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Question Paper Code	12847
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**B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024**

Fifth Semester

**Electronics and Instrumentation Engineering**

(Common to Instrumentation and Control Engineering)

**20EIPC501 - ANALYTICAL INSTRUMENTATION**

Regulations – 2020

Duration: 3 Hours

Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

	Marks	K- Level	CO
1. Define Isobestic point.	2	K1	CO1
2. Name the different burners used in flame photometry.	2	K1	CO1
3. Define Chromatography.	2	K1	CO2
4. List the various components used in HPLC.	2	K1	CO2
5. Define Chemiluminiscence.	2	K1	CO3
6. Define Thermal Conductivity of a gas.	2	K1	CO3
7. Discuss about the need of buffer solution in pH measurement.	2	K2	CO4
8. State the principle of Selective Ion Electrode.	2	K1	CO4
9. Mention the limitations of NMR.	2	K1	CO5
10. Differentiate between Mass and NMR spectrometer.	2	K2	CO5

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

11. a) Explain the single beam & double beam instruments used in UV spectrophotometer. 13 K2 CO1

**OR**

b) Explain the working principle of Atomic Emission Spectrometer. 13 K2 CO1

12. a) Explain in detail about the different classification of chromatography and explain about the Paper chromatography and Gel Permeation Chromatography. 13 K2 CO2

**OR**

b) Draw the schematic diagram of a High pressure Liquid Chromatography and explain the components in detail. 13 K2 CO2

13. a) Explain smoke and dust measurement in detail. 13 K2 CO3

**OR**

b) With neat diagram explain the working principle of IR analyzer. 13 K2 CO3

14. a) With a neat sketch explain the working principle of dissolved oxygen analyzer. 13 K2 CO4

**OR**

b) Describe in detail about the constructional details and working principles of ion selective electrodes. 13 K2 CO4

15. a) Explain the working principle of a pulsed Fourier Transform NMR spectrometer with neat diagram. 13 K2 CO5

**OR**

b) Explain about the magnetic deflection analyzer spectrometer with neat sketch. 13 K2 CO5

**PART - C (1 × 15 = 15 Marks)**

16. a) i) Explain the working of Water quality analyzer in detail. 7 K2 CO4

ii) Explain about the quadrupole mass analyzer in detail. 8 K2 CO5

**OR**

b) i) Explain the working of silicon analyzer in detail. 7 K2 CO4

ii) Explain about the time of flight mass analyzer in detail. 8 K2 CO5