2022

ZOOLOGY — HONOURS

Paper : DSE-A(2)-2

(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 no.* 1** and ***any four*** questions from the rest.

1. Answer ***any five*** questions : 2×5

(a) What are phagemids?

(b) Mention the source of Taq Pol and state one of its drawback.

(c) Name one Restriction enzyme and its restriction site.

(d) What are *ex-vivo* and *in-vivo* gene therapy?

(e) What is Allele Specific PCR (AS-PCR)?

(f) State the applications of RAPD.

(g) What is an expression vector? Cite an example.

(h) Mention the importance of Primer in PCR.

(i) What is knock-out mice?

2. (a) Distinguish between Southern Blotting and Northern Blotting.

(b) Give the significance of Etbr and DNA marker in agarose gel-electrophoresis.

(c) What is blocking? State its significance in western blot. 3+2+(2+3)

3. (a) How can DNA fingerprinting technology be applied in forensic analysis?

(b) Briefly describe the procedure for construction of genomic libraries with proper diagram.

(c) What is DNA microinjection? 4+4+2

4. (a) What is BAC? Describe the configuration of YAC with a sketch.

(b) Write a note on 'Dolly' and 'Polly' cloning.

(c) How genetically modified economically important animals are beneficial to us? (1+3)+4+2

5. (a) What is chimera? Mention the advantages of cDNA library.

   (b) Mention the key steps associated with the cloning of animals by nuclear transplantation. (2+3)+5

6. (a) State the difference between conventional PCR and RT-PCR. What are the advantages of using real time PCR over conventional PCR?

   (b) Enlist the equipments needed in animal cell culture.

   (c) How can cystic fibrosis be detected through molecular diagnosis? (3+2)+2+3

7. (a) Comment on the application of lipofection in gene therapy.

   (b) Discuss briefly about the non-viral delivery system in gene therapy.

   (c) Briefly discuss about the various physical methods of gene transfer in the target cell. 3+3+4

8. Write short notes on (***any four***) : 2½×4

   (a) Organisation of *Drosophila* genome

   (b) Restriction endonucleases and their types

   (c) Cosmids

   (d) LINES and SINES

   (e) Drug farming

   (f) PAGE

   (g) Retroviral method of production of transgenic animals.

   (h) Gene augmentation therapy

   (i) ADA-SCID Gene therapy.