

Total No. of Questions – 10] [Total Pages : 2  
(2023)

**4702**

**M.Sc. Botany (CBS) Ist Semester Examination**

**CELL AND MOLECULAR BIOLOGY**

(Common with MZOO-102)

Paper–MBOT-102

Time : Three Hours]

[Maximum Marks : 40

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

**Note :** Attempt any *five* questions. All questions carry equal marks.

1. What are the principle components of the plasma membrane?  
Discuss the structure and functions of the plasma membrane.  
(1+7=8)
2. Describe the structure and genome organization of mitochondria. (8)
3. (i) Describe the phases of the cell cycle.  
(ii) Discuss how the cell cycle is genetically regulated?  
(2+6=8)

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4. (i) What are the causes of DNA damage in a cell?  
(ii) Explain excision repair and post-replication repair mechanism. (2+6=8)
5. (i) How many transesterification reactions occur during RNA splicing?  
(ii) Describe the spliceosome and its function during RNA splicing. (2+6=8)
6. Write about the following :  
(i) Transcription factors.  
(ii) Tumour suppressor genes. (4×2=8)
7. Discuss the regulation of gene expression in eukaryotes. (8)
8. (i) What comprises the cytoskeleton and what is its function?  
(ii) Write about the structure and function of three types of cytoskeletal filaments. (2+6=8)
9. Discuss the intracellular signalling pathways in a cell. (8)
10. (i) Write about the major components involved in translation.  
(ii) Describe the process of protein synthesis. (2+6=8)