

2025

ZOOLOGY — HONOURS

Paper : DSE-A-3

(Animal Biotechnology)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer *question nos. 1 and 2, and any three* questions from the rest.

1. Answer *any five* questions : 2×5
 - (a) What is drug farming?
 - (b) State the application of RAPD.
 - (c) How DNA polymorphism differs from mutation?
 - (d) Draw a bacteriophage vector.
 - (e) Write the purpose of using serum in animal cell culture.
 - (f) Define Homopolymer tailing.
 - (g) Name one restriction enzyme and its restriction site.
 - (h) What is cosmid?
 - (i) Define chimera.
2. Write short notes on (*any two*) : 5×2
 - (a) Genomic DNA libraries
 - (b) α -complementation
 - (c) Western blot
 - (d) Use of antibiotic resistance gene in cloning.
3. (a) Briefly discuss the process of 'Nuclear Transplantation' method of transgenesis. Write one advantage and one disadvantage of the same.
(b) Mention briefly two physical methods of gene delivery for gene therapy.
(c) Write any two uses of transgenics in pharmaceuticals. (3+1)+4+2
4. (a) Write any one process of molecular diagnosis of Sickle cell anaemia.
(b) Schematically explain any one process of gene knockout in mice.
(c) During Southern blot electrophoresis DNA is exposed to an alkali. — Why? 4+4+2

Please Turn Over

5. (a) Schematically describe the steps of reverse transcriptase PCR.
(b) What is nuclear transplantation in animal cloning?
(c) How can you detect tissue specific expression of any gene?
(d) Define molecular weight marker. 4+2+2+2
6. (a) Write features of cloning vector.
(b) Describe shuttle vector with example.
(c) Mention the equipments used in cell culture.
(d) Distinguish between adherent and suspension cell culture. 2+(2+1)+3+2
7. (a) Write the function of stacking and separating gel in SDS-PAGE.
(b) Write the composition and function of sample loading dye in Agarose gel electrophoresis.
(c) Mention any two importance of genetically modified animals.
(d) Mention the source of Taq Polymerase and state one of its drawback. (2+2)+(1+1)+2+2
8. Write short notes on : 2½×4
- (a) Organization of *E coli* genome
 - (b) DNA microinjection
 - (c) Blue white selection in cloning
 - (d) Antisense genetherapy.
-