22BOU204N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(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 contraction of the cell due to protoplast shrinking upon exposure to a hypertonic solution is (a) osmosis (b) diffusion (c) plasmolysis (d)imbibition	K1	CO1
	2	The most abundant organic polymer on earth (a) Glucose (b) Fructose (c) Cellulose (d)Sucrose	K2	CO1
2	3	Storage form of lipid is (a) phospholipid (b) sterol (c) triacylaglycerol (d) glycolipid	K1	CO2
	4	Identify the powerhouse of the cell (a) Chloroplast (b) Mitochondria (c) Golgi complex (d) Nucleus	K2	CO2
3	5	Which of the following is produced with the combination of apoenzyme and coenzyme? (a) holoenzyme (b) prosthethic group (c) enzyme-substrate complex (d) enzyme-product complex	K1	CO3
	6	The bond that forms between one amino acid with another amino acid (a) peptide (b) covalent (c) amide (d) ionic	K2	CO3
4	7	Nucleoside lacks (a) ribose (b) nitrogenous base (c) phosphate (d) deoxyribose sugar	K1	CO4
	8	Anticodon found in (a) Mrna (b) DNA (c) Trna (d) rRNA	K2	CO4
5	9	The inducer for the lac operon is (a) lactose (b) galactose (c) allolactose (d) β-galactosidase	K1	CO5
	10	A chromosome having centromere at the middle is called as (a) dicentric (b) acrocentric (c) telocentric (d)metacentric	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.	Examine the different chemical constituents that make up the plant cell wall.	K4	CO1
		(OR)		
	11.b.	Distinguish cellulose from hemicellulose.		
2	12.a.	Categorize the biomolecules present in the plasma membrane.	K4	CO2
		(OR)		
	12.b.	Analyze the ultrastructure and functions of Chloroplast.		
3	13.a.	How proteins are classified based on their structure and function?	K5	CO3
		(OR)		
	13.b.	Determine the hormonal and enzymatic role of proteins.		
4	14.a.	With experimental evidences, prove DNA as genetic material.	K6	CO4
		(OR)		
	14.b.	Identify the nucleoside and nucleotide components of DNA and RNA.		
5	15.a.	Assess how gene expression is regulated in prokaryotes?	K5	CO5
		(OR)		
	15.b.	Evaluate the significance of lamp brush chromosomes.		

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	Analyze the processes related to the movement of molecules and water across cell membranes.	K4	CO1
2	17	Examine the topology of biological membrane with reference to fluid mosaic model.	K4	CO2
3	18	Account for the various types bonds and forces that contribute to the formation secondary and tertiarystructuresin proteins.	K6	CO3
4	19	Explain the different types of RNAs and show how a basic ribonucleotide is constructed.	K5	CO4
5	20	Compare and contrast prokaryotic and eukaryotic gene regulation.	K5	CO5

Z-Z-Z END