



RM-7127

B. E. - III (I.C.) (Sem. VI) Examination

May / June - 2010

Analytical Instrumentation

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृशविवेक निशानीवाणी विगतो उत्तरवडी पर अवश्य लखवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
B. E. - 3 (I.C.) (Sem. 6)

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) Answers to each section must be written in separate answer books.
(3) Figures to the right indicate maximum marks.
(4) Draw neat figure wherever required.

SECTION - I

- 1 (a) (1) What is beer Lambert's law and explain ? 2
(2) Give application of mass spectrometer. 2
(3) What is unit of radioactivity ? Give the equation 2
for a half life of radioactive isotopes.
(4) Explain monochromators and mention their types. 4
- (b) What is the difference between photometer 8
and spectrophotometer? Explain working of double
beam filter photometer.
- 2 (a) Explain basic parts of Liquid Chromatography. 8
(b) Explain magnetic deflection mass spectrometer with 8
its schematic diagram.

OR

- 2 (a) Explain basic parts of Gas Chromatography. 8
(b) Explain Time of flight mass spectrometer with its 8
schematic diagram.

- 3 Attempt any two of the following : 8×2 = 16
- (a) Geiger-Muller Counter
 - (b) Smoke detector
 - (c) Infra-red spectrophotometer.

SECTION - II

- 4 (a) (1) Explain the principle for density measurement using bubbler tube. 2
- (2) What is the principle of hair hygrometer ? 2
- (3) Why is photo diode most suitable as a receiver in fibre optic applications ? 2
- (4) Draw the schematic depicting phototransistor used as a photodiode. 2
- (b) Describe the concept of pH measurement in detail. 10
Mention merits and advantages offered by it. Draw and explain, with neat sketch glass electrode used for pH measurement.
- 5 (a) Explain U-Tube densitometer. 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

OR

- 5 (a) How does absolute humidity differ from relative humidity ? Explain a commercial dew point meter. 8
- (b) What is the principle of paramagnetic oxygen analyzer ? Give the industrial application of oxygen analyser. 8
- 6 Attempt any two of the following : 8×2=16
- (a) Explain principle and operation of LED.
 - (b) Explain construction and working of photodiode.
 - (c) Explain construction and working of photo voltaic cell.