Total number of printed pages–4

63(FY) SEM–4/MAJ/ZOOMAJ2054

2025

ZOOLOGY

(Major)

Paper : ZOOMAJ2054

(Animal Biotechnology)

Full Marks : 50

Pass Marks : 20

Time : Two hours

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

1. Choose the correct answer : ***(all compulsory)*** 1×5=5

   (a) Who coined the term 'Biotechnology'?

   (i) Karl Ereky, in 1919

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

   (iii) Rudolf Jaenisch, 1947

   (iv) Craig Venter, 2000.

(b) What is the primary goal of gene therapy ?

(i) To diagnose genetic disease

(ii) To treat *or* prevent disease by modifying genes

(iii) To study gene expression

(iv) To develop new medication

(c) What is the primary goal of nuclear transplantation ?

(i) To clone an organism

(ii) To study gene expression

(iii) To develop new therapies

(iv) To understand embryonic development

(d) What is the role of the probe in colony and plaque hybridization ?

(i) To amplify specific DNA sequences

(ii) To copy specific DNA sequences

(iii) To clone genes

(iv) To detect specific DNA sequences

(e) What is the first step in the southern blotting process ?

(i) DNA extraction

(ii) DNA digestion

(iii) Gel electrophoresis

(iv) Blotting

2. Answer the following questions : ***(any five)*** 2×5=10

(a) What are the application of biotechnology in maintaining environment ?

(b) What is animal biotechnology ?

(c) What is electroporation ?

(d) What is GMO ?

(e) Why Ori site is important in a vector ?

(f) Write the differences between cloning and expression vectors.

(g) What is restriction enzyme ? Write *two* applications of Type–II restriction enzyme. 1+1

3. Answer the following questions : ***(any five)*** 5×5=25

(a) Write the applications of restriction enzymes in r-DNA technology.

(b) Explain the various steps involved in construction of Genomic library.

(c) Write the detailed process of Maxam-Gilbert method of DNA sequencing.

(d) Describe the techniques for the development of primary cell cultures.

(e) Write short notes of plasmid and cosmid vectors. 2½+2½=5

(f) Write the different methods for production of human insulin in laboratory.

(g) What is DNA fingerprinting and how is it used in forensic science? 2+3=5

(h) Describe DNA microarray technique. Write their application. 4+1=5

4. Answer the following question : ***(any one)*** 10

(a) What are transgenic plants? What are their application in agriculture, medicine, industry and nutritional enhancement? 2+2+2+2+2=10

(b) Describe Sanger method of DNA sequencing with proper diagrams.