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( Held in 2023 )

**ZOOLOGY**

Paper : ZOOHE5026

( **Animal Biotechnology** )

Full Marks : 60  
Pass Marks : 24

Time : 3 hours

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

1. Choose the correct options from the following : 1×5=5

(a) The term 'biotechnology' was coined by

(i) Alexander Fleming

(ii) Karl Ereky

(iii) J. D. Watson and F. H. C. Crick

(iv) Ian Wilmut

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- (b) Major branch of biotechnology is
- (i) environmental biotechnology
  - (ii) genetic technology
  - (iii) food technology
  - (iv) All of the above
- (c) Genetic engineering techniques are utilized for
- (i) construction of genetically engineered plant species
  - (ii) organism with commercial value
  - (iii) prevention of genetic defects
  - (iv) All of the above
- (d) Which is not the step in construction of genomic DNA libraries?
- (i) Isolation of target DNA
  - (ii) Restriction fragment
  - (iii) Cloning the fragments in vector
  - (iv) Reverse transcription

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- (e) The first genetically engineered organism was
- (i) mammal
  - (ii) bacteria
  - (iii) virus
  - (iv) protozoa

2. Answer the following questions briefly :  $2 \times 5 = 10$

- (a) What is restriction enzyme?
- (b) What is electroporation?
- (c) What are gene libraries?
- (d) Define 'knockout mice'.
- (e) What is cryopreservation?

3. Write short notes on any five of the following :  $5 \times 5 = 25$

- (a) DNA modifying enzymes
- (b) Southern blotting
- (c) Production of recombinant insulin
- (d) Polymerase Chain Reaction (PCR)

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- (e) DNA fingerprinting
- (f) SDS-PAGE
- (g) Restriction Fragment Length Polymorphism (RFLP)

4. Answer any *two* of the following questions in detail : 10×2=20

- (a) Explain the various physical and chemical methods of gene transfer in animals.
- (b) Describe the various sub-areas of biotechnology.
- (c) Describe the methods of production of transgenic plants. Write the advantages of transgenic plants with Bt genes.

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