

B.E. Instrumentation Engineering (Model Curriculum) Semester-VIII
IN801M - Analytical and Environmental Instrumentation

P. Pages : 2

Time : Three Hours



GUG/W/23/14363

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Assume suitable data wherever necessary.
 3. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Write a short note on **any two**. **8**
- a) Radiation sources.
 - b) Optical fibers
 - c) Monochromators.

- b) Compare in between classical method and instrumental analysis method. **8**

OR

2. a) Draw and explain the various components of an absorption instruments. **8**

- b) Define Beer-Lambert law and state the deviations from Beer-lambert law. **8**

3. a) Draw & explain the working of single & double beam filter photometer. **8**

- b) Discuss UV-visible spectrophotometer with the help of **8**
- i) Working principle
 - ii) Construction

OR

4. a) Discuss the applications of Atomic absorption spectrophotometer. **8**

- b) Describe the working principle of flame photometer with application. **8**

5. a) Draw and explain the basic parts of a gas chromatograph in brief. **8**

- b) Describe the strategy to separate sample in HPLC with a neat instrumentation diagram. **8**

OR

6. a) Describe with block diagram the working of Liquid chromatograph. **8**

- b) Enlist various detectors used in gas chromatograph and explain any two in detail. **8**

7. a) With a schematic diagram explain the method of measuring Sulphur dioxide (SO₂) estimation using conductivity method. **8**

- b) Discuss how to estimate the amount of hydrocarbons present in air with neat instrumentation set up. **8**

OR

8. a) Classify types of gas analyzer for measurement of oxygen and explain any one in detail. 8
- b) What are the different electrochemical methods of oxygen measurements. 8
9. a) List different types of electrodes used for measurement of pH. Discuss any two electrodes in details. 8
- b) Elaborate the principle and schematic diagram of a biosensor in details. 8

OR

10. a) Elaborate non-contact type water conductivity meter. 8
- b) Discuss how dissolved oxygen in water can be measured. 8
