain titration curve for strong acid weak base. 5
