17539

11819

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE of the following : **12**

(a) Define pH. List the types of electrodes used for pH measurement.

(b) Compare single beam and double beam filter photometer by any four points.

(c) Name four blood gas parameters, with their normal range.

(d) List the types and concentration of various gas pollutants.

(B) Attempt any ONE of the following : **6**

(a) Draw block diagram of Analytical Instrument. Explain its each block.

(b) Explain with diagram basic parts of gas chromatography. Name two carrier gases used in gas chromatography.

2. Attempt any FOUR of the following : **16**

(a) Draw the schematic diagram of multichannel photometer and explain it in brief.

(b) Classify liquid chromatography in detail.

(c) Explain measurement of nitrogen oxide using CO laser with a neat block diagram.

(d) Explain spectrachemical shift in NMR.

(e) Define the following :

(i) Environment

(ii) Air Pollution

(f) Explain the working of thermal conductivity analyser using thermistor with diagram.

3. Attempt any FOUR of the following : **16**

(a) State the applications of flame photometry. (any 4)

(b) State the principle of NMR spectrometer. State any two applications of it.

(c) Describe the construction of glass electrode with a neat diagram.

(d) Explain why column temperature is so critical in gas chromatography.

(e) Describe a technique for Ozone measurement.

4. (A) Attempt any THREE of the following : **12**

(a) Draw a neat block diagram of liquid chromatography. What is the role of high pressure pump in it ?

(b) State any four drawbacks of IR analyzer.

(c) Draw a neat block diagram of a complete blood analyzer.

(d) List two applications each of : (i) GCMS (ii) LCMS.

(B) Attempt any ONE of the following : **6**

(a) Describe the conductivity method for measurement of SO_2 in air with a neat labelled diagram.

(b) Draw a neat labelled diagram of flame photometer. Explain the function of each block in brief.

5. Attempt any FOUR of the following : **16**

(a) Explain interaction of radiation with matter.

(b) Explain the working of a null detector type pH meter with a neat diagram.

(c) How do you convert volumetric concentration of gas to gravimetric concentration of gas ?

(d) Explain what is the effect of blood on electrode. State the use of buffer solution in brief.

(e) Explain any one technique of measurement of CO concentration in air.

(f) Explain principle of chromatography. Classify Gas Chromatography.

6. Attempt any FOUR of the following : **16**

(a) Draw a neat labelled diagram of GCMS.

(b) What is electrophoresis ? Explain paper electrophoresis in brief.

(c) Differentiate between colorimeter and flame photometer. (any four points)

(d) Explain discharge type atomizer used in flame photometer.

(e) Compare Gas Chromatography and Liquid Chromatography. (any four points)
