22435

22223

3 Hours / 70 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. Attempt any FIVE of the following: **10**

a) List any two applications of colorimeter.

b) State the importance of sterilizer equipments.

c) State the two types of electronic microscope.

d) Write significance of pH measurement.

e) Explain automated wet-chemical air analysis system.

f) List any two applications of ultrasonic cleaner.

g) Define conductivity.

Marks

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

a) Describe working principle of flame phorometer with suitable diagram.

b) Describe the working principle of hot air oven.

c) Describe temperature compensation of conductivity measurement.

d) Suggest measurement techniques with full scale measurement range for the following various gas pollutants.

i) Oxidant : 0 - 500 ppb

ii) Carbon monoxide : 0 - 200 ppm

iii) Hydrocarbons : 0 - 80 ppm

iv) Sulphur oxides : 0 - 2 ppm

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

a) Write any four applications of centrifuge.

b) Draw and explain capillary electrophoresis.

c) Explain working principle of pH meter with a neat labelled diagram.

d) With a neat block diagram explain non-dispersive infrared analyzer for carbon monoxide measurement.

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

a) Draw a neat labelled diagram of auto analyzer and describe its working.

b) Describe working of preparative ultracentrifuge.

c) With a neat labelled diagram explain working of liquid chromatography.

d) Explain transmission electron microscope with neat diagram.

e) List any four gas pollutants present in atmosphere and write its effect on health.

Marks

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

a) Draw block diagram of analytical instrument and give function of each block.

b) Write procedure to sterilize medical equipments using autoclave. State application of autoclave.

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

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

a) Explain Beer Lambert law and suggest any two equipments based on Beer Lambert law.

b) Draw equivalent circuit of conductivity cell used in high frequency method and explain it.

c) Describe direct method for conductivity measurement with a neat labelled diagram.