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[A-91]

No. of printed pages:02

Sardar Patel University
M.Sc. Integrated Biotechnology, Fifth Semester Examination
Monday, 27th April, 2015
2:30 p.m. to 5:30 p.m.
PS05CIGB05: Bioinstrumentation

Total Marks: 70

Note:

1. Figures to the right indicate marks.
2. Draw neat and labeled diagram, wherever necessary.

Q.1 Attempt the following (08)

- 1) Which device is used for the recovery of the sample in Density gradient centrifugation.
(a) Peristaltic pump (b) Vertical pump (c) Outlet pump (d) All of these
- 2) In which direction centrifugal force acts on the particle.
(a) Inward (c) Outward
(b) Opposite to axis (d) None of these
- 3) Substance which emits fluorescence is termed as _____.
(a) Fluorochrome (b) Fluorophore (c) Fluorocore (d) *Fluorosome
- 4) Electron microscope was introduced by scientist _____.
(a) Knoll and Ruska (c) Robert Koch
(b) Alexander Fleming (d) Mikhail Tswett
- 5) The upper limit of column pressure maintained in HPLC is _____.
(a) 800 psi (c) 8000 psi
(b) 80 psi (d) 80,000 psi
- 6) Which of the following components can be separated only by GC?
(a) Volatile vegetable oil (c) Pesticides
(b) Hormones (d) None of these
- 7) _____ is used as tracking dye in SDS-PAGE.
(a) Bromophenol blue (c) Ethydim bromide
(b) Coomassie Brilliant blue (d) Acridine orange
- 8) _____ is used to determine Isoelectric point.
(a) SDS-PAGE (c) IEF
(b) Gradient-gel electrophoresis (d) Pulse field electrophoresis

P.T.O.

- Q.2 Attempt the followings. (Attempt any Seven) (14)**
- 1 Differentiate between Differential and Density gradient centrifugation.
 - 2 Write characters of Rate zonal centrifugation.
 - 3 Give function of reference electrode in pH measurement.
 - 4 List four differences between Light and Electron microscope.
 - 5 Define: SEM. Give its applications.
 - 6 Enlist applications of Ion-exchange chromatography.
 - 7 Explain principle of Thin layer chromatography.
 - 8 Write significance of Pulse-field electrophoresis.
 - 9 Justify the reason for using Native PAGE.
- Q.3 A Describe principle of Centrifugation in detail. Write a brief note on types of Rotors. (06)**
B What is an electrode? Discuss the principle behind operation of a pH meter. (06)
- OR**
- B Give derivations for Handerson-Hasselbalch equation to determine the pH of weak acids. (06)**
- Q.4 A Give Diagrammatic representation of various components of Electron microscope with their appropriate functions. (06)**
B What is Stoke's effect? Add a note on working and application of Fluorescence microscope. (06)
- OR**
- B Briefly explain the role of Phase-contrast microscope used to observe unstained micro-organisms. (06)**
- Q.5 A Discuss briefly the mechanism of Gel filtration chromatography used for separation of various solutes. (06)**
B Define Ligand. Add a detailed note on the technique of Affinity chromatography. (06)
- OR**
- B With labeled diagram explain principle of HPLC and give its applications. (06)**
- Q.6 A What is SDS-PAGE? How it is used to separate various biomolecules. (06)**
B Give an account on IEF. (06)
- OR**
- B Describe the properties of agarose as gel matrix. Explain the principle of DNA agarose gel electrophoresis. (06)**
