22435

24225

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 meaning of sterilization.

b) Enlist application of colorimeter.

c) Suggest sterilizing equipment for sterilizing priomedical waste.

d) Define electrophoresis.

e) State any two sensors used for measurement of conductivity.

f) Enlist the instrument used to measure hydroxy ion concentration in the given solution.

g) Write the effect of temperature on pH measurement.

Marks

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

a) Draw block diagram of auto-analyser and describe function of each block.

b) Explain working of autoclave with neat diagram.

c) Draw diagram of electro-conductive blood cell counter.

d) Following are the full scale measurement range for various gas pollutant. Suggest measurement technique for following pollutants :

i) Carbon monoxide – 0-50 ppm

ii) Hydrocarbons – 0-80 ppm

iii) Nitrogen oxide – 0-1 ppm

iv) Sulphar oxide – 0-2 ppm

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

a) Describe freezer with a neat labelled block diagram.

b) Describe working principle of dark field blood cell counter with neat diagram.

c) Draw labelled diagram for beat frequency method for measuring conductivity and give it's working.

d) Enlist any four gas pollutants present in atmosphere and write it's effect on health (are effect of each pollutants)

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

a) Explain the steps for calibration of colorimeter.

b) With neat diagram describe working principle of analytical ultracentrifuge.

c) Describe the working of transmission electron microscope with neat diagram.

d) Explain liquid chromatography with a neat labelled diagram.

e) Explain the concept of automated web chemical air analysis.

Marks

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

a) Explain photometry law. Give it's mathematical expression. Name any four analytical instruments based on it.

b) Explain two applications of the following analytical equipment :

i) Centrifuge

ii) Autoclave

iii) Auto-analyser.

c) Describe working of PAGE (Polyacrylamide Gel Electrophoresis). Give any two application of the same.

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

a) Explain significance of pH meter. Daw null detector type pH meter and give it's working.

b) Describe direct method for conductivity measurement with neat diagram.

c) Draw labelled diagram of ultrasonic cleaner. Explain it's working. List any two applications of same.
