

TED (10)-4088

(REVISION—2010)

Reg. No.

Signature

SIXTH SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY—MARCH, 2013

ANALYTICAL INSTRUMENTS

(Common to EI and IT)

[Time : 3 hours

(Maximum marks : 100)

Marks

PART—A

(Maximum marks : 10)

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

1. What do you mean by Electromagnetic spectrum ?
2. Write the importance of buffer solution.
3. State the principle of thermal conductivity.
4. Write the basic components of flame photometer.
5. List any two sources of water pollution.

(5x2=10)

PART—B

(Maximum marks : 30)

II Answer *any five* questions. Each question carries 6 marks.

1. State and explain the fundamental laws of photometry.
2. Explain the working principle of single beam spectrophotometer.
3. Explain how the pH is being controlled in effluent treatment.
4. Mention the different types of errors present in glass electrode. How it is being compensated ?
5. Explain the construction and operation of paramagnetic oxygen analyzer.
6. What is the working principle of a carbon monoxide analyzer ?
7. Explain the electrostatic precipitator in pollution control.

(5x6=30)

PART—C

(Maximum marks : 60)

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

UNIT - I

III With neat diagrams, explain the construction and principle of :

- (a) Single beam filter photometer.
- (b) Flame photometer.

5

10

OR.

- | | Marks |
|---|-------|
| IV (a) State and explain the principle of Raman Effect. | 5 |
| (b) Describe the construction and working of Raman Spectrophotometer. | 10 |

UNIT – II

- | | |
|--|----|
| V (a) State and explain the importance of chromatographic process. | 5 |
| (b) With a neat block schematic, explain the construction and working of gas chromatography. | 10 |

OR

VI Write short notes on :

- | | |
|----------------------------|---|
| (a) Hydrogen electrode. | 8 |
| (b) Combined pH electrode. | 7 |

UNIT – III

VII Explain the construction and operation of :

- | | |
|------------------------------------|---|
| (a) Infrared gas analyzer. | 8 |
| (b) Thermal conductivity analyzer. | 7 |

OR

VIII Describe the construction and operation of :

- | | |
|---------------------------------------|---|
| (a) Electrical conductivity analyzer. | 8 |
| (b) Zirconia oxygen analyzer. | 7 |

UNIT – IV

- | | |
|---|----|
| IX (a) What is air pollution ? List major types of gas pollutants. | 5 |
| (b) With the aid of necessary diagrams, explain sulphur dioxide analyzer. | 10 |

OR

- | | |
|---|----|
| X Describe the method of flue gas analysis. | 15 |
|---|----|