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Total Number of Pages: 01

**B.TECH**  
**PEEI5301**

**6<sup>th</sup> Semester Regular / Back Examination 2015-16**

**ANALYTICAL INSTRUMENTATION**

**BRANCH(S): AEIE, EIE, IEE, MINERAL**

**Time: 3 Hours**

**Max Marks: 70**

**Q.CODE:W512**

**Answer Question No.1 which is compulsory and any five from the rest.**

**The figures in the right hand margin indicate marks.**

- Q1** Answer the following questions: **(2 x 10)**
- a) State difference among the colorimeter, photometer and spectrophotometer.
  - b) How Intelligent Analytical Instrument differs from conventional one ?
  - c) What is the pH range of normal human?
  - d) Write down different types of NMR spectrometers.
  - e) What is Scintillation counter?
  - f) What is the role of atomizer in the flame photometry?
  - g) What is Ion-sensitive FET?
  - h) Name different parts of gas chromatography.
  - i) What is polarography?
  - j) Write three common practical infrared sources.
- Q2** a) Describe PC based Analytical instrumentation system with suitable diagram **(5)**  
b) Describe working of multi channel Photometer with suitable diagram **(5)**
- Q3** a) Describe the working of microprocessor based Spectrophotometer with suitable diagram **(5)**  
b) With neat diagram explain working of Bio-sensor. **(5)**
- Q4** What is chromatography? How it differs from other analysis techniques? **(10)**  
Describe the working of Gas chromatograph in detail with suitable diagram.
- Q5** a) Explain principle and operation of any one of the Industrial gas analyzer. **(5)**  
b) Write unit of radio activity. Explain properties of particles emitted in Radioactivity **(5)**
- Q6** a) Explain methods of generation and detection of X-ray **(5)**  
b) With suitable block diagram explain the working of microprocessor-based ion analyzer. **(5)**
- Q7** a) Write the principle of flame photometry. Explain the constructional details of a Flame photometry. **(5)**  
b) What are different radiation sources used in infrared spectrometer? Discuss briefly. **(5)**
- Q8** Write short note of any two **(5 x 2)**
- a) Principle of NMR
  - b) Bio-sensor
  - c) Radiation detector.
  - d) Infrared Gas analyzer.