

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 )



( 2 )

- (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 )

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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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