



Name :

Roll No. :

Invigilator's Signature :

CS/B.Tech (BME)/SEM-5/BME-503/2009-10

2009

ANALYTICAL AND DIAGNOSTIC EQUIPMENT

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$
 - i) The ratio of the radiant power transmitted by a sample to the radiant power incident on the sample is known as
 - a) transmittance
 - b) luminescence
 - c) absorbance
 - d) optical density.
 - ii) In case of IR spectrophotometer, one of the common IR sources is
 - a) Deuterium lamp
 - b) Mercury lamp
 - c) Nernst filament
 - d) Tungsten-halogen lamp.
 - iii) Electromagnetic blood flowmeter is based on
 - a) Lenz's law
 - b) Beer-Lambert's law
 - c) Faraday's law
 - d) Fleming's law.



GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

8. Explain the basic principle of oximetric measurement. Describe the pulse oximeter with a neat sketch. What is impedance pneumometer ? $5 + 8 + 2$
9. a) Define systolic and diastolic pressures.
b) Describe one direct method of monitoring blood pressure.
c) When is direct method of blood pressure measurement used ? $2 + 9 + 4$
10. Describe the pH measurement procedure using glass electrode with a neat sketch. Describe the Clark method of pO_2 measurement. $8 + 7$
11. Describe the cardiac output measurement by impedance technique. Describe the Coulter counter with a neat sketch. $7 + 8$
12. Draw the block diagram of basic spectrophotometer type instrument with a small description. Why is the optical filter used in spectrophotometer type instrument ? Describe briefly. Explain the basic principle of calorimetric measurement of unknown sample. $4 + 6 + 5$
13. Describe the Gas chromatography system with a basic schematic diagram. Explain the basic principle of Flame photometer. $11 + 4$