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 2025
SEMESTER - IV
22UCHCT4008 - Transition, inner Transition Elements and Metallurgy

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

Section B

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

1. Explain the variation of atomic radii, ionic radii, melting and boiling points of 'd'- block elements.
2. What is metallurgy? Describe any one method of concentration of ores.
3. Applying the metallurgical techniques, explain the extraction of titanium from its ore.
4. Predict the number of unpaired electrons in the following:
   Ce^{4+}, Yb^{2+}, Eu^{2+}, Lu^{2+}.
5. Explain the following:
   (a) Most of the transiton metals are paramagnetic.
   (b) Compounds of transition metals are generally coloured.
6. Describe the electrolytic refining and zone refining process.
7. Illustrate that how are the properties of steel altered by heat treatment process.
8. Distinguish between lanthanides and actinides.

Section C

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

9. Explain the preparation, properties and uses of titanium dioxide and ammonium molybdate.
10. (a) How would you relate the standard potentials of 'd'-block elements with their reducing properties.
    (b) Explain the role of sodium and potassium in human system.
11. (a) Distinguish between i. calcination and rusting ii. Gangue and flux
    (b) Applying various metallurgical processes, how will you get a pure metal from its sulphide ore?

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12. (a) Give the classification of steels.
    (b) Explain the extraction of thorium.
13. What is lanthanide contraction? Evaluate the consequences of lanthanide contraction.

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