

[A-29]

SARDAR PATEL UNIVERSITY

M. Sc. (Integrated) Biotechnology – Sixth Semester Examination

Thursday, 30th April, 2015

2:30 p.m. to 5:30 p.m.

PS06CIGB05: Bioanalytical Techniques

Note: 1) Figures to the right indicate marks

2) Draw diagram wherever necessary

Total marks: 70

Q – 1 Choose the most appropriate alternative for the following:

(08)

1. An absorption at 179nm comes in _____ region of the electromagnetic spectrum.
 - a) Infrared
 - b) Visible
 - c) Near UV
 - d) None of these
2. In Mull technique, sample can be ground with _____.
 - a) Liquid paraffin
 - b) 0.1M HCl
 - c) 0.1M H₂SO₄
 - d) All of these
3. $\log_{10} I_0/I = abc$, where I_0/I is _____.
 - a) Transmittance
 - b) Concentration
 - c) Absorbance
 - d) Time
4. Flame spectrophotometry is also known as _____.
 - a) Atomic emission spectroscopy
 - b) Flame emission spectroscopy
 - c) Both a) and b)
 - d) None of these
5. Fluorescence involves the excitation and emission of light based on the theory that,
 - a) Excitation wavelength and emission wavelength are same
 - b) Emission wavelength is shorter than excitation wavelength
 - c) Emission wavelength is longer than excitation wavelength
 - d) None of these
6. The largest peak in a mass spectrum is called the _____.
 - a) Molecular ion
 - b) Standard peak
 - c) Base peak
 - d) Calibration peak
7. _____ has the highest ability to induce ionization.
 - a) α particles
 - b) β particles
 - c) γ radiation
 - d) X rays
8. A Geiger-Muller counter measures _____.
 - a) The arrival of individual photons of ionizing radiation or high energy particles
 - b) The incidence of heat
 - c) The incidence of light
 - d) Electronic pulse

[P.T.O.]

- Q – 2 Attempt ANY SEVEN from the following: (14)**
1. Write Lambert's law of absorption.
 2. What do you mean by auxochromic effect?
 3. Explain the working of photovoltaic cell.
 4. Give the principle of Atomic absorption spectroscopy.
 5. What are disadvantages of atomic emission spectroscopy?
 6. Draw a labeled diagram of premix burner.
 7. Define chemical shift.
 8. What is radio ligand? Write any four properties.
 9. Define units of radioactivity.
- Q – 3 (a) Explain energy sources and wavelength selectors used in UV spectrophotometer. (06)**
(b) Describe Beer's law of absorption in detail. (06)
- OR**
- (b) Explain applications and limitations of UV spectrophotometer. (06)**
- Q – 4 (a) Enlist parts of IR spectroscopy and explain detectors used in IR spectroscopy. (06)**
(b) Discuss any two components of electron spin resonance spectroscopy. (06)
- OR**
- (b) Explain instrumentation of AAS. (06)**
- Q – 5 (a) Give an account on MALDI-TOF. (06)**
(b) Define fluorescence. Explain instrumentation of fluorescence spectrometer. (06)
- OR**
- (b) Discuss principle, instrumentation and application of mass spectrometer. (06)**
- Q – 6 (a) What is radioimmuno assay? Give it's applications. (06)**
(b) Give an account on autoradiography. (06)
- OR**
- (b) Explain any one method used for radiation detection. (06)**
