

B.E. Instrumentation Engineering (CBCS / Model Curriculum) Semester - VIII
8BEIE01 / IN801M - Analytical and Environmental Instrumentation

P. Pages : 2

Time : Three Hours



GUG/S/23/14363

Max. Marks : 80

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- 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) Enlist the classical & Instrumental methods of analysis based on physical property measured. **8**
- b) Describe in brief: **8**
- i) Spectral Method of analysis
 - ii) Electro-analytical method of analysis.

OR

2. a) Discuss the advantages and disadvantages of instrumental and classical methods of analysis. **8**
- b) With neat diagram, write short note on: **8**
- 1) Prism and grating
 - 2) Monochromators
3. a) Explain in details "IR Spectrophotometer". **8**
- b) Explain the instrumentations required in emission spectroscopy. **8**

OR

4. a) With necessary diagram. Describe the principle, construction and working of UV Spectrophotometer. **8**
- b) What are the various sources of interferences in Atomic absorption spectrophotometer? **8**
5. a) Explain the sample injection techniques used in Gas Chromatograph. **8**
- b) Describe with block diagram the working of Liquid Chromatograph. **8**

OR

6. a) Enlist various detectors used in gas chromatograph and explain any two in details. **8**
- b) Describe the strategy to separate sample in HPLC with a neat instrumentation diagram. **8**

7. a) With neat diagram explain the working principle of thermal conductivity analysis. 8
- b) Discuss how to estimate the amount of hydrocarbons present in air with neat instrumentation set up. 8

OR

8. a) What are the different electrochemical methods of oxygen measurements? 8
- b) Write a short note on non – dispersive infra – red analyzer and GC for CO₂ measurement. 8
9. a) Define Monitoring. List the water quality testing instruments. 8
- b) Elaborate the categories of water pollution. 8

OR

10. a) Elaborate with neat block diagram of the nephelometer system for measurement of turbidity of water. 8
- b) Describe with neat diagram the Optical arrangement for measurement of turbidity of water. 8
