Code: 13A10502 **R13**

B.Tech III Year I Semester (R13) Supplementary Examinations June 2017

ANALYTICAL INSTRUMENTATION

(Electronics and Instrumentation Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) How measurements are done in ion selective electrodes.
(b) State Bouguer's law.
(c) What are the light sources used for AAS?
(d) Specify the classification of IR region of spectrum.
(e) Define spectroscopy.
(f) What is the basic principle of NMR?
(g) Define retention time.
(h) What is pyrolysis?
(i) What are the advantages of gas chromatography?
(j) Why ammonia gas is added to the sample in Sodium analyzer.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) Explain the Electromagnetic radiation with neat figure.
(b) Write short notes on Resonance.

OR

3 (a) Explain the effect of Emission and absorption of radiations.
(b) Write short notes on electronic interaction.

UNIT – II

4 Explain the single beam & double beam instruments used in UV spectrophotometer.

OR

5 (a) With a neat diagram, illustrate IR absorption spectrophotometers in detail.
(b) What are the features of non-dispersive spectrophotometers?

UNIT – III

6 (a) Draw the block diagram of an NMR spectrometer. Describe the function of each part.
(b) What are the basic components of a Mass spectrometer?

OR

7 (a) Explain the difference between a continuous wave and a Fourier transform NMR.
(b) Describe time of flight and quadruple mass spectrometers.

UNIT – IV

8 (a) With a block diagram, describe the operation of a Flame photometer.
(b) What is the need for isotope dilution?

OR

9 Explain the operation of Proportional Counter and Solid state detector.

UNIT – V

10 (a) Explain in detail about the principle and illustrate working of High Pressure Liquid Chromatography.
(b) Summarize the factors to be considered in Carrier Gas supply system.

OR

11 (a) Explain any two types of chromatographic column used in Gas Chromatography.
(b) What is the function of partition chromatography?

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