PSG COLLEGE OF ARTS & SCIENCE

(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2023

(First Semester)

Branch - BIOCHEMISTRY

CHEMISTRY OF BIOPOLYMERS

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	СО
1	1	Which of the following is a homoglycan? a) Honey b) starch c) dextran d) all of them	K1	CO1
	2	Heparin conatins repeated units of iduronic acid with sulfate on a) C3 b) C4 c) C2 d) C1	K2	CO1
2	3	 β pleated sheet segments are held together by a) Hydrophobic interaction b) Vander waals interaction c) hydrogen bond d) none of them 	K1	CO1
	4	How many heme groups are present in hemoglobin? a) 4 b) 3 c) 6 d) 2	K2	CO1
	5	Which of the following is not a terpene? a) Phytol b) camphor c) menthol d) silk	K1	CO1
3	6	All lipid molecules in the cell membrane are a) amphipathic b) hydrophobic c) polar d) None of them	K2	CO1
4	7	Nucleotides are joined by which type of bond? a) Peptide bond b) hydrogen bond c) phosphodiester bond d) covalent bond	K1	CO1
	8	Two strands of DNA twist around helical axis once every base pairs. a) 10.5 b) 12 c) 14.5 d) 4	К2	COI
	9	Triple stranded DNA is also known as a) B DNA b) C DNA c) H DNA d) Z DNA	K1	CO1
5	10	Which of the following is not a DNA-binding motif? a) Helix-turn-helix b) Helix-loop-helix c) Helix-sheet-helix d) Zinc finger	K2	CO1

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EOUAL Marks $(5 \times 7 = 35)$

Module No.	Question No.	Question Question	K Level	СО
1	11.a.	Distinguish between homoglycans and heteroglycans with suitable examples.	K4	CO3
		(OR)		
	11.b.	Describe the biological functions of heparin and sialic acids.		

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Cont...

2	12.a.	Explain the formation of peptide bond and its importance in protein structure formation.	K5	CO4
		(OR)		
	12.b.	Classify and summarize the secondary structures of proteins.		
3	13.a.	Justify the biological importance of cholesterol and phytosterol.	K5	
		(OR)		CO4
	13.b.	Assess the role of liposomes as carrier for drugs, enzymes and other biologically important molecules.		
4	14.a.	Explain DNA supercoiling and different types of supercoiled DNA forms.	K4	CO3
		(OR)		
	14.b.	Summarise different types of RNA and their role in biological functions.		
5	15.a.	Discuss the structural and functional role of Helix-turn-helix motif and Leu Zipper.		
		(OR)	K6	CO3
	15.b.	Compile a list of important considerations for DNA-protein binding.		

SECTION -C (30 Marks) Answer ANY THREE questions

ALL questions carry EQUAL Marks

$(3 \times 10 = 30)$	0)	
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Module No.	Question No.	Question	K Level	СО
1	16	Narrate on the available isolation and purification techniques for polysaccharides.	K4	CO3
2	17	Elaborate how Ramachandran plot could be used to describe the basic elements of protein structure.	K6	CO5
3	18	Explain the structural and biological importance of prostacyclins and leucotrienes.	K5	CO4
4	19	Describe in detail the structure of different types of double stranded DNA.	K5	CO4
5	20	Elaborate on the occurance of alternative conformations of DNA.	K4	CO3