

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7259

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Unique Paper Code : 2173550009

Name of the Paper : DSE- Advance Analytical Techniques for Inorganic Compounds

Name of the Course : **B.SC. (HONS.) CHEMISTRY**

Semester : VIII

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **four** questions in all. All questions carry equal marks.
3. The questions should be numbered in accordance to the number in the question paper

- Q1. (a). Differentiate between Fe^{3+} and Fe^{2+} by Mössbauer Spectroscopy.
(b). How spectrometers are significance in qualitative and quantitative analysis?
(c). Enumerate important methods for purification and drying of solvent,
(3×5)

- Q2. (a). Explain diagrammatically, why electrothermal atomizers are important in AAS.
(b). How ion exchange chromatography is critical to Reverse Osmosis (RO)?
(c). Describe the theory and role of Infrared Spectroscopy in forensic analysis.
(3×5)

- Q3. (a). Highlight the working of Induced Coupled Plasma AES.
(b). Give method for the separation of two cation through column chromatography.
(c). Discuss the UV-Vis spectroscopy application in analysis of inorganic compounds.
(3×5)

- Q4. (a). Explain the principle of EPR spectroscopy with a diagram.
- (b). Explain how column chromatography helps in compound isolation and identification.
- (c). Highlight the significance of interference in absorption spectrometry.

(3×5)

- Q5. (a). What is hyperfine splitting in EPR and Mossbauer spectroscopy?
- (b). Differentiate between plate number and plate height in column efficiency.
- (c). Comment on the types of Ion exchangers.

(3×5)

- Q6. (a). What are the limitations of ICPES and AAS?
- (b). Describe the term Recoil energy and Doppler effect in Mössbauer spectroscopy.
- (c). Enumerate the list of safety measures while handling chemicals in lab.

(3×5)