

2019

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. Answer the following as directed : 1×7=7

(a) _____ is a technique used to get information about the recognition sites on DNA.

(Fill in the blank)

(b) Reverse transcriptase is an RNA dependent DNA polymerase.

(State True or False)

(c) _____ are enzymes that decompose nucleic acids by cutting the phosphodiester bond.

(Fill in the blank)

- (d) Ligase is used for
- (i) transduction
 - (ii) replication
 - (iii) cleaving DNA molecules
 - (iv) joining DNA fragments
- (Choose the correct option)

- (e) If linkers are combined with other features such as selectable marker, it is called
- (i) cassette
 - (ii) adaptors
 - (iii) induced linkers
 - (iv) tracers
- (Choose the correct option)

- (f) _____ is a separation technique that is based on the mobility of ions in an electric field.
- (Fill in the blank)

- (g) The DNA polymerase isolated from the bacteria *Thermus aquaticus* is
- (i) T4 DNA
 - (ii) Taq DNA
 - (iii) Vent DNA
 - (iv) topoisomerase
- (Choose the correct option)

2. Write brief notes on the following : $2 \times 4 = 8$
- (a) S1 nuclease
 - (b) Difference between genomic DNA and cDNA
 - (c) Plasmids
 - (d) Electroporation
3. Answer any *two* of the following : $5 \times 2 = 10$
- (a) Write the functions of restriction endonuclease.
 - (b) State the properties of a good cloning vector.
 - (c) Write on the application of tissue culture.
 - (d) Write on the various chemical methods of gene transfer.
4. Answer any *two* of the following : $10 \times 2 = 20$
- (a) Write in detail about the various culture media used in cell culture emphasizing on their advantages and disadvantages. $4+3+3=10$
 - (b) What is gene cloning? Describe the various stages of gene cloning. $2+8=10$
 - (c) Describe in detail the microprojectile shotgun method of gene transfer. Indicate the advantages of the method. $7+3=10$
 - (d) Describe the procedure of construction of cDNA library. 10

GROUP—B

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

5. Write briefly on any *one* of the following : 5

(a) Computer-aided technique for data presentation

(b) Programming languages

6. What is an Operating System? Discuss the Windows Operating System. 2+8=10

Or

What is bioinformatics? Enumerate on the application of bioinformatics in today's world. 2+8=10

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