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UZOD104

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B.Sc. Course (CBCS) Ordinance (Sem-VI)
EXAMINATION MAY 2023
ZOOLOGY - ANIMAL BIOTECHNOLOGY

[Time: 2 Hours]

[Max. Marks:60]

Instructions:

- 1) Attempt all questions
- 2) Figures to the right indicate marks allotted to the question
- 3) illustrate your answer wherever necessary

Q1 Attempt any five of the following:

10

- a) Define Biotechnology
- b) "Scope of Biotechnology is inherently dependent on understanding basic principles of Biology". Comment.
- c) With reference to microbes, what are extremophiles?
- d) With reference to arrangement of bacteria, what is meant by Staphylococcus?
- e) Why Sanger's DNA sequencing technique is known as chain termination method?
- f) Polymerase enzyme from which particular organism is used in PCR technique and why?
- g) What is the difference between Gene cloning and Reproductive cloning?

Q2 Attempt any five of the following:

10

- 1) Historically Biotechnology was used by man without knowing the science behind it. Justify.
- 2) With reference to microbes, what are halophiles?
- 3) State the function of pili (including sex pilus) in bacteria.
- 4) State the similarities domain Archae shares with domain Eukarya.
- 5) What are the 'must have' components of a Shuttle vector?
- 6) How electroporation brings about bacterial transformation?
- 7) State the risks of transgenic animals.

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- Q3 a) Describe the structural peculiarities of Lambda bacteriophage, which makes it suitable and advantageous to be used as a cloning vector over other vectors. 5

OR

- a) Describe the genetic organisation of wild type M13 bacteriophage and construction of any one M13 phage-based vector. 5
- b) Explain the mechanism of action and importance of enzymes Polynucleotide kinase and Alkaline phosphatase in genetic engineering experiments. 5

- Q4 a) Clarify the suitability of bacterial plasmids as gene cloning vectors and illustrate the structure of any one plasmid-based vectors. 5

OR

- a) Describe the restriction modification system and type 2 restriction enzymes. 5
- b) Explain the action and usefulness of reverse transcriptase enzyme in R-DNA technology. 5

- Q5 a) Analyse colony hybridization as a screening tool in Genetic engineering experiments. 5

OR

- a) Explain Southern blotting technique. 5
- b) What is bacterial transformation? Give details of chemical method of bacterial transformation. 5

- Q6 a) Discuss the methods used for producing "Knockout mice". 5

OR

- a) Discuss the role of nuclear transplantation in producing clones. 5
- b) List the various applications of transgenic animals. 5