No. of Printed Pages : 3

MBC–002

M. SC. (BIOCHEMISTRY) (MSCBCH)

Term-End Examination

December, 2024

MBC-002 : CELL AND MOLECULAR BIOLOGY

Time : 3 Hours *Maximum Marks : 100*

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

1. (a) Explain the following in 1-2 sentences each : 5×2=10

   (i) Nucleosome

   (ii) Peroxisome

   (iii) Proteoglycan

   (iv) Endocytosis

   (v) Intron

   (b) Discuss the structural organisation and function of nucleus with suitable diagram. 10

2. Write notes on the following : 4×5=20

   (a) Dynamic behaviour of microtubules

(b) Semi-conservative model of DNA replication

(c) Poly-U experiment

(d) Cot curve

3. Describe the following processes with the help of suitable diagrams : 10+10

(a) Bacterial transcription

(b) Prokaryotic DNA replication

4. Differentiate between the following pairs : 4×5=20

(a) Prokaryotic and Eukaryotic translation

(b) Mismatch repair and Nucleotide excision repair

(c) Active transport and Passive transport

(d) Apoptosis and Necrosis

5. (a) Draw a well-labelled diagram of each of the following : 2×5=10

(i) Metaphase chromosome

(ii) Gap junction

(iii) Mitochondria

(iv) Plasma membrane

(v) Cell cycle checkpoints

(b) Give a detailed overview of signalling molecules. 10

6. (a) What are DNA binding motifs ? Discuss any *one* of them with suitable diagram. 2+8

Or

Describe post-transcriptional processing of RNA. 10

(b) State Wobble hypothesis and its significance. 10

7. (a) Describe the steps involved in the initiation of bacterial translation process with suitable diagrams. 10

(b) Elaborate the structural organisation of Lactose (Lac) Operon. 10

8. Write notes on the following : 4×5=20

(a) RNA Editing in Eukaryotes

(b) Translational Control in Eukaryotes

(c) Eukaryotic RNA polymerases

(d) Mutagenesis

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