SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.Sc. Chemistry - END SEMESTER EXAMINATIONS APRIL - 2024
SEMESTER - V
20UCHCT5009 -Inorganic Chemistry – I

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Define the terms isotopes and isotones. Give an example for each.
2. Explain the various uses of miscible and immiscible solvents.
3. A solution containing 3.92 mg/100 ml of A (335 g/mol) has a transmittance of 64.1% in a 1.50 cm cell at 425 nm. Calculate the molar absorptivity of A at this wavelength.
4. Explain the applications of nano-chemistry in different fields.
5. State and explain the group discussion law.
6. How is a solvent extracted using a Soxhlet apparatus?
7. Describe the factors influencing absorption maximum and intensity.
8. Distinguish top down and bottom up techniques of nanoparticle synthesis.

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Describe the features of the cell model and the liquid drop model.
10. a) Nitrogen isotope $^{15}N_7$ has 7 protons and 8 neutrons. Its nucleus has a mass of 15.00011 u. Calculate mass defect and binding energy of the nucleus. (5)
    b) Highlight the various nuclear fusion reactions taking place in the sun and stars. (5)
11. Distinguish between fractional, vacuum and steam distillation techniques.
12. a) Classify (i) vibrational frequencies (ii) Raman lines (6)
    b) Apply mutual exclusion principle to identify the IR and Roman activities of molecules with suitable examples.
13. Compare and contrast any two physical and chemical methods of synthesizing nanoparticles.

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