**Analytical instrumentation**

**Unit wise** **important questions**

**Unit -1**

1. What is pH ? explain the different electrodes used for pH measurement?

2. Explain indetail about Hydrogen Sulphide Analyser.

3. Explain indetail about Sodium Analyser with neat diagram?

4. Explain in detail about Silica Analyser with neat diagram?

5. Define thermal conductivity? Explain the different methods involved in it?

6. Describe about the CO monitor in detail?

7. Draw a neat sketch of laser opto aucostic spectro analyser and explain indetail?

8. Explain indetail about dissolved oxygen analyser using polarograph method?

**SHORT ANSWERS:**

1.Define Beer’s law?

2.Define Capacity factor?

3.Define Retention time in a chromatography.

4.Define Spectroscopy?

5. Define Polarograph method

6. Define Analyser.

7. Define thermal conductivity?

8.List out the types of pH?

9.Define chemiluminescence ?

10. List out the advantages of Analysers.

**Unit-2**

1. What is column chromatography? Explain briefly

2. Draw and Explain in detail the operation of double beam spectrophotometer.

3. Draw the thermal type of Paramagnetic Oxygen Analyser and explain.

4. Draw the schematic diagram of Gas Chromatography and Explain the working of various part of it ?

5.Draw the thermal type of Magnetic wind and Paramagnetic Oxygen Analyser and Explain.

6. Draw the schematic diagram of Liquid Chromatography and Explain the working

Indetail?

7.Explain the working of flame ionization detector ?

8.Explain the working of electron capture detector?

**SHORT ANSWERS:**

1.Define Eluent?

2.Define Phase ratio?

3.Define Chromatography.

4.Define Absorption Spectroscopy?

**Unit -3**

1.Explain the working of any one source of UV spectroscopy?

2.Explain the working of Single Beam Spectrophotometer ?

3.explain the working of double beam spectrophotometer?

4. Explain the principle of operation of IR spectrophotometer of single beam?

5.Discuss about the instrumentation associated with spectrophotometers.

**SHORT ANSWERS:**

1. Explain the principle of operation of Polarographic cell

2. Draw the diagram of magnetic wind instrument.

3. Discuss different sources of spectrophotometers.

4.What are the detectors used in spectroscopy.

5.List out the instruments associated in UV-VIS spectrophotometers.

**Unit-4**

1. Draw the block diagram of Atomic Emission Spectrophotometer.

2. Explain the online calorific value measurements(bomb calorimeter)

3. Explain the different sources and detectors used in FTIR spectroscopy

4. Draw the block diagram of Atomic Absorption Spectrophotometer.

5. Explain the working of Flame Photometer.

6. Draw the block diagram of Atomic Emission Spectrophotometer.

7. Explain the online calorific value measurements(bomb calorimeter )

**SHORT ANSWERS:**

1.What is the principle of Atomizer.

2.What are the types of radiation detectors used by the radioactive sources.

3.Draw the diagram of paramagnetic oxygen analyser

4. List out types of detectors used in FTIR spectroscopy

5. list out the applications of Atomic Emission Spectrophotometer.

**Unit-5**

1. Explain in detail about the working of NMR spectrophotometers

2. Explain the principle of infrared spectroscopy with the operation of

Golay Pneumatic Detector.

3. Explain the working of ESR spectrometer in detail

4. Explain the different types of nuclear radiation detectors with suitable diagrams.

5.Explain the working of Mass spectroscopy in detail.

6.Explain with working principle of GM counter

**SHORT ANSWERS:**

1.Discuss different magnetic systems used in NMR spectroscopy.

2.Define Dead time in GM counter

3.What are the resonance conditions for NMR

4, list out the applications of GM Counter

5.list out the advantages of nuclear radiation detectors