N21-04079

TED (15) - 6212 Reg.No.....
(Revision-2015) Signature.....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/ COMMERCIAL PRACTICE - NOVEMBER-2021

ANALYTICAL INSTRUMENTATION

[Maximum marks: 75] (Time: 2.15 Hours)

PART – A

Marks

I. Answer any *three* questions in one or two sentences. Each question carries 2 marks

1. Define absorption spectroscopy.
2. Define Raman scattering.
3. What is a buffer solution.
4. List the classification of IR gas analyzer.
5. Define thermal conductivity of gas. (3 x 2 = 6)

PART – B

II.Answer any ***four*** of the following questions. Each question carries 6 marks

1. Explain the basic components of Photometer.
2. List the difference between filter photometer and spectrophotometer.
3. Define the working of Raman spectrometer.
4. Describe the working principle of mass spectrometer.
5. Explain the construction of glass electrode.
6. Describe the working of digital pH meter.
7. Describe the construction and operation of electrical conductivity analyzer. (4 x 6= 24)

PART – C

Answer ***any of the three units*** from the following. Each full question carries 15 marks

UNIT –I

III. (a) Describe the construction and working of single beam filter photometer. (8)

(b) Describe the working of double beam filter photometer. (7)

OR

IV. Draw and explain the construction and working of IR spectrophotometer. (15)

UNIT-II

V. Explain the construction and working of flame photometer. (15)

OR

VI. (a) Draw and explain the working principle of magnetic deflection type mass Spectrometer. (8)

(b) Describe the principle of operation of NMR spectrometer. (7)

UNIT-III

VII. (a) Explain the pH control in effluent treatment. (8)

(b) Explain the construction of calomel electrode (7)

OR

VIII. Draw and explain the construction and working of gas chromatograph. (15)

UNIT-IV

IX. (a) Describe the construction and operation of Zirconia oxygen analyzer (8)

(b) Explain the construction and operation of positive filter type IR analyzer. (7)

OR

X Explain the construction and operation of magnetic force type and wind type Paramagnetic oxygen analyzers. (15)
