

II B.Tech II Semester Examinations, April/May 2012

INSTRUMENTAL METHODS OF ANALYSIS

Bio-Technology

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Write short notes on:
 - (a) Principle involved in colourimetry
 - (b) Transition in UV-V is spectroscopy
 - (c) Types of errors occur in visible spectroscopy
 - (d) How the different spectrophotometers are priced? [4*4=16]
2. What is the range of wavelengths for NMR for analysing DNA, RNA, proteins and Enzymes? Explain in detail? [16]
3. You wish to sediment a preparation of equine encephalitis virus ($s_{20,w}=300$) of the two fixed angle rotors that are available, rotor A has $r_{min}=4$ cm, $r_{max}=11.2$ cm, and a maximum speed of $35000 \text{ rev min}^{-1}$. Rotor B has $r_{min}=4.2$ cm and a maximum speed of $65000 \text{ rev min}^{-1}$.
 - (a) Calculate the k factor for each rotor and then estimate the time required to pellet the virus preparation using each rotor, assuming that the rotors are operated at their maximum speed and that centrifuge tubes are full.
 - (b) Which rotor is most efficient for sedimenting the virus preparation? Give the reason for your answer. [16]
4. Discuss the differences between Ultra filtration and Membrane Separations. [16]
5. Explain in detail about the working principle and construction of Chemical Ionization Unit. [16]
6. Describe how phase contrast and fluorescence microscopes work? What kind of images provided by each? Give the specific use of each type. [16]
7. Give an account on:
 - (a) Method of inter standard
 - (b) Isotopic dilution. [8+8]
8. Explain different types of Sensors used in the online monitoring and explain any one. [16]

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