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SF-7127

B. E. III (Sem. VI) (IC) Examination

May / June – 2011

Analytical Instrumentation

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. 3 (Sem. 6) (IC)**

Name of the Subject :

☛ **Analytical Instrumentation**

☛Subject Code No. : **7 1 2 7** ☛Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Attempt **all** questions.

(3) Figure to the **right** indicate marks.

(4) Answer of **two** sections must be written in **separate** answer books.

SECTION - I

1 (a) Answer the following question briefly. **10**

(i) What is radioactivity ? **2**

(ii) What is hydrometer ? **2**

(iii) Difference colorimeter and spectrophotometer.

(iv) Give the wavelength of UV and visible light. **2**

(b) Discuss basic mass spectrometer-principle, operation, components. **8**

2 (a) Explain basic parts of Liquid Chromatography. **8**

(b) Explain thermal conductivity detector with neat sketch. And also give its application. **8**

OR

2 (a) Explain basic parts of Gas Chromatography. **8**

(b) What is spectrophotometer ? Explain the working of double-beam ratio recording spectrophotometer. **8**

3 Attempt any **two** of the following : **8×2=18**

(a) Infra-red Spectrophotometer

(b) Time of flight mass spectrometer

(c) Explain how radioactivity interacts with matter.

SECTION - II

4 (a) Answer the following question briefly : 8

(i) What is hygrometer ? 2

(ii) Explain the principle for density measurement using bubbler tube. 2

(iii) Explain the role of analytical instrumentation in industry. 2

(iv) Give two application of opto-coupler. 2

(b) Give the principle, working and construction of paramagnetic oxygen analyzer. 10

5 (a) What is pH ? How the calomel electrode of pH meter works ? 8

(b) Explain characterization and application of photo transistor. 8

OR

5 (a) How does absolute humidity differ from relative humidity ? Explain a commercial dew point meter. 8

(b) Describe the concept of measurement of conductivity of material. Mention various methods adopted for measurement. Explain any one type of conductivity meter. 8

6 Attempt any **two** of the following : 8×2=16

(a) Smoke detector

(b) Working principle and characteristics of LCD

(c) Density measurement.
