

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – BIOTECHNOLOGY

CELL AND MOLECULAR BIOLOGY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 In _____ of the following type of cells, the cell junction is abundant.
(i) Cardiac cells (ii) Epithelial cells
(iii) Prokaryotic cells (iv) Hepatic cells
- 2 Which part of the nucleotide is responsible for the formation of bonds in DNA double helix?
(i) Base (ii) Sugar
(iii) Hydroxyl group of sugar (iv) Phosphate group
- 3 Which of the following enzymes separates the two strands of DNA during replication?
(i) Ligase (ii) Gyrase
(iii) Topoisomerase (iv) Helicase
- 4 In the prokaryotic organisms, transcription process occurs in -----.
(i) Nucleus (ii) Golgi complex
(iii) SER (iv) Mitochondria
- 5 Basic tools of genetic regulation are the ability of some proteins to bind to specific -----.
(i) regulatory DNA sequences (ii) regulatory RNA sequences
(iii) enzymes of cells (iv) promoter portions of genes

SECTION - B (15 Marks)

Answer ALL Questions

ALL questions carry EQUAL marks (5 x 3 = 15)

- 6 a Discuss the components of cytoskeleton network.
OR
b Illustrate the salient features of eukaryotic ribosomes.
- 7 a Distinguish between nucleosides and nucleotides.
OR
b Determine the factors affecting denaturation of DNA.
- 8 a Why does DNA replication take place from 5' to 3'?
OR
b Analyze the steps of DNA repair mechanism.
- 9 a Enlist the inhibitors and modifiers of protein synthesis.
OR
b Evaluate the significance of genetic code.
- 10 a Summarize the structural genes of arabinose operon.
OR
b Appraise the function of transcription factors.

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 6 = 30)

11 a Analyze the fluid mosaic model of plasma membrane.

OR

b Interpret the export and sorting of proteins to mitochondria.

12 a Construct purine and pyrimidine nucleotides.

OR

b Determine the genome organization and its importance.

13 a Invent the steps involved in central dogma of molecular biology.

OR

b Differentiate between homologous and non homologous recombinations.

14 a Interpret, the interaction between codon and anticodon.

OR

b Explain the structure and types of RNA.

15 a Evaluate translation that regulate the gene expression.

OR

b Criticize the mechanism of gene amplification.

Z-Z-Z

END