



C09-AEI-405

**3415**

**BOARD DIPLOMA EXAMINATION, (C-09)**  
**MARCH/APRIL—2014**  
**DAEIE—FOURTH SEMESTER EXAMINATION**  
**ANALYTICAL INSTRUMENTATION**

Time : 3 hours ]

[ Total Marks : 80

---

**PART—A**

3×10=30

**Instructions** : (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define pH.
2. Give the principle of pH measurement.
3. Define viscosity.
4. Draw the block diagram of analytical instrumentation.
5. State Beer-Lambert law.
6. Draw the diagram of thermal conductivity gas analyzer.
7. List the applications of spectrofluorometer.
8. Give the principle of polarimetry.

\* 9. List the advantages of mass spectrometer.

10. Classify the chromatography.

**PART—B**

10×5=50

**Instructions** : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Describe the measuring and reference electrodes in pH measurement. 10

12. Explain the principle of operation of rotating viscometer. 10

13. Explain UV spectrophotometer with a neat sketch. 10

14. Explain the principle and operation of IR spectrometer. 10

15. Explain the principle and operation of flame photometer. 10

16. Explain the operation of spectrofluorometer. 10

17. (a) Describe the operation of mass spectrometer. 6

(b) List the applications of mass spectrometer. 4

\* 18. (a) Describe conductivity cells. 4

(b) Derive an expression for  $m/e$  ratio of mass spectroscopy. 6

\*\*\*