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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Instrumentation & Control Engg.) (Sem.-7)

ANALYTICAL INSTRUMENTATION

Subject Code : EI-406

M.Code : 58048

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A**1. Answer briefly :**

- a) Give the selection criteria for carrier gas.
- b) Define Beer Law.
- c) What are the applications of oxygen analyzer?
- d) Give the general classification of PH cell.
- e) Define Humidity & Dew point.
- f) Name the instruments used in IR spectrometry.
- g) What are the different types of gas chromatography?
- h) What are the types of detectors in mass spectrometer?
- i) What is Spin-Spin coupling?
- j) What are the types of NMR spectrometer?

SECTION-B

2. Briefly explain about dissolved oxygen analyzer.
3. Describe the construction of a pH electrode. Draw the electronic circuit diagram for measuring pH of a liquid and explain its working.
4. In NMR spectroscopy mention the advantages of using a magnet with as great a field strength as possible. Also explain the difference between a continuous wave and fourier transform NMR.
5. Explain how the dust and smoke analyzer is used?
6. Describe the construction and working of IR analyzer.

SECTION-C

7.
 - a) What are the types gas analysers? Explain anyone with example.
 - b) Compare UV, IR and near IR chemical analysers.
8.
 - a) Describe the automatic and faithful sampling with neat diagrams.
 - b) Write the construction and working of analytical electron microscope.
9. Write short note on following :
 - a) Electron Spin Resonance (ESR)
 - b) Viscosity and consistency Measurement

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.