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BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DBME – FOURTH SEMESTER EXAMINATION

ANALYTICAL INSTRUMENTATION ENGINEERING

Time : 3 Hours] [*Total Marks* : 80

PART—A 3×10=30

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

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

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. List the applications of single beam visible spectrophotometer.

2. Draw the block diagram of analytic instrumentation.

3. State the need of digital spectroscopy.

4. Compare radiation energy from a color filter and monochromator.

5. List the methods for measurement of peak areas.

6. Define chromatography.

7. Write the principle of X-ray spectrometer.

8. List the applications of automated biochemical analysis system.

9. Define pH.

10. Define conductance.

PART—B

8×5=40

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

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

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

11. *(a)* Define and explain electromagnetic spectrum.

(OR)

(b) Explain Beer Lambert law.

12. *(a)* Explain the working principle of direct reading spectrophotometer.

(OR)

(b) Explain the block diagram of microprocessor control based spectrophotometer.

13. *(a)* Explain the constructional details of flame photometer.

(OR)

(b) Explain the block diagram of liquid chromatograph.

14. *(a)* Explain the system components of continuous flow system.

(OR)

(b) Explain schematic diagram of automated biochemical analysis system.

15. *(a)* Explain catheter tip electrode for measurement of PO_2 and PCO_2.

(OR)

(b) Explain the working principle of pH meter with a block diagram.

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The 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. Analyze the use of chromatography used in food and beverage industries.

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