

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)

- 1 Answer the following: (10 X 02 = 20 Marks)
- How measurements are done in ion selective electrodes.
 - State Bouguer's law.
 - What are the light sources used for AAS?
 - Specify the classification of IR region of spectrum.
 - Define spectroscopy.
 - What is the basic principle of NMR?
 - Define retention time.
 - What is pyrolysis?
 - What are the advantages of gas chromatography?
 - 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 quadrupole 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?
