

Reg. No.

Question Paper Code

11868

13 JUN 2023

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Fifth Semester

Electronics and Instrumentation

20EIPC501 – ANALYTICAL INSTRUMENTATION

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|---|-------------------------------|
| 1. List any 4 different techniques used for sampling of solids. | 2,K1,CO1 |
| 2. State the principle of operation of flame emission photometry. | 2,K1,CO1 |
| 3. Define Distribution Constant. | 2,K1,CO2 |
| 4. Mention the considerations should be taken into account for selecting a carrier gas. | 2,K2,CO2 |
| 5. List the various types of CO analyzer. | 2,K1,CO3 |
| 6. List the different analysis methods of Nitrogen Oxide. | 2,K1,CO3 |
| 7. Define pH. | 2,K1,CO4 |
| 8. List the different types of electrodes used for PH measurements. | 2,K2,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) Elucidate 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 Ion Exchange, Thin layer 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) Elucidate the working principle of hot wire Thermal Conductivity Analyzer. 13,K2,CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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OR

b) Enumerate smoke and dust measurement in detail. 13,K2,CO3

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

OR

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

15. a) Explain the basic principle of NMR? Discuss the working principle of NMR spectrometer & give its applications. 13,K2,CO5

OR

b) Discuss the working principle of a pulsed Fourier Transform NMR spectrometer with neat diagram. 13,K2,CO5

PART - C (1 × 15 = 15 Marks)

16. a) (i) Describe about the water quality analyzer in detail. 8,K2,CO4

(ii) With neat diagram explain magnetic sector analyzer spectrometers. 7,K2,CO5

OR

b) (i) Explain the principle of conductivity measurement by using the conductivity meters in detail. 8,K2,CO4

(ii) Explain about time of flight mass analyzers. 7,K2,CO5