LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

SECOND SEMESTER – APRIL 2017

16PBT2ES02- BIOANALYTICAL TECHNIQUES

Date: 28-04-2017   Dept. No.   Max. : 100 Marks
01:00-04:00

PART – A

Answer all the questions

I. Choose the correct answer   **(5 x 1 = 5 Marks)**

1. Process by which the sediment volume is reduced and the sediment density increased.
 a) Sedimentation b) Consolidation   c) Centrifugation d) Thickening
2. The substance to be separated during chromatography.
a) Analyte b) Eluent   c) Eluate   d) Chromatogram
3. Speed of an electromagnetic wave is

   a) 300,000 km/sec   b) 3,000 km/sec c) 30,000 km/sec   d) 300 km/sec
4. Broad class of computational algorithms that rely on repeated random sampling to obtain numerical results
   a) Monte Carlo method   b) Stoke's Law
   c) Monte Jackman method   d) Lambert's Law
5. Diagnostic method for epilepsy
   a) EEG   b) ELISA   c) PET   d) ECG

II. State whether the following are true or false **(5 x 1= 5 Marks)**

6. RCF is the relative centripetal friction.
7. Anion exchangers attract negatively charged anions.
8. Heinrich Hertz discovered that shining light on a metal caused electrons to be ejected.
9. Molecular pyramiding is a key tool in structural molecular biology and computer-assisted drug design.
10. The spikes and dips in the tracings of ECG are called waves.

III. Complete the following   **(5 x 1 = 5 Marks)**

11. _____ is a suspension of cell constituents obtained when tissue has been mechanically disrupted.
12. In capillary electrophoresis the capillary tubes are made of _____ coating.
13. _____ lamps are most widely used in a UV spectrophotometer.
14. The production of light as a result of a chemical reaction between components of the scintillation sample in the absence of radioactive material is called _____.

15. _____ is a parameter applying to transverse waves that specifies the geometrical orientation of the oscillation.

IV. Answer the following within 50 words **(5 x 1 = 5 Marks)**

16. What is the formula for angular velocity?
17. What is the basic principle behind HPLC?

18. Define Planck's constant.

19. Give the definition for Bragg's Law.

20. What is electrophysiology?

PART – B (5×8 = 40 Marks)

Answer the following each within 500 words.
Draw diagrams and flowcharts wherever necessary.

21(a) What is Stoke's Law? What are the types of rotors used in centrifugation?
OR
  (b) Write a short note on sedimentation tanks.

22(a) Expand PAGE. With the help of a diagram briefly explain the principle of PAGE.
OR
  (b) Explain the theory and principle of paper chromatography.

23(a) What is Beer Lambert's law? Explain the instrumentation of double beam spectrophotometer.

OR
 (b) What is luminometry? Write briefly on the different kinds of luminometry.

24(a) Write a note on the importance of mass spectrometry in protein identification.
OR
(b) Briefly discuss the importance of X-ray crystallography.

25(a) Explain the method of magnetic resonance imaging.
OR
  (b) What is ECG? Add a brief note on its principle.

PART – C

Answer any TWO of the following each within 1500 words. (2×20 = 40 Marks)
Draw diagrams and flowcharts wherever necessary.

26. Write an essay on 2D electrophoresis and density gradient centrifugation.

27. Explain the principle and applications of spectrofluorimetry.

28. Discuss the functioning and applications of a Geiger Muller counter.

29. Write a detailed account on positron emission tomography.

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