NAVRACHANA UNIVERSITY
a UGC recognized University

School: School of Science
Program/s: B.Sc.
Year: 2nd **Semester:** 3rd
Examination: End Semester Examination
Examination year: December 2022

Course Code: CH259   **Course Name:** Biomolecules
Date: 12/12/2022   **Total Marks:** 40
Time: 11:30 am to 13:30 pm   **Total Pages:** 3

Instructions:

➢ *Write each answer on a new page.*
➢ *Use of a calculator is permitted*
➢ *Please read the instructions carefully before attempting the Exam*
➢ *All questions are compulsory*

Q. No.	Details	Marks	Cos*	BTL*
Q.1	**Choose the most appropriate answer from the options provided**	6		
	1. Which of the following is not true for triglycerides?			
	(a) Triglycerides from animals tend to have a higher proportion of saturated fatty acids			
	(b) Triglycerides from plants tend to have a higher proportion of saturated fatty acids			
	(c) Triglycerides from plants tend to have a higher proportion of unsaturated fatty acids			
	(d) Most of the triglycerides from plants are liquid at room temperature			
	2. Which element is an important component of enzyme urease?			
	(a) Co (b) Zn (c) Fe (d) Ni			
	3. Which of the following is true for disaccharide?		CO1	BT1
	(a) Maltose on hydrolysis gives glucose and galactose		CO2	BT2
	(b) Lactose on hydrolysis gives glucose and fructose		CO3	BT3
	(c) Sucrose on hydrolysis gives glucose and fructose		CO4	BT4
	(d) None of the above			
	4. Which of the following is true for Fatty acids?			
	(a) Fatty acid contain -CONHR group			
	(b) Melting point of saturated fatty acids increases as number of carbon			

increases

(c) The number of carbons are usually odd

(d) The polar tails interact with London forces

5. Which of the following is not the reason behind structural variations in DNA?

(a) Different possible conformations of the deoxyribose

(b) Free rotation about the C-1'-O-N-glycosyl bond

(c) Free rotation about the C-1'-N-glycosyl bond

(d)   Rotation about the contiguous bonds that make up the phosphodeoxyribose backbone

6. Which of the following statement is NOT true?

(a) Substrate binds on the allosteric site

(b) Lock and key model is also known as rigid template model

(c) Specificity allows the enzymes to co-exist in the same cell without any interference

(d) Regulator binds on the allosteric site

Q.2	Solve any four from the following questions	8		
	(i) Structurally how does a nucleotide differ from a nucleoside?			
	(ii) Write the complementary DNA and RNA sequence for the sequence GCTTAGTA		CO1	BT1
			CO2	BT2
	(iii) Explain in brief how temperature and pH affecting the rate of enzyme reaction		CO3	BT3
				BT4
	(iv) In samples of double-stranded DNA isolated from unidentified species X of becteria, adenine make up 22% of the total bases. What relative proportions of adenine, guanine, thymine, and cytosine would you expect to find in the DNA sample?			BT5
	(v) How will you obtain α-D-glucose and β-D-fructose from Sucrose.			
Q.3	Solve any four from the following questions	12		
	(i) Explain the different types of interactions present in secondary and tertiary structure of proteins		CO1	BT1
			CO2	BT2
	(ii) Draw H-bonding between (Guanine-Cytosine & Adenine-Thymine) in terms of donor-acceptor relationship			Bt3
				BT4
	(iii) What are proteolytic enzymes and why are proteolytic enzymes released as zymogens?			
	(iv) What does the alkaline hydrolysis of RNA yield?			

	(v) Explain the cyclic structure of D-Fructose				
Q.4	**Answer the following in brief**	9	CO1	BT1
	(i) Define epimers and anomers		CO2	BT2
	(ii) Why is the Na-K pump an example of active transport? Explain Na-K pump.		CO3	BT3
			CO4	BT4
	(iii) What is a prosthetic group? Explain with the help of heme.			
Q.5	**Write chemical reaction to affect the following transformations**	5		
	(i) Lactose from glucose and galactose		CO1	BT1
	(ii) Glucose to gluconic acid (Fehling test)		CO2	BT2
	(iii) Glucose to α-D-methyl glycoside and β-D-methyl glycoside			BT3
	(iv) What are the different tautomeric forms of uracil? Which form predominates at neutral pH?			BT4
	(v) Fructose to mannitol and sorbitol			

************End of Question Paper************