

Code No: RT32102

**R13****SET - 1****III B. Tech II Semester Regular/Supplementary Examinations, April -2018****ANALYTICAL INSTRUMENTATION**

(Electronics and Instrumentation Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)2. Answering the question in **Part-A** is compulsory3. Answer any **THREE** Questions from **Part-B**

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**PART -A**

- 1 a) State and explain the Beer-Lambert's law. [3M]
- b) Distinguish between a prism and a grating monochromator. [4M]
- c) Explain about magnetic sweep generator. [4M]
- d) What is a GM counter and explain its various designs. [4M]
- e) What are the various detectors used in spectrophotometers. [3M]
- f) Explain the basic pH measurement circuit. [4M]

**PART -B**

- 2 a) Define the cell constant of a conductivity cell and explain the basic principle of working of a conductivity cell. [4M]
- b) Draw and explain the conductivity measuring circuit. [8M]
- c) Explain the construction of conductivity cell. [4M]
- 3 a) Explain the principle and working of a carbon monoxide monitor. [5M]
- b) Explain briefly about NOX analysis. [6M]
- c) Explain the importance of gas analysis in industry. [5M]
- 4 a) Explain the principle and working of emission type spectroscope. [8M]
- b) Explain the scheme for a spark generation technique. [8M]
- 5 a) Explain the working of a cross-coil type NMR spectrometer. [8M]
- b) With a neat schematic explain the working of an ESR spectrometer. [8M]
- 6 a) Explain in detail about the chromatographic columns used in gas chromatographic systems. [8M]
- b) With a neat sketch explain working of a high pressure liquid chromatograph. [8M]
- 7 a) Explain basic principles of nuclear radiation detection and what are the various types. [8M]
- b) Explain with a block schematic the construction of a solid state X-ray detector. [8M]

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