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-2023
SEMESTER - I
20UCHCT1002 - General Chemistry-II

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

Section B

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

1. a) Give the difference between Compton effect and photoelectric effect. (3)
   b) Mention the limitation of Bohr's model of atom. (2)
2. What do you mean by ionization potential ? Explain the factors which affect ionization potential.
3. Discuss the Baeyer's strain theory and its limitations.
4. Write a brief account of the following:
   i) Space lattice ii) Born-Landé equation
5. a) What is the Arrhenius theory of acid and bases? Give its limitations. (2)
   b) Differentiate between protic and aprotic solvents. (3)
6. Apply the Slater's rules to predict the effective nuclear charge (Z_{eff})of the given isoelectronic species and comment on the results.
   i) F^- ii) Ne iii) Na^+
7. Discuss the preparation of alkanes by Kolbe's electrolytic method. Why methane cannot be prepared by this method?
8. Draw and explain the structure of NaCl and CsCl.

Section C

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

9. a) Explain in detail about quantum number and mention their significance. (8)
   b) State Heisenberg's uncertainty principle. (2)
10. a) Arrange the following elements in order of decreasing electron affinity: (2)
    i)F ii) P iii) S iv) B
    b) Explain the determination of electronegativity using Pauling scale and Mulliken's scale. (6)
    c) What is Sanderson's electron density ratio? (2)

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11. a) Give the mechanism of nitration and sulphonation of alkane. (5)
    b) Explain the mechanism of Dieckmann's condensation reaction with an example. (5)

12. a) List the classification of imperfections in crystalline solid. (2)
    b) Define point defect. (2)
    c) Differentiate between Schottky and Frenkel defect in crystalline solid. (6)

13. a) Discuss the applications of solubility product and common ion effect in qualitative analysis. (8)
    b) Illustrate the HSAB principle with example. (2)

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