B.E. Instrumentation Engineering (Model Curriculum) Semester-VIII

IN801M - Analytical and Environmental Instrumentation

P. Pages : 2 **GUG/S/25/14363**

Time : Three Hours * 2 6 1 9 * Max. Marks : 80

Notes : 1. All questions carry marks as indicated.
2. Same answer book must be used for each section.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Write a short note on optical filters and monochromators in brief. **8**

b) Enlist the various parts of absorption spectroscopy and explain the working of it. **8**

OR

2. a) At a definite wavelength an absorber when placed in a cell of 1 cm path length absorbs 20% of incident light, if the absorptivity of the absorber at this wavelength is 2. Find the concentration. Explain the deviation in Beer-Lamberts law. **8**

b) Differentiate between classical and instrumental method of analysis. **8**

3. a) Enlist the various parts of UV-Visible Absorption Spectroscopy and explain the working of it. **8**

b) Explain the importance of flame photometry. **8**

OR

4. a) Compare between atomic emission and atomic absorption spectroscopy. **8**

b) Explain principle and working of Fourier Transfer IR Spectrophotometer. **8**

5. a) Describe with block diagram the working of gas chromatography. **8**

b) Illustrate the various type of HPLC and explain its explanation. **8**

OR

6. a) Discuss the various type of detectors used in gas chromatography. Explain any one in short. **8**

b) Explain the high pressure liquid chromatography. **8**

7. a) Enlist oxygen gas analyzers and explain any one in details. **8**

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

OR

8.	a)	Write a short note on air pollution monitoring system.	**8**
	b)	Describe the working of thermal conductivity analyzer.	**8**
9.	a)	Discuss biosensors in detail.	**8**
	b)	Elaborate with neat block diagram the measurement of nitrogen oxide.	**8**

OR

10.	a)	State the principle for measurement of pH and explain about calomel electrodes.	**8**
	b)	Illustrate the method of dissolved oxygen measurement.	**8**

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