22543

11920

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) 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) State the role of radiation source in analytical instruments.

b) List any two properties of analytes used in analytical instruments.

c) State Beer Lambert's law.

d) Name any two applications of flame photometer.

e) State the effect of column length in chromatography.

f) State the principle of chromatography.

g) State the need of pollutant monitoring.

Marks

2. Attempt any THREE of the following: **12**

a) List the different filters used in analytical instruments. Explain any one filter in detail.

b) Draw a neat labelled diagram of glass electrode and explain its working.

c) List any four applications of GCMS.

d) Explain nitrogen oxide measurement using CO laser.

3. Attempt any THREE of the following: **12**

a) Draw a neat labelled diagram of single beam filter photomer and explain its working.

b) Explain the working of time of flight type mass spectrometer.

c) Draw a neat labelled block diagram of infrared gas analyzer. Explain its working.

d) Explain in brief ozone measurement using conductivity meter.

4. Attempt any THREE of the following: **12**

a) Explain the working principle of spectro photometer using prism.

b) In chromatography if the temprature of oven decreases, what will be its effect on retention time in chromatogram.

c) State the principle of thermal conductivity analyzer and explain its working.

d) List the types of gas pollutant and their concentration.

e) Explain carbon monoxide measurement using gas chromatography.

Marks

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

a) Describe the procedure to troubleshoot NMR.

b) Draw block diagram of LC and explain role of each block.

c) Explain construction and working of pCO_2 electrode.

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

a) Draw a neat labelled diagram of flame photometer. Explain the role of each element of flame photometer.

b) Draw labelled diagram of complete blood gas analyzer. Explain measurement of HCO_3 using same.

c) Explain SO_2 measurement using conductivity method.