C5307

EIGHTH SEMESTER B.TECH (ENGINEERING) DEGREE EXAMINATION

JUNE 2010

~~AI04-802 ANALYTICAL INSTRUMETATION~~

Time: Three Hours AI 04-802 Analytical Instrumentation Maximum: 100 Marks

Answer *all* questions

Part A

I. (a) State and explain Beer's law and discuss its relevance.

(b) Discuss the principle of ultraviolet spectrometer.

(c) Explain the theory of Raman spectrometry

(d) Write a note on thermo gravimetric analysis.

(e) What is X ray absorption? How is it useful in instrumentation?

(f) Write a note atomic emission spectrometry.

(g) How nuclear radiation detectors work?

(h) Describe the working of CO monitor. Describe one typical application.

(8×5=40 marks)

Part B

II. (a) Describe the single and double beam photometry. (8)

(b) Describe the use of microprocessors in photometry. (7)

Or

(c) Discuss the working UV.vis spectrometer in detail. (8)

(d) Write a note on radiation sources. (7)

III. (a) Explain FTIR instrumentation with a functional block diagram (15)

Or

(b) Explain the principle of atomic emission spectrometry. Discuss source, components etc. (15)

IV. (a) Explain magnetic resonance technique. Discuss various types and instrumentation application of each in detail. (15)

Or

(b) Explain the principle and application of ESR spectrometer. Compare with other types. (15)

V. (a) Explain the principle of mass spectrometry. Explain the various analyzing techniques. (15)

Or

(b) Explain the general principle of chromatography. Explain gas and liquid types in detail. (15)

(4×15=60 marks)

◊◊◊◊◊◊◊◊◊◊◊◊