Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. / B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, MAY 2024

BE BIOMEDICAL ENGINEERING

IV SEMSTER

BM5401 FUNDAMENTALS OF BIOCHEMISTRY

(Regulation2019)

Time: 3hrs Max. Marks: 100

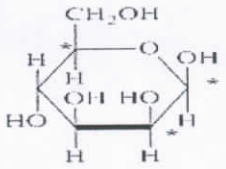
CO1	Describe the surface properties involved in biological systems
CO2	Explain about bio molecules such as Carbohydrates, Lipids, Nucleic Acid & Protein
CO3	Explain functions of bio molecules
CO4	Assess the significance of biomolecules in biological systems.
CO5	Analyze the etiology and biological parameters in metabolic diseases.

BL – Bloom's Taxonomy Levels

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

PART- A(10x2=20Marks)

(Answer all Questions)

Q.No	Questions	Marks	CO	BL
1	Find the given structure below, do the numbering and mention the significance of the asterisk markings? 	2	1	3
2	Carbonic acid as pKa1 of 6.35 & pKa2 of 10.33. If pH is 3.52, what is the major species found in the solution? Justify your answer. a) H_2CO_3 b) CO_3 c) HCO_3 d) H_3O^-	2	1	4
3	What is meant by surface tension?	2	1	2
4	Define saponification number with example.	2	1	2
5	The multi enzyme complex pyruvate dehydrogenase contains all the following except ------. Give reasons. a) Thiamine b) Lipoic acid c) Biotin d) FAD & NAD.	2	3	4
6	A short oligonucleotide sequence of DNA has 70 guanine and 30 thymine bases. Find purine bases in its complementary strand?	2	2	4
7	A triglyceride contains lauric acid (12:0), linoleic acid (18:2), and palmitoleic acid (16:1).How many hydrogen molecules are required to completely hydrogenate this triglyceride?	2	3	3
8	What is the purpose of using bromophenol in separation techniques?	2	3	2
9	Differentiate coenzyme and cofactor with example.	2	2	2
10	How isoenzymes are practically applied in clinical diagnosis?	2	5	3

PART- B (5x 13=65Marks)

Q. No	Questions	Mark	CO	BL
11 (a)	Discuss on Henderson-Hasselbalch equation.	13	1	1
	OR			
11 (b)	Describe the role of biological buffers.	13	1	1
12 (a)	How cell meets energy demands when oxygen is not supplied?	13	3	4
	OR			
12 (b)	Elaborately explain the impact of glucagon on carbohydrate metabolism.	13	3	4
13 (a)	How even numbered fatty acid is degraded?	13	4	4
	OR			
13 (b)	PLs are asymmetrical arranged in cell membrane- Justify.	13	4	4
14 (a)	"Ribonucleic acid, responsible factor for the transfer of genetic trait." Prove or disprove the statement with the proper evidence.	13	4	3
	OR			
14 (b)	How protein maintains its three dimensional structure?	13	4	3
15 (a)	Describe M.M equation?	13	2	2
	OR			
15 (b)	Explain competitive inhibition and its applications.	13	2	2

PART- C(1x 15=15Marks)

(Q.No.16 is compulsory)

Q. No	Questions	Mark	CO	BL
16.	An unknown protein X was isolated from a plant extract by a researcher. Suggest him a suitable technique and provide a protocol to determine its molecular weight?	15	1	L5