

**PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION MAY 2024  
(Second Semester)**

Branch -**BOTANY**

**CYTOLOGY 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            | The movement of water from an area of high concentration to an area of low concentration through a semi-permeable membrane is<br>(i)osmosis (ii) diffusion (iii)plasmolysis (iv)imbibition             | K1      | CO1 |
|            | 2            | Cellulose is a polymer of<br>(i) Galctose(ii) Sucrose (iii) fructose (iv)glucose   | K2      | CO1 |
| 2          | 3            | Carbohydrates associated with proteins of cell membrane<br>(i)Glycogen (ii)Glycoproteins<br>(iii)Glycolipids (iv)Glucose   | K1      | CO2 |
|            | 4            | The inner folding of mitochondrial membrane is called as<br>(i) thylakoid (ii) cristae (iii) vesicles (iv)cisternae  | K2      | CO2 |
| 3          | 5            | Which of these bonds is present in the primary structure of protein?<br>(i) peptide bond (ii) glycosidic bond<br>(iii) disulfide bond (iv) hydrogen bond   | K1      | CO3 |
|            | 6            | Identify the amino acid abundantly found in collagen<br>(i)tryptophan (ii)serine (iii)alanine (iv) Glycine   | K2      | CO3 |
| 4          | 7            | ATP is a<br>(i) Nucleotide (ii) nucleoside<br>(iii)nucleic acid (iv) vitamin   | K1      | CO4 |
|            | 8            | In RNA, thymine is replaced by<br>(i) cytosine (ii) uracil<br>(iii)guanine (iv) adenine  | K2      | CO4 |
| 5          | 9            | Genes that are involved in turning on or off the transcription of a set of structural genes are called as<br>(i) polymorphic genes (ii) operator genes<br>(iii) redunctant genes (iv) regulatory genes | K1      | CO5 |
|            | 10           | Centromere is a part of<br>(i)chromosome (ii) ribosomes (iii) mitochondria<br>(iv)endoplasmic reticulum  | K2      | CO5 |

Cont...

**SECTION - B (35 Marks)**

Answer ALL questions

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

| Module No. | Question No. | Question   | K Level | CO  |
|------------|--------------|--|---------|-----|
| 1          | 11.a.        | Explain the processes related to the movement of molecules and water across cell membranes.          | K5      | CO1 |
|            | (OR)         |  |         |     |
|            | 11.b.        | Explain the functions of plant cell wall.  |         |     |
| 2          | 12.a.        | Find the role of lipids in membrane.   | K4      | CO2 |
|            | (OR)         |  |         |     |
|            | 12.b.        | Enlist the functions of Endoplasmic Reticulum  |         |     |
| 3          | 13.a.        | Interpret proteins based on their structure and function   | K5      | CO3 |
|            | (OR)         |  |         |     |
|            | 13.b.        | Enumerate the biological role of proteins.   |         |     |
| 4          | 14.a.        | Illustrating the differences in nitrogenous bases cite the rule of base pairing and construct B DNA. | K6      | CO4 |
|            | (OR)         |  |         |     |
|            | 14.b.        | Elaborate on the different types of RNA.   |         |     |
| 5          | 15.a.        | Compare the gene regulation of prokaryotes and eukaryotes.   | K4      | CO5 |
|            | (OR)         |  |         |     |
|            | 15.b.        | Analyze the organization of chromosome.  |         |     |

**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           | Evaluate the role of chemical constituents that make up the plant cell wall. | K5      | CO1 |
| 2          | 17           | Examine the different models of plasma membrane and enlist their functions.  | K4      | CO2 |
| 3          | 18           | Determine the various levels of protein structures                           | K5      | CO3 |
| 4          | 19           | Elaborate the experimental evidences that prove DNA as genetic material.     | K6      | CO4 |
| 5          | 20           | Compare and contrast Lamp brush chromosomes and B chromosomes.               | K4      | CO5 |

Z-Z-Z END