

B.Tech Degree V Semester Examination November 2011

EB 505 BIO INSTRUMENTATION I

(2006 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A

(Answer all questions)

(8x5=40)

- I. (a) Define the term 'Drift'. Explain its classification with suitable graphs.
(b) Explain measuring lag on the basis of dynamic characteristics.
(c) How transmittance and absorbance laws are related to absorption of radiation?
(d) Bring out the objectives of spectroscopy which utilizes ultraviolet and visible range of the electromagnetic spectrum.
(e) Discuss the basic principle of operation of a mass spectrometer.
(f) Write notes on electrophoresis.
(g) What are direct recorders?
(h) Distinguish thermal array and electrostatic recorders.

PART B

(4x15=60)

- II. (a) Comment on "the comparison between a known standard and the output of measuring system measuring the same quantity". (8)
(b) Discuss systemic errors and its error reduction method. (7)
- OR
- III. (a) Explain the functional elements of an instrumentation system. (8)
(b) How can we improve the dynamic characteristics of first order system? (7)
- IV. Define pH. What are the design criteria of pH meters? Explain potentiometer type of pH meter in detail. (15)
- OR
- V. (a) With reference to blood cell counters explain cell identification system with neat schematics. (8)
(b) Explain the need and types of optical filters used in colorimeters and spectrophotometers. (7)
- VI. (a) Define liquid chromatography and explain its classifications in detail. (8)
(b) Describe densitometers in detail. (7)
- OR
- VII. (a) Briefly explain the fundamentals of NMR spectroscopy. (8)
(b) Explain the principles involved in simple and compound microscopes. (7)
- VIII. With relevant schematics discuss the basic recording system and explain the general considerations for signal conditioners. (15)
- OR
- (a) Write notes on instrumentation tape recorder in detail. (8)
(b) What are the elements of DSP system used for processing techniques? (7)
