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.
M.Sc. - END SEMESTER EXAMINATIONS NOVEMBER - 2022
SEMESTER - I

22PCHCT1002 - Structural Inorganic Chemistry and Photochemistry

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

Section A

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

1. a) Draw and explain the structure of Wurtzite and rutile.
   b) Identify the line defect in crystal and give its significance. (3+2)
2. Illustrate the zeolite structure and explain one preparation and its application.
3. Predict the structure of $(Re_2X_8)^{2-}$ and explain its bonding natures.
4. Describe the photo sensitization reactions of $[Ru(bpy)_3]^{2+}$ complex.
5. Explain the types of semiconductor with suitable examples.
6. Determine the structure and bonding involved in borazines.
   Give it's one preparation method.
7. Explain tetranuclear and hexanuclear clusters with suitable examples.
8. Diagnose the application of photosensitisation in solar energy conversions and Dye Sensitized Solar Cells.

Section B

Part A

Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. a) Illustrate the dislocation in solids
   b) Describe the solid state reaction and spinels. (4+6)
10. a) Apply the theory involved in super conductors.
    b) Relate themeisner effect with super conducting materials.
11. a) Distinguish different types of silicates and their structures.
    b) Ascertain the heteropolyacids of Mo and W (5+5)

Contd...

12. Distinguish the structure and bonding of boranes, carboranes, metallacarboranes compounds by using Wade's rule.

Part B

Compulsory question $(1 \times 10 = 10$ Marks)

13. Apply and explain the photoredox reactions and photo substitution reactions involved in coordination metal complexes. (5+5)

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