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MBC-002

M. SC. (HONOURS) BIOCHEMISTRY

(MSCBCH)

Term-End Examination

June, 2026

MBC-002 : CELL AND MOLECULAR BIOLOGY

Time : 3 Hours

Maximum Marks : 100

Note : (i) Attempt any **five** questions.

(ii) All questions carry equal marks.

1. (a) Define the following terms : 5×2=10

(i) Exocytosis

(ii) Mitochondrial cristae

(iii) Necrosis

(iv) Promoter

(v) Telomere

(b) Explain the structure and function of chloroplast. 10

2. (a) Describe the structural components and roles of extracellular matrix (ECM). 10
- (b) How do cyclin and cyclin dependent kinases regulate the different phases of cell cycle ? 10
3. Describe the following biological processes with the help of suitable diagram : 10+10
- (a) Eukaryotic DNA replication
- (b) RNA splicing
4. Differentiate between the following pairs : 4×5=20
- (a) Prokaryotic and Eukaryotic ribosomes
- (b) Base excision repair and Nucleotide Excision repair.
- (c) Mitosis and Meiosis.
- (d) Channel proteins and carrier proteins.
5. (a) Draw a well-labelled diagram structure of each of the following : 2×5=10
- (i) Nucleus

- (ii) G-protein linked receptor
 - (iii) Nucleosome
 - (iv) t-RNA
 - (v) Acridine orange
- (b) Illustrate the basic steps of transcription in prokaryotes with a suitable diagram. 10
6. (a) Describe translation process in prokaryotes. 10
- (b) Explain the mechanism of translational control in eukaryotes. 10
7. Write notes on any *two* of the following : 10+10
- (a) Pseudogenes
 - (b) The 30 nm fiber
 - (c) Leucine-Zipper motif
 - (d) Genetic code
8. (a) Explain how does attenuation work to fine control trap operon in *E. coli* ? 10
- (b) Elaborate any two methods of post-translational modification in histones. 10

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