

Standard : Degree

Total Marks : 200

Nature : Conventional

Duration : 3 Hours

Note :

- (i) Answers must be written in **English only**.
- (ii) **Question No. 1 is Compulsory**. Of the remaining questions, attempt **any four** selecting one question from **each section**.
- (iii) Figures to the **RIGHT** indicate marks of the respective question.
- (iv) Number of optional questions upto the prescribed number in the order in which they have been solved will only be assessed. Excess answers will not be assessed.
- (v) Credit will be given for orderly, concise and effective writing.
- (vi) Neat line drawings are expected wherever necessary.
- (vii) Candidate should not write roll number, any name (including their own), signature, address or any indication of their identity anywhere inside the answer book otherwise he/she will be penalised.
- (viii) For each slab of 10, 15 and 20 marks, the examinee is expected to write answers in 125, 175 and 250 words respectively.

1. Answer **any four** of the following questions:-

- (a) Describe ultrastructure of mitochondria. Add a note on 'biogenesis of mitochondria'. **10**
- (b) Define 'cloning'. Give applications of cloning technology **10**
- (c) Give a brief account of innate and adaptive immunity. **10**
- (d) Describe poultry feeding methods. Enlist the feed additives and mention their importance. **10**
- (e) Write a note on 'the PCR technique and its application'. **10**

**SECTION-A**

2. (a) Write an essay on: 'Mitosis'. **10**
- (b) Give a brief account of the morphology, ultrastructure and chemistry of the chromosomes. **10**
- (c) Describe chemical composition and functions of RNA **10**
- (d) Give a brief account of mechanism of transcription in prokaryotes. **10**

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- |   | <b>Marks</b> |
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| 3. (a) What is 'programmed cell death'? Describe its biological significance in higher animal groups.   | 10           |
| (b) Describe 'Lampbrush chromosome'.  | 10           |
| (c) Give an account of Watson & Crick's double stranded model of DNA molecule. Explain why A&T and G&C form two and three hydrogen bonds respectively, while pairing. | 10           |
| (d) Describe the experiments which helped in deciphering the genetic code. Mention properties of the genetic code.  | 10           |

#### SECTION-B

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|---|----|
| 4. (a) Describe the phenomenon of multiple allelism in animals.                                       | 15 |
| (b) Describe : 'the process of cell line preparation'.  | 10 |
| (c) Give an account of 'Bioinformatics tools'.  | 15 |
| 5. (a) What is gene therapy? Discuss the purpose and limitations of genetic counselling.              | 15 |
| (b) What are transgenic animals? Describe the objectives behind the production of transgenic animals. | 10 |
| (c) Define 'Bioinformatics'. Comment on 'phylogenetic analysis'. Add a note on functions of 'NCBI'.   | 15 |

#### SECTION-C

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|---|----|
| 6. (a) Classify proteins. Describe the forces that stabilize secondary, tertiary and quaternary structures of proteins. | 15 |
| (b) With reference to their sources, disorders due to deficiencies in animals describe <b>Vitamin-A and Vitamin-C</b> . | 15 |
| (c) Give a brief account of 'Acquired Immune Deficiency Syndrome'.  | 10 |
| 7. (a) Describe 'Kreb's cycle'. Where it takes place? What is its biological importance ?                               | 15 |
| (b) What are enzymes? Describe the Michaelis theory of enzyme Kinetics.   | 15 |
| (c) What is immunoglobulin? Enlist the classes of immunoglobulins. Describe their role in immune system in animals.     | 10 |

Marks

## SECTION-D

8. (a) Define gametogenesis. Describe the process of spermatogenesis. Add a note on its significance. 10
- (b) Give a brief account of foetal membranes in Mammals. Add a note on their role during development of the embryo. 10
- (c) Describe 'Embryo Transfer Technique' and its importance. 10
- (d) Give an account of the early development of Nervous System in frog. 10
9. (a) What is parthenogenesis? Describe different types of natural parthenogenesis in animals. 10
- (b) Explain the term 'Embryonic Organizer'. Describe the experiment conducted by Spemann. 10
- (c) What are contraceptives. Enlist their types. How are they important in population control ? 10
- (d) What is cellular aging? Describe theories of aging. 10

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