

314330

24225

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answer with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following: 10**
- a) List any two analytical equipments.
 - b) Draw Geiger Muller counter.
 - c) List the types of interfaces.
 - d) List different methods for measuring conductivity.
 - e) Suggest instrument technique for measurement of Carbon monoxide and Hydrocarbon.
 - f) Write four applications of incinerator.
 - g) Define Chromatography.

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- 2. Attempt any THREE of the following:** **12**
- a) Describe working of colorimeter with neat labelled diagram.
 - b) Define sterilization list different sterilizing instruments.
 - c) Suggest the instrument which is used to measure PCO_2 , PO_2 from single sample of blood and draw its block diagram.
 - d) Draw a neat labelled diagram of an instrument used for carbon monoxide measurement and explain it.
- 3. Attempt any THREE of the following:** **12**
- a) List and explain different types of Ultracentrifuge.
 - b) Describe gas chromatography with a neat labelled diagram.
 - c) Explain temperature compensation in conductivity measurement.
 - d) State the function of ultrasonic cleaner.
- 4. Attempt any THREE of the following:** **12**
- a) List the steps for calibrating analytical instruments.
 - b) Write any four application of centrifuge.
 - c) Explain the working of scanning electron microscope with neat diagram.
 - d) Describe Null method for conductivity measurement with neat diagram.
 - e) Define Analog interfaces and digital I/O interfaces. Give two characteristics of IEEE 488 standard interface.
- 5. Attempt any TWO of the following:** **12**
- a) State Beer and lamberts law. List any two applications of –
 - i) Auto-analyzer
 - ii) Flame photometer.
 - b) List and explain different types of blood cell counter.
 - c) Describe direct method for conductivity measurement with neat labelled diagram.

6. Attempt any TWO of the following:**12**

- a) List different types of radiation detector. Explain any one with suitable diagram.
 - b) Suggest the technique for separating molecules based on their size and electrical charge and explain it with neat diagram.
 - c) Following are the full scale measurement range for various gas pollutant. Suggest measurement technique for following pollutants and also explain one of them –
 - i) Sulphur dioxide – 0.2 ppm
 - ii) Nitrogen dioxide – 0.1 ppm
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