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Question Paper Code : 21532

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Fifth Semester

Electronics and Instrumentation Engineering

EI 2302/EI 52/10133 EI 505 — ANALYTICAL INSTRUMENTS

(Common to Instrumentation and Control Engineering)

(Regulations 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the two basic requirements of radiation sources in absorption photometry?
2. Describe interference filters.
3. Define sample injection system.
4. Describe the classification of stationary phases?
5. Define thermal conductivity Analyzer.
6. Mention the different types of Gas analyzers.
7. Write the operational definition of P_H .
8. What are the different types of calomel reference electrode used?
9. What is magnetic resonance?
10. Define wide-line NMR.

PART B — (5 × 16 = 80 marks)

11. (a) Explain in detail about FTIR spectrophotometer with neat optical path diagram and block diagram of the instruments. (16)

Or

- (b) Explain in detail about grating mono chromator system with neat diagram. (16)

12. (a) Explain in detail about liquid chromatographs with neat diagram and application. (16)

Or

(b) Explain the operating principles of high pressure liquid chromatographs. (16)

13. (a) Explain in detail :

(i) IR Analyzer (8)

(ii) Thermal conductivity analyzer. (8)

Or

(b) Write the notes on dust and smoke measurements. (16)

14. (a) Explain the operating principles of solid state sensors and liquid matrix electrodes with neat diagrams.

Or

(b) Write notes on :

(i) Sodium analyzer (8)

(ii) Silicon analyzer. (8)

15. (a) Explain the operating principles, instrumentation system and application of electron spin resonance spectroscopy. (16)

Or

(b) Explain the different types of mass spectrometers with the neat diagrams. (16)