

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 :  $1 \times 7 = 7$

(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) T<sub>4</sub> DNA polymerase

(iv) S<sub>1</sub> 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

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?  $2+4+4=10$

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

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