Total No. of Questions : 11 Total No. of Printed Pages : 6

SH - 448

M.Sc. I Semester Biotechnology Examination - 2015

BIOINSTRUMENTATION (ANAL. TECH. IN BIOTECH.)

Paper : IV

Time Allowed : Three Hours

Maximum Marks : 85

Note : All questions are compulsory

Section - A

(Objective type Questions)

Q. 1 **All questions are compulsory. Choose the correct answer.** 10×2=20

i) Confocal laser scanning microscopy is a fluorescence based microscopy technique

(a) True

(b) False

ii) In continuous density gradient centrifugation particles of different densities will accumulate and form discrete bands at the interfaces between each step of the gradient

(a) True

(b) False

iii) Characteristics feature of any form of chromatography is the _____

(a) Use of an inert carrier gas

(b) Use of molecules that are soluble in water

(c) Use of mobile and a stationary phase

(d) Calculation of an Rf value for the molecules separated

iv) Thin layer chromatography is

(a) Partition chromatography

(b) Electrical mobility of ionic species

(c) Adsorption chromatography

(d) None of the above

v) In SDS - PAGE

(a) Protein are denatured by the SDS

(b) Proteins have the same charge to mass ratio

(c) Smaller proteins migrate more rapidly through the gel

(d) All of the above

vi) Western blotting is the technique for the detection of

(a) Specific DNA in a sample

(b) Specific RNA in a sample

(c) Specific protein in a sample

(d) Specific glycolipid in a sample

vii) Amino Benzyloxymethyl filter paper in commonly used for transfer in

(a) Western blotting (b) Southern blotting

(c) Northern blotting (d) Net blotting

viii) What is shielding in NMR

(a) Using a curved piece of metal to block an opponents attack

(b) Putting metal around an Rf source

(c) When the magnetic moment of an atom blocks the full induced magnetic field from surrounding nuclei.

(d) Blocking parts of a molecule from Rf radiation

ix) Why do fluorescence spectrometer often use double beam optics.

(a) So a reference solution can be used

(b) To compensate for beam attenuation by the monochromator

(c) To compensate for power fluctuations in the radiation source

(d) All of the above

x) Which of the following techniques in the most suitable for detecting a metabolite labelled with 14_c

(a) Infra red spectroscopy

(b) NMR spectroscopy

(c) Scintillation counting

(d) Mass spectrometry

Section - B

(Short Answer Type Questions)

5×4=20

Q.2. Describe the principle and applications of fluorescence microscopy.

Or

a) Write briefly on flow cytometry.

b) Principle of preparative and analytical centrifugation.

Q.3. Write note on thin layer chromatography.

Or

Describe the theory and application of paper chromatography.

Q.4. Describe the theory and application of Agarose Gel electrophoresis.

Or

Write note on Western Blotting.

Q.5. Write a short note on theory and applications of UV spectroscopy.

Or

a) Write briefly on atomic absorption spectroscopy.

b) Note on mass spectroscopy.

Q.6. Write a note on biological applications of radioisotopic techniques.

Or

a) Radioactive decay

b) Types and measurement of radioactive delay

Section - C

(Long Answer Type Questions)

5×9=45

Q.7. Provide a detailed account on scanning and transmission electron microscopy.

Or

Explain density gradient centrifugation.

Q.8. Explain the principle and functioning of Gas Liquid Chromatography (GLC) and High Performance Liquid Chromatography (HPLC).

Or

Write in detail about the Ion exchange chromatography.

Q.9. Describe the principle and applications of SDS - PAGE this method is different from Native PAGE?

Or

Explain in detail the 2 dimensional electrophoresis

Q.10. Provide a detailed account on NMR spectroscopy

Or

Describe the principle and applications of MALDI

Q.11. Explain in detail about principles and applications of G counter.

Or

Write in detail about the Autoradiography

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