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**ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)****B.E. / B.Tech (Full Time) - END SEMESTER ARREAR EXAMINATIONS, NOV / DEC 2023**

**BIOMEDICAL ENGINEERING**  
IV Semester  
**BM5401 & Fundamentals of Biochemistry**  
(Regulations 2019)

Time: 3hrs

Max.Marks: 100

CO 1	Describe the surface properties involved in biological systems.
CO 2	Explain about bio molecules such as Carbohydrates, Lipids, Nucleic Acid & Protein
CO 3	Explain functions of bio molecules
CO 4	Assess the significance of biomolecules in biological systems.
CO 5	Analyze the etiology and biological parameters in metabolic diseases.

**BL – Bloom's Taxonomy Levels**

(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

**PART- A (10 x 2 = 20 Marks)**  
(Answer all Questions)

Q. No	Questions	Marks	CO	BL
1	Define the principle of viscosity.	2	1	L2
2	How water acts as a biological solvent?	2	1	L2
3	Define isomerism.	2	3	L1
4	Classify carbohydrates and give an example for each.	2	2	L2
5	Compare Reichert- Meissl number and iodine number.	2	3	L2
6	Differentiate simple and derived lipids. Give an example for each.	2	2	L2
7	List the properties of amino acids.	2	4	L1
8	Define dihedral angles.	2	4	L1
9	What is Michaelis - Menten equation?	2	3	L1
10	How does temperature and pH affect the enzymatic activity?	2	4	L3

**PART- B (5 x 13 = 65 Marks)**

Q. No	Questions	Marks	CO	BL
11 (a) (i)	Explain in detail the Handerson - Hassel Balch equation.	13	1	L2
<b>OR</b>				
11 (b) (i)	Describe the different types of physiological buffers.	13	1	L2
12 (a) (i)	Elucidate glycogenesis and glycogenolysis and its hormonal regulation.	13	4	L3
<b>OR</b>				
12 (b) (i)	Explain in detail the TCA cycle.	8	4	L3
(ii)	Write brief notes on electron transport chain.	5	4	L3
13 (a) (i)	Explain the beta oxidation of fatty acid.	8	5	L2
(ii)	Describe the hormonal regulation of fatty acid metabolism.	5	5	L2
<b>OR</b>				

13 (b) (i)	Discuss the nomenclature of fatty acid.	7	5	L2
(ii)	Give brief notes on physical and chemical properties of fat.	6	5	L2
14 (a) (i)	Explain the Watson and crick model of DNA.	13	2	L2
<b>OR</b>				
14 (b) (i)	Elucidate the structure of RNA and its type.	8	2	L2
(ii)	DNA acts as a genetic material. Discuss.	5	2	L2
15 (a) (i)	Elaborate enzymatic inhibition and its types with neat illustration.	13	3	L1
<b>OR</b>				
15 (b) (i)	Explain the classification of enzymes with examples.	13	3	L1

**PART- C (1 x 15 = 15 Marks)**

(Q.No.16 is compulsory)

Q. No	Questions	Marks	CO	BL
16. (i)	Explain the principle, instrumentation and mechanism of SDS electrophoresis for protein separation.	15	4	L3

