(Second Semester)

Branch – **BOTANY**

## CELL AND MOLECULAR BIOLOGY

Time: Three Hours Maximum: 75 Marks

**SECTION-A (10 Marks)**

Answer **ALL** questions

**ALL** questions carry **EQUAL** marks (10 × 1 = 10)

| Module No. | Question No. | Question | K Level | CO |
|---|---|---|---|---|
| 1 | 1 | What is the main component of a plant cell wall?<br>i) Protein ii) Lipid<br>iii) Cellulose iv) Starch | K2 | CO1 |
| | 2 | Which of the following lacks a true nucleus?<br>i) Fungi ii) Plant cell<br>iii) Animal cell iv) Bacteria | K2 | CO1 |
| 2 | 3 | The ER is continuous with the outer membrane of which structure?<br>i) Mitochondria ii) Golgi apparatus<br>iii) Nucleus iv) Plasma membrane | K2 | CO2 |
| | 4 | What is the longest phase of mitosis?<br>i) Prophase ii) Metaphase<br>iii) Anaphase iv) Telophase | K2 | CO1 |
| 3 | 5 | Which experiment proved that DNA replication is semi-conservative?<br>i) Hershey and Chase<br>ii) Griffith's experiment<br>iii) Meselson and Stahl experiment<br>iv) Watson and Crick model | K1 | CO1 |
| | 6 | In RNA, which base is present instead of Thymine (found in DNA)?<br>i) Adenine ii) Cytosine<br>iii) Guanine iv) Uracil | K2 | CO2 |
| 4 | 7 | The initiation amino acid in prokaryotic protein synthesis is:<br>i) Methionine ii) N-formylmethionine (fMet)<br>iii) Valine iv) Serine | K2 | CO1 |
| | 8 | The process by which protein synthesis from genetic code occurs is best described by<br>i) transcription ii) translation<br>iii) replication iv) reproduction | K2 | CO2 |
| 5 | 9 | Which technique is most commonly used in proteomics?<br>i) Centrifuge ii) Calorimenter<br>iii) Mass spectroscopy iv) DNA microarray | K2 | CO1 |
| | 10 | What is the limitations of homology modeling?<br>i) Dependence on Template Availability<br>ii) Sequence of DNA<br>iii) double strands of RNA<br>iv) all of these | K2 | CO2 |

**Cont...**

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

| Module No. | Question No. | Question | K Level | CO |
|---|---|---|---|---|
| 1 | 11.a. | How is the cell wall related to its function? | K2 | CO1 |
| | | (OR) | | |
| | 11.b. | Describe structure and functions of inheritance of plastid genome. | | |
| 2 | 12.a. | Why lysosomes are known as the suicidal bags of a cell ?-Discuss. | K2 | CO3 |
| | | (OR) | | |
| | 12.b. | Trace the stages of Mitosis. Mention its biological significance. | | |
| 3 | 13.a. | Find out the molecular structure of DNA. | K3 | CO4 |
| | | (OR) | | |
| | 13.b. | Determine the methods of drug development and nucleic acid therapeutics. | | |
| 4 | 14.a. | How do prokaryotes ability to regulate patterns of gene expression?- Explain. | K4 | CO4 |
| | | (OR) | | |
| | 14.b. | Focus the types and applications of gene silencing in plants. | | |
| 5 | 15.a. | Differentiate structural and functional genomics- Mentions its advantages. | K4 | CO4 |
| | | (OR) | | |
| | 15.b. | Simplify the applications of data mining in proteomic biomarker discovery. | | |

## SECTION -C (30 Marks)

Answer **ANY THREE** questions

**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

| Module No. | Question No. | Question | K Level | CO |
|---|---|---|---|---|
| 1 | 16 | Visualize model and describes the structure and function of the plasma membrane. | K2 | CO4 |
| 2 | 17 | Elaborate the structure and functions of chromosome. | K2 | CO5 |
| 3 | 18 | Organize the experimental evidence and methods for DNA replication. | K3 | CO3 |
| 4 | 19 | Illustrate the steps on protein synthesis in eukaryotic cells. | K4 | CO4 |
| 5 | 20 | Classify proteomics and applications in human medicine. | K5 | CO5 |

Z-Z-Z END