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C20-AEI–406

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BOARD DIPLOMA EXAMINATION, (C-20)

JUNE/JULY—2022

DAEI – 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 spectroscopy.

2. State the Beer Lambert's Law.

3. List the types of UV, Visible and IR light sources.

4. Draw the block diagram of Flame photometer.

5. Define the resolution of mass spectrometer.

6. Define the terms absorption and adsorption.

7. Classify chromatography.

8. Define conductivity.

9. List the types of radiations.

10. List the properties of Gamma particles.

PART—B

8×5=40

Instructions : (1) Answer **all** questions.

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

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

11. *(a)* Explain the principle of operation and applications of UV spectrophotometer.

(OR)

(b) Explain electromagnetic spectrum with a diagram.

12. *(a)* Explain the principle of operation and applications of Refractometer.

(OR)

(b) Explain the principle of operation and applications of Paramagnetic gas analyzer.

13. *(a)* Explain the operation of single-deflection 180^0 mass spectrometer with schematic diagram.

(OR)

(b) Explain the block diagram of mass spectrometer.

14. *(a)* Explain the measuring and reference electrodes used for pH measurement.

(OR)

(b) Explain the operation of digital type pH meter with diagram.

15. *(a)* Explain the working of Scintillation counter detection method with diagram.

(OR)

(b) Explain the working of Geiger Muller detection method with diagram.

PART—C

10×1=10

Instructions : (1) Answer the following question.

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

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

16. Derive the expression for mass charge (m/e) of mass spectrometer.

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