G-2/203/21

Roll No. .....

M.Sc. II Semester Examination, 2021

BIOCHEMISTRY

Paper III

(Instrumentation and Molecular Techniques)

Time : 3 Hours] [Max. Marks : 80

Note : *All questions are compulsory. Question Paper comprises of 3 sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.*

SECTION A **1×8=8**

(Objective Type/Multiple Type Questions)

Choose the correct answer :

1. Which of the following centrifugation is used to separate certain organelles from whole cell ?

(a) Rate Zonal centrifugation

(b) Normal centrifugation

(c) Differential centrifugation

(d) Isopyenic centrifugation

2. Which device is used to isolate the radiation of desired wavelength from wavelength of the continuous spectra :

(a) Monochromator

(b) Radiation source

(c) Recorder

(d) None of these

3. Resolving power of a microscope can be increased by :

(a) Using an illumination of longer wavelength and by decreasing the NA

(b) Using an illumination of longer wavelength and by increasing the NA

(c) Using an illumination of shorter wavelength and by increasing NA.

(d) Using an illumination of shorter wave length and by decreasing the NA.

4. Which of the following is used to visualize live cells ?

(a) SEM (b) TEM

(c) Phase Contrast Microscope

(d) All of these.

5. An Eluent is :

(a) A liquid solution

(b) A liquid solution that is a result from elution

(c) It is a solvent used for separation of absorbed material from stationary phase

(d) None of above

6. What is the role of goat anti-rabbit IgG horseradish peroxidase conjugate in the experiment ?

(a) Antigen (b) Primary antibody

(c) Secondary antibody

(d) Substrate

7. Which of the following reagent is used for quantifying DNA ?

(a) Chloroform (b) CTAB

(c) Diphenylamine (d) Dansyl chloride

8. How many DNA duplexes are obtained from one duplex after S cycles of PCR ?

(a) 8 (b) 10

(c) 32 (d) 16

SECTION B **6 × 4 = 24**

(Short Answer Type Questions)

Note : *Attempt one question from each unit.*

Unit-I

1. Write short note on any one of the following :

(a) Sedimentation coefficient,

(b) 2D electrophorasis.

Unit-II

2. Write short note on any one of the following :

(a) Image processing methods in microscopy,

(b) Microtomy.

Unit-III

3. Write short note on any one of the following :

(a) Gel filtration chromatography,

(b) FISH and GISH.

Unit-IV

4. Write short note on any one of the following :

(a) RFLP, (b) RTPCR

SECTION C **12 × 4 = 48**

(Long Answer Type Questions)

Note : *Attempt one question from each unit.*

Unit-I

1. Explain the principle instrumentation and application of UV-visible spectrophotometer.

Or

Write note on the following :

(a) Gel electrophorasis,

(b) Analytical centrifuges.

Unit-II

2. Describe the principle, instrumentation, sample preparation and applications of Transmission Electron Microscopy.

Or

Write short note on the following :

(a) SEM,

(b) Lyophilization.

Unit-III

3. Write note on the following :

(a) RIA, (b) ELISA.

Or

Write note on the following :

(a) HPLC,

(b) GM Counter.

Unit-IV

4. Write the isolation and purification process of genomic DNA from bacteria.

Or

Explain the DNA sequencing methods.

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