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Question Paper Code: 35505

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Fifth Semester

Electronics and Instrumentation Engineering

(Common to Instrumentation and Control Engineering)

01UEI505 – ANALYTICAL INSTRUMENTS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define Beer-Lambert law.
2. What is meant by flame emission spectrometry?
3. List the various detectors used in gas chromatography.
4. Why high pressure pumps are used in HPLC?
5. List the method used for measuring oxygen in flue gas.
6. Describe the principle of thermal conductivity analyzer.
7. List is the use of black in silica analyzer.
8. Tell the application of Silica analyzer
9. What are the advantages of NMR spectrometer?
10. Classify the NMR spectrometer.

PART - B (5 x 16 = 80 Marks)

11. (a) Illustrate the working principle of double beam IR spectrophotometers. (16)

Or

(b) Explain the single beam and double beam spectrophotometers. (16)

12. (a) Discuss any two types of detector used in liquid chromatography. (16)

Or

(b) Analyze the components and operation of the high performance liquid chromatography. (16)

13. (a) (i) Explain the construction and working of Infra-Red gas analyzers. (8)

(ii) How Carbon Monoxide (CO) and Hydrocarbons are estimated? Explain in detail. (8)

Or

(b) Explain the measurement of sulphur dioxide and carbon monoxide. (16)

14. (a) With neat diagram, explain the construction and working of dissolved oxygen analyzer. (16)

Or

(b) Examine the working principle of sodium analyzer. (16)

15. (a) Explain the construction and working principle of Electron Spin Resonance (ESR) spectrometer with neat diagram. (16)

Or

(b) Explain the principle of operation of a mass spectrometer. (16)