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3 (Sem-5/CBCS) ZOO HE 2/3/4

2023

ZOOLOGY

(Honours Elective)

Answer the Questions from any one Option.

OPTION-A

(Animal Biotechnology)

Paper : ZOO-HE-5026

OPTION-B

(Endocrinology)

Paper : ZOO-HE-5036

OPTION-C

(Parasitology)

Paper : ZOO-HE-5046

Full Marks : 60

Time : Three hours

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

Contd.

OPTION-A

(Animal Biotechnology)

Paper : ZOO-HE-5026

1. Answer the following questions as directed :
1×7=7

- (a) Western blotting is used for detection of specific RNA sequence in a sample.
(True/False)
- (b) During cDNA library construction, total mRNA is converted into double stranded DNA by the enzyme _____.
(Fill in the blanks)
- (c) Sanger's method of DNA sequencing is also known as chain termination method.
(True/False)
- (d) Mention the advantage of recombinant human insulin over bovine insulin in diabetic patients.
- (e) What is contact inhibition of cell growth in cell culture ?
- (f) Name the gene responsible for occurrence of cystic fibrosis disease.
- (g) Sickle cell anaemia is caused due to single nucleotide polymorphism (SNP) mutation.
(True/False)

2. Answer the following questions : $2 \times 4 = 8$

(a) Mention the differences between knockout mice and transgenic mice.

(b) Name the *three* steps in PCR used for amplification of DNA segment.

(c) Write the role of serum in cell culture.

(d) What is cryopreservation in cell culture ?

3. Answer **any three** of the following questions briefly : $5 \times 3 = 15$

(a) What is gene therapy ? Mention the applications of gene therapy.

(b) What is primary cell culture ? Write about the growth curve of cells under *in vitro* condition.

(c) Mention the differences between genomic library and cDNA library.

(d) Illustrate the transformation technique by electroporation in gene manipulation.

(e) Write about the application of transgenic animals in production of pharmaceuticals with suitable examples.

4. (a) What is DNA fingerprinting? Explain the procedure of DNA fingerprinting and its application with proper illustration. $2+6+2=10$

Or

- (b) Describe with proper illustration the Sanger's procedure of DNA sequencing. $3+7=10$

5. (a) Mention the laboratory requirement for starting of animal cell cultures. Write about the different types of media used for animal cell culture. $5+5=10$

Or

- (b) Discuss briefly about the Agrobacterium mediated gene transfer technology for production of transgenic plants. 10

6. (a) What is sickle cell anaemia? Write in brief about the molecular diagnosis of sickle cell anaemia. $2+8=10$

Or

- (b) Discuss the technique of Southern blotting and its applications. $6+4=10$
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