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Question Paper Code: 35505

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

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. State Beer's Law.
2. What are the techniques used for handling solid samples in IR spectroscopy?
3. What are the different chromatography techniques?
4. What are the requirements for a pumping system in HPLC?
5. List the method used for measuring oxygen in flue gas.
6. Describe the principle of thermal conductivity analyzer.
7. List the use of black in silica analyzer.
8. Write a note on silicon analyzer.
9. Write the types of NMR spectrometer.
10. What are the applications of mass spectrometry?

PART - B (5 x 16 = 80 Marks)

11. (a) With a neat sketch explain the principle and operation of instrumentation of atomic absorption spectrophotometer. (16)

Or

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

12. (a) With a neat diagram explain the principle of separation in gas chromatography and write the advantages and disadvantages of gas chromatography. (16)

Or

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

13. (a) Explain the function of Hay's magneto strictive analyzer used for measurement of oxygen. (16)

Or

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

14. (a) Describe the constructional details of reference electrode used for different pH ranges and write the precautions in the use of reference electrodes. (16)

Or

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

15. (a) (i) Explain in detail about the NMR Spectrometer. (8)

- (ii) Illustrate the working of Quadrapole Mass Spectrometer. (8)

Or

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