445141

DCCH201

Reg. No. | | | | | | | | |

II Semester B.Sc. Degree Examination, July/August - 2024

CHEMISTRY

Analytical, Physical and Organic Chemistry

(NEP CBCS Scheme 2021-22 Onwards)

Paper : II

Time : 2½ Hours **Maximum Marks : 60**

Instructions to Candidates:

1. The question paper has Three parts. Answer all the parts.
2. Write chemical equations and diagrams wherever necessary.

PART - A

Answer any **Five** of the following questions. Each question carries **2** marks. **(5×2=10)**

1. Mention any two reagents used in gravimetric analysis.

2. What is Joule - Thomson effect?

3. What are the factors which affect the viscosity of a liquid?

4. Define collision number of a gas molecule.

5. Give the applications of liquid crystals.

6. What is limit of detection?

7. What are the factors which affect S_N^1 and S_N^2 reactions?

PART - B

Answer any **Four** of the following questions. Each question carries **5** marks. **(4×5=20)**

8. Define post - precipitation. Explain the factors which influence the precipitation. **(5)**

9. What are complexometric titrations? Explain the titration method of determining total hardness of water. **(5)**

10. a) Discuss the mechanism of Friedel crafts alkylation with an example.

b) What is Benzyne? Write its structure. **(3+2)**

[P.T.O.

11. Define surface tension. Describe the experimental method of determination of surface tension of a liquid. **(5)**

12. Explain Berkely - Hartely method for determination of molar mass of a solute. **(5)**

13. State Nernst distribution law. Explain the use of distribution law in parke's process of deriverisation of lead. **(5)**

PART - C

Answer any **Three** of the following questions. Each question carries **10** marks. **(3×10=30)**

14. a) Explain the Mohr's method of precipitation titrations.
    b) What are the advantages of organic reagents over inorganic reagents in gravimetric anlaysis.
    c) What is meant by regression co-efficient. **(4+4+2)**

15. a) What is ipso substitution? Give suitable example.
    b) Explain S_N Ar mechanism with an example.
    c) What is sulphonation reaction of Benzene. **(4+4+2)**

16. a) State the law of corresponding states.
    b) Describe the process of determination of critical temperature and critical pressure of a gas molecules.
    c) Calculate critical volume, critical temperature and critical pressure using vanderwaal's constants for Co_2 a = 3.61 atm dm^6 mol^{-2} and b = 4.27×10^{-2} dm^3 mol^{-1}. **(2+4+4)**

17. a) Using Energy profile diagram explain S_N^1 mechanism with a suitable example.
    b) Define Parachor. Explain the elucidation of structure of Benzene using parachor. (Given parachor value of C = 8.6 H = 15.7 Ring = 1.4 and double bonds = 19.9).
    c) State law of constancy of interfacial angles. **(4+4+2)**

18. a) Derive Bragg's equation $n\lambda = 2d\sin\theta$.
    b) Explain
       i. Schottky defect.
       ii. Frenkel defect

       Give the differences.
    c) Calculate the miller indices for the following planes with intercepts given (6a, 3b, 3c). **(4+4+2)**