Code No: R05222302 **R05** **Set No. 2**

II B.Tech II Semester Examinations,December 2010
INSTRUMENTAL METHODS OF ANALYSIS
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) A protein has a sedimentation coefficient value of 3.12×10^{-13} sec in water. Its diffusion coefficient in water is found to be 8.2×10^{-7} /cm. Both the above values have been corrected for 20^0 C in water. The partial specific volume of the protein is 0.735, & the density of water at 20^0 C is 0.9982. Determine the molecular weight of the protein?
   (b) Explain the principle involved in the above method. [8 × 2 = 16]
2. Explain clearly the chemical shift? How does it help in the elucidation of the structure of organic compound? [16]
3. Write notes on:
   (a) bainbridge mass spectrograph.
   (b) dempster's mass spectrometer. [8 × 2 = 16]
4. Discuss some important applications of fluorometric analysis. [16]
5. (a) How do atomic & molecular spectra differ?
   (b) Give the application of molecular spectrum data.
   (c) Define the terms:
      i. Wave length
      ii. Frequency
      iii. Wavenumber
      iv. Amplitude. [5+6+5]
6. Describe in detail how hyperfine interactions helps in qualitative analysis in ESR? [16]
7. (a) Give the principle involved in SEM ?
   (b) Which aspects of morphological study the SEM is used for? [8 × 2 = 16]
8. Describe the suitable instrumental methods used for the analysis of following:
   (a) Alloys & Ores.
   (b) Trace metal ions.
   (c) Gaseous mixtures. [5+5+6]

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Code No: R05222302 **R05** **Set No. 4**

II B.Tech II Semester Examinations,December 2010
INSTRUMENTAL METHODS OF ANALYSIS
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Describe the suitable instrumental methods used for the analysis of following:
   (a) Alloys & Ores.
   (b) Trace metal ions.
   (c) Gaseous mixtures. [5+5+6]
2. (a) How do atomic & molecular spectra differ?
   (b) Give the application of molecular spectrum data.
   (c) Define the terms:
      i. Wave length
      ii. Frequency
      iii. Wavenumber
      iv. Amplitude. [5+6+5]
3. Explain clearly the chemical shift? How does it help in the elucidation of the structure of organic compound? [16]
4. Discuss some important applications of fluorometric analysis. [16]
5. Describe in detail how hyperfine interactions helps in qualitative analysis in ESR? [16]
6. (a) Give the principle involved in SEM ?
   (b) Which aspects of morphological study the SEM is used for? [8 × 2 = 16]
7. (a) A protein has a sedimentation coefficient value of 3.12×10^{-13} sec in water. Its diffusion coefficient in water is found to be 8.2×10^{-7} /cm. Both the above values have been corrected for 20^0 C in water. The partial specific volume of the protein is 0.735, & the density of water at 20^0 C is 0.9982. Determine the molecular weight of the protein?
   (b) Explain the principle involved in the above method. [8 × 2 = 16]
8. Write notes on:
   (a) bainbridge mass spectrograph.
   (b) dempster's mass spectrometer. [8 × 2 = 16]

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Code No: R05222302 **R05** **Set No. 1**

II B.Tech II Semester Examinations,December 2010
INSTRUMENTAL METHODS OF ANALYSIS
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Give the principle involved in SEM ?
   (b) Which aspects of morphological study the SEM is used for? [8 × 2 = 16]
2. Write notes on:
   (a) bainbridge mass spectrograph.
   (b) dempster's mass spectrometer. [8 × 2 = 16]
3. (a) A protein has a sedimentation coefficient value of 3.12×10^{-13} sec in water. Its diffusion coefficient in water is found to be 8.2×10^{-7} /cm. Both the above values have been corrected for 20^0 C in water. The partial specific volume of the protein is 0.735, & the density of water at 20^0 C is 0.9982. Determine the molecular weight of the protein?
   (b) Explain the principle involved in the above method. [8 × 2 = 16]
4. Describe in detail how hyperfine interactions helps in qualitative analysis in ESR? [16]
5. Discuss some important applications of fluorometric analysis. [16]
6. (a) How do atomic & molecular spectra differ?
   (b) Give the application of molecular spectrum data.
   (c) Define the terms:
      i. Wave length
      ii. Frequency
      iii. Wavenumber
      iv. Amplitude. [5+6+5]
7. Explain clearly the chemical shift? How does it help in the elucidation of the structure of organic compound? [16]
8. Describe the suitable instrumental methods used for the analysis of following:
   (a) Alloys & Ores.
   (b) Trace metal ions.
   (c) Gaseous mixtures. [5+5+6]

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Code No: R05222302 **R05** **Set No. 3**

II B.Tech II Semester Examinations,December 2010
INSTRUMENTAL METHODS OF ANALYSIS
Bio-Technology

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Describe the suitable instrumental methods used for the analysis of following:
   (a) Alloys & Ores.
   (b) Trace metal ions.
   (c) Gaseous mixtures. [5+5+6]
2. Discuss some important applications of fluorometric analysis. [16]
3. (a) Give the principle involved in SEM ?
   (b) Which aspects of morphological study the SEM is used for? [8 × 2 = 16]
4. Write notes on:
   (a) bainbridge mass spectrograph.
   (b) dempster's mass spectrometer. [8 × 2 = 16]
5. (a) A protein has a sedimentation coefficient value of 3.12×10^{-13} sec in water. Its diffusion coefficient in water is found to be 8.2×10^{-7} /cm. Both the above values have been corrected for 20^0 C in water. The partial specific volume of the protein is 0.735, & the density of water at 20^0 C is 0.9982. Determine the molecular weight of the protein?
   (b) Explain the principle involved in the above method. [8 × 2 = 16]
6. Describe in detail how hyperfine interactions helps in qualitative analysis in ESR? [16]
7. Explain clearly the chemical shift? How does it help in the elucidation of the structure of organic compound? [16]
8. (a) How do atomic & molecular spectra differ?
   (b) Give the application of molecular spectrum data.
   (c) Define the terms:
      i. Wave length
      ii. Frequency
      iii. Wavenumber
      iv. Amplitude. [5+6+5]

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