

2018

ZOOLOGY

(Major)

Paper : 6.4

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

GROUP—A

(Biotechnology)

1. Choose the correct answer : 1×7=7

(a) The enzyme that cleaves DNA at or near recognition site within the molecule is

- (i) helicase
- (ii) DNA ligase
- (iii) restriction endonuclease
- (iv) restriction exonuclease

- (b) Southern Blotting technique is used in molecular biology for
- (i) detection of specific DNA sequence
 - (ii) separation and characterization of protein
 - (iii) detection and analysis of RNA
 - (iv) amplify a single or few copies of DNA
- (c) Which of the following is natural media for cell and tissue culture?
- (i) Plasma clot
 - (ii) Biological fluids
 - (iii) Tissue extracts
 - (iv) All of the above
- (d) Lambda phase, SV 40 are different types of
- (i) adapter molecules
 - (ii) tracers
 - (iii) vectors
 - (iv) linkers

- (e) Which of the following is a thermo-stable DNA polymerase?
- (i) Vent DNA
 - (ii) Taq DNA
 - (iii) T₄ DNA polymerase
 - (iv) S₁ nuclease
- (f) Restriction enzymes are also called
- (i) biological scissors
 - (ii) molecular markers
 - (iii) molecular scalpels
 - (iv) None of the above
- (g) Genomic library is
- (i) the entire DNA content of a cell
 - (ii) the total of all genes in an interbreeding population
 - (iii) gene that is deduced from genetic recombination experiments
 - (iv) the complete set of cloned fragments of DNA of an organism

2. Define the following : 2×4=8

- (a) Gene cloning vectors
- (b) Reverse transcriptase
- (c) Genetic engineering
- (d) Synthetic media for tissue culture

(4)

3. Answer any *two* of the following : $5 \times 2 = 10$

- (a) Write briefly on the construction of cDNA library.
- (b) What is somatic cell fusion? Write the significance of hybrid cells in biochemical applications.
- (c) Write a note on cell harvesting methods.
- (d) Give an account on gene cloning methodology.

4. Answer any *two* of the following : $10 \times 2 = 20$

- (a) Describe in detail the enzymology of genetic engineering with special emphasis on ligase and restriction endonuclease. $4+3+3=10$
- (b) Enumerate on the application of genetic engineering in improving human health and prosperity. 10
- (c) Describe different methods of gene transfer into specific animal tissues. 10
- (d) What is animal cell culture? What are the advantages and disadvantages associated with animal cell culture? $2+4+4=10$

(5)

GROUP—B

**(Bioinformatics and Computer Application
for Biologists)**

5. Write briefly on (any one) : 5

- (a) DOS
- (b) UNIX
- (c) Programming languages

6. Describe the various computer-aided statistical techniques for data presentation and analysis. 10

Or

What is bioinformatics? Write a note on Windows operating system. $2+8=10$

★ ★ ★