

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE, APRIL-2022**

**ANALYTICAL INSTRUMENTATION**

[Maximum marks: 100]

(Time: 3 Hours)

**PART – A**

**Maximum marks : 10**

I (Answer *all* the questions in one or two sentences. Each question carries 2 marks)

1. What are the types of spectrum?
2. State the principle of Raman Effect.
3. Define Ph.
4. What is the importance of Buffer solution?
5. Give the classification of Infrared analyzers. (5 x 2 = 10)

**PART – B**

**Maximum marks : 30**

II (Answer any *five* of the following questions. Each question carries 6 marks)

1. Describe the working of double beam filter photometer.
2. State the principle of flame photometer.
3. Explain the construction & working of time of flight mass spectrometer.
4. Describe the working of digital pH meter.
5. What is the importance of Chromatograph?
6. Describe the construction and operation of Electrical conductivity analyser.
7. State the principle of Thermal conductivity analyzer. (5 x 6= 30)

**PART – C**

**Maximum marks : 60**

(Answer one full question from each unit. Each full question carries 15 marks)

**UNIT –I**

- III. (a) Explain the construction and working principle of single beam filter photometer. (6)
- (b) Draw and explain the construction of infrared spectrophotometer. (9)

OR

IV. Explain the basic components of photometer. (15)

**UNIT-II**

V. (a) Explain the working of magnetic deflection mass spectrometer. (6)

(b) Explain the construction & working of Raman spectrophotometer. (9)

OR

VI. Describe the principle, construction and working of NMR spectrometer. (15)

**UNIT-III**

VII. Explain the sources of errors and their compensation methods in glass electrode. (15)

OR

VIII.(a) Draw and explain the construction of calomel electrode. (6)

(b) Explain dip and flow type industrial electrode assembly. (9)

**UNIT-IV**

IX. Explain the principle, construction and operation of magnetic force type paramagnetic oxygen analyser. (15)

OR

X. Explain the construction and operation of positive and negative filter type IR analyser? (15)

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