

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) 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.

1. Answer any **FOUR** of the following **40**
- (a) Describe in brief the structure of prokaryotic cell with suitable figure.
 - (b) Give structure of nucleic acids.
 - (c) Explain in brief clonal selection method and give its merits and demerits.
 - (d) Explain in brief biological nitrogen fixation.
 - (e) Explain computer application with respect to genomic information and biostatistical analysis of data.

SECTION - A

2. Answer the following sub-questions.
- (a) Give an account of ultrastructure and functions of mitochondria in plant cells. **20**
 - (b) What is mitosis ? Give various stages of progression in mitosis and state its significance. **20**

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| 3. Answer the Following sub-questions. | |
| (a) Give ultrastructure origin and functions of cell wall in plants. | 20 |
| (b) What are chromosomal aberrations ? Describe deletions or deficiencies and state their genetic effects. | 20 |

SECTION - B

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| 4. Answer the following sub-questions. | |
| (a) What is crossing over ? Explain in brief the process of crossing over. Give significance of crossing over. | 15 |
| (b) What is genetic code ? Describe the process of regulation of gene expression. | 15 |
| (c) What is organic evolution ? Explain Darwin's theory with suitable example. | 10 |
| 5. Answer the following sub-questions. | |
| (a) What are mutations ? Explain biochemical and molecular basis of mutations. | 15 |
| (b) Describe the process of protein synthesis. | 15 |
| (c) Explain different evidences of organic evolution. | 10 |

SECTION - C

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| 6. Answer the following sub-questions. | |
| (a) What is heterosis ? Explain the phenomenon of heterosis and give its applications in agriculture. | 15 |
| (b) What is tissue culture ? Explain the procedure of plant tissue culture. Give its importance. | 15 |
| (c) What is standard deviation ? Describe briefly properties and uses of standard deviation. | 10 |
| 7. Answer the following sub-questions. | |
| (a) What is hybridization ? Describe in brief method of hybridization in plant breeding ? | 15 |
| (b) What is genetic engineering ? Explain various steps involved in recombinant DNA technology. | 15 |
| (c) What is biostatistics ? Explain how you will use 'Graph' and 'Karl Pearsons' method in determining correlation. | 10 |

SECTION - D

8. Answer the following sub-questions.
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| (a) Give an account of TCA cycle and state its significance. | 10 |
| (b) Explain mechanism of action and biochemical role and practical applications of Gibberellins. | 10 |
| (c) What is succession ? Describe various successional stage of hydrosphere. | 10 |
| (d) What is biodiversity ? Explain India as a mega diversity nation. | 10 |
9. Answer the following sub-questions.
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| (a) What are essential elements ? Give symptoms caused by deficiency of nitrogen and phosphorus. | 10 |
| (b) What is seed dormancy ? Give causes of seed dormancy and state methods to break it. | 10 |
| (c) What is deforestation ? State briefly causes and effects of deforestation. | 10 |
| (d) Explain briefly causes and impacts of "Global Warming". | 10 |