2017
ZOOLOGY
PAPER : ZOO 301
TOOLS AND TECHNIQUES

FULL MARKS:80 Time :3 hours

{ The figures in the margin indicate full marks for the question.}

1. Answer the following multiple choice questions (any eight) 1x8 = 8

I) Which one of the following is true regarding image formation in SEM?

a) Two types of electrons- reflected and backscattered electrons are used in image formation

b) Gold coating do not improve emission of secondary electrons in SEM

c) Sample surface made up of heavier elements gives brighter image

d) Sample surface made up of lighter elements gives brighter image

II) Limit of resolution (R) is an important property of microscope. Which one of the following is not true regarding R?

a) Strong resolution power of microscope has less R value

b) Strong resolution power of microscope has high R value

c) Higher the wavelengths of illumination lower the resolution

d) Higher the wavelengths of illumination higher the value of R

III) Which one of the following techniques uses thermal behaviour of dsDNA and electrophoresis mobility to detect mutation in two similar genes?

a) Ligase Chain Reaction

b) Single Strand Conformational Polymorphisms

c) Denaturing Gradient Gel Electrophoresis

d) Mismatch Chemical Cleavage

IV) Which one of the following does not act on centrifugation?

a) Buoyant force of the molecules

b) Viscosity of the medium

c) Mass and size of the molecules

d) Density of the molecule to be precipitated

V) Suppose, you have run two identical negatively charged proteins into two identical electrophoresis units. After staining the gel, protein bands were found to be different in both the electrophoresis unit. Which of the

method?

g) How do you screen the present of transformed bacteria from a bacterial colony?

4. Answer the following long type question (any two) 9 x 2 = 18

a) Describe the importance of DNA libraries, restriction enzymes and cloning vectors in recombinant DNA Technology?

b) Describe the various steps of tissue processing for normal histological studies. Add note on eosin and haematoxylin staining.

c) Write the significance of wave length and fluorochrome in microscopy? Describe briefly about the working principle of confocal microscope with proper diagram?

d) Describe the process of phosphoramidite method of oligonucleotide synthesis? How do you use oligonucleotide in biological sciences?

5. Answer the following very long type questions (any two) 12 x 2 = 24

a) What is the significance of Rf-value? Describe the working principle of chromatographic separation with suitable diagramme. What chromatographic technique do you choose for separating protein and why?

b) What do you mean by mutagenesis? Describe the various types of mutagenesis with suitable diagram?

c) Describe with diagram how do you separate a neutral protein using gel electrophoresis? Write the various staining procedure of protein in gel.

d) Why thermostable polymerase enzyme is required in PCR? Describe the working principle of real time PCR with proper diagram. Add note on degenerate primers.

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