

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2024
(First Semester)

Branch - **BIOCHEMISTRY**

STRUCTURAL BIOCHEMISTRY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

$$(10 \times 1 = 10)$$

Module No.	Question No.	Question	K Level	CO
1	1	What is coordinate bonding? a) Bonding where atoms share electrons equally b) Bonding where atoms transfer electrons completely c) Bonding where both electrons are provided by one atom d) Bonding where electrons are shared unequally	K1	CO1
	2	Define hydrophobic interactions. a) Interactions between polar molecules b) Attraction between water and nonpolar molecules c) Repulsion between water and nonpolar molecules d) Bonding between hydrophilic substances	K2	CO1
2	3	Give an example of a polysaccharide. a) Glucose b) Sucrose c) Glycogen d) Fructose	K1	CO2
	4	Differentiate between amylose and amylopectin. a) Amylose is branched, while amylopectin is unbranched b) Amylose is unbranched, while amylopectin is branched c) Both are branched polysaccharides d) Both are unbranched polysaccharides	K2	CO2
3	5	What is a zwitterion? a) A molecule with a positive charge only b) A molecule with a negative charge only c) A molecule with both positive and negative charges d) A molecule without any charge	K1	CO3
	6	Explain the role of enzymes in protein metabolism. a) Enzymes break down carbohydrates into amino acids b) Enzymes catalyze the synthesis and breakdown of proteins c) Enzymes store proteins in the liver d) Enzymes convert proteins into DNA	K2	CO3
4	7	Name two essential fatty acids. a) Stearic acid and Palmitic acid b) Linoleic acid and Alpha-linolenic acid c) Lauric acid and Oleic acid d) Butyric acid and Caproic acid	K1	CO4
	8	Pick out the Vitamin which spares the role of Hormone a) Vitamin A b) Vitamin B c) Vitamin D d) Vitamin K	K2	CO4

Cont...

5	9	What is the function of mRNA in protein synthesis? a) To store genetic information b) To carry amino acids to the ribosome c) To deliver the genetic code from DNA to the ribosome d) To synthesize DNA	K1	CO5
	10	Describe the structure of RNA. a) RNA is a double-stranded molecule like DNA b) RNA is a single-stranded molecule with ribose sugar c) RNA is a single-stranded molecule with deoxyribose sugar d) RNA is a double-stranded molecule with ribose sugar	K2	CO5

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.	Discuss the role of hydrogen bonds in biological molecules.	K2	CO1
		(OR)		
	11.b.	Highlight the importance of ionic bonding in proteins.		
2	12.a.	How are carbohydrates classified, give their functions.	K3	CO2
		(OR)		
	12.b.	What are glycoproteins? Brief on their role.		
3	13.a.	Summarize the structure and biological importance of Peptide bond.	K3	CO3
		(OR)		
	13.b.	How are proteins Denatured? Compile its significance.		
4	14.a.	Describe the biological significance of fatty acids.	K3	CO4
		(OR)		
	14.b.	Outline the function of phospholipids in membranes.		
5	15.a.	Recall the process of transcription in prokaryotes.	K4	CO5
		(OR)		
	15.b.	Propose the process of translation and protein synthesis.		

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	Discuss the types of chemical bonds found in proteins and their significance in maintaining structure.	K4	CO1
2	17	Summarize the structure and function of complex carbohydrates.	K5	CO2
3	18	Related the structure of proteins, including their classification based on function.	K5	CO3
4	19	Explain the role of lipids in human health and nutrition.	K5	CO4
5	20	Compile the biological importance of RNA in gene expression and regulation.	K5	CO5

Z-Z-Z END