Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) EXAMINATION – WINTER 2023

Subject Code:3130403 Date:12-01-2024

Subject Name:Basic Biochemistry and Calculations

Time:10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Give two examples of each type of carbohydrate and state the importance of one example: monosaccharide, disaccharide, trisaccharide	**03**
	(b)	Explain Disaccharide structures.	**04**
	(c)	Explain the process of Hexose monophosphate shunt	**07**
Q.2	**(a)**	Enlist the enzymes used in pyruvate synthesis	**03**
	(b)	Discuss fate of pyruvate in anaerobic conditions.	**04**
	(c)	Explain in detail the Urea cycle	**07**
		OR	
	(c)	Give overview of aminoacid biosynthesis	**07**
Q.3	**(a)**	Explain sis and trans configuration of peptide unit.	**03**
	(b)	Compare the structure of turns.	**04**
	(c)	Explain super secondary structures of proteins with suitable drawings.	**07**
		OR	
Q.3	**(a)**	Why peptide group assume planar configuration?	**03**
	(b)	Give classification of lipids.	**04**
	(c)	Explain Titration of aminoacids	**07**
Q.4	**(a)**	How is triglyceride formed?	**03**
	(b)	What is carnitine shuttle pathways?	**04**
	(c)	Explain beta oxidation of odd number fatty acid with an example	**07**
		OR	
Q.4	**(a)**	Explain Nomenclature of lipids.	**03**
	(b)	What is the role of acyl carrier protein in fat transport?	**04**
	(c)	Explain hydrogen bonding patterns in water.	**07**
Q.5	**(a)**	What is the pH of a mixture of 0.042 M acetic acid and 0.058 M sodium acetate? Pka= 4.2	**03**
	(b)	What is the charge of DNA in water? Which chemical groups are responsible for this charge?	**04**
	(c)	Explain the thermodynamics behind formation of double layered lipid membrane spheres in water.	**07**
		OR	
Q.5	**(a)**	Describe the 3D structure of double stranded DNA in water.	**03**
	(b)	Draw structures of all purines and pyrimidines	**04**
	(c)	What is the difference between nucleotide and nucleoside? (1) Write short notes on all three types of RNA. (6)	**07**

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