
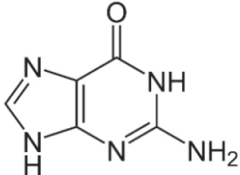
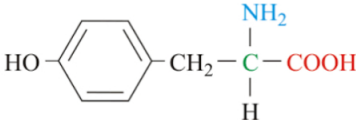


Name:			
Enrolment No:			
UPES End Semester Examination, December 2024			
Course: Biochemistry		Semester : I	
Program: MSc Microbiology and N&D		Duration : 3 Hours	
Course Code: HSMB7036		Max. Marks: 100	
Instructions: Attempt all questions			
Section A			
S. No.	Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
Q 1	Define pKa.	1.5	CO1
Q 2	Non-protein part of enzyme called as.....	1.5	CO1
Q 3	Identify the below given structure: 	1.5	CO1
Q 4	Identify the given below structure 	1.5	CO1
Q 5(name of scientist) who crystalized(name of enzyme) from jack bean extract.	1.5	CO1
Q 6	List the name of amino acid having sulfur group.	1.5	CO1
Q 7	Recall the structure of lauric acid (12:0).	1.5	CO1
Q 8	Remember the site of Electron Transport Chain.	1.5	CO1
Q 9	Define domain.	1.5	CO1
Q 10	Recall the name of any basic amino acid and its one letter code.	1.5	CO1
Q 11	The bond between C-C α and N-C α are called as and, respectively.	1.5	CO2
Q 12	Two successive nucleoside residues link together by.....	1.5	CO2
Q 13	α -D-Glucose and β -D-Glucose are: a. Epimers b. Anomers c. Isozymes d. Cofactors	1.5	CO2
Q 14	Which enzyme catalyzes the conversion of pyruvate to oxaloacetate: a. Pyruvate carboxylase b. Pyruvate dehydrogenase c. Pyruvate kinase d. PFK-1	1.5	CO2

Q 15	If an organic cofactor binds covalently to an enzyme called as.....	1.5	CO2
Q 16	What is the product formed by malate dehydrogenase? a. Oxaloacetate b. Pyruvate c. Fumarate d. Succinate	1.5	CO2
Q 17	Hair keratin protein has: a. Primary structure b. Secondary structure c. Tertiary structure d. Quaternary structure	1.5	CO2
Q 18	Which one is false a) Fatty acids may be saturated or unsaturated. b) Fatty acids are water soluble.	1.5	CO2
Q 19	Discuss why unsaturated fatty acids liquid and saturated fatty acids are waxy in nature at room temperature.	1.5	CO2
Q 20	Describe the relationship between the chain length of fatty acid and melting point.	1.5	CO2
Section B (4Qx5M=20 Marks)			
Q 1	Describe lactic acid formation from pyruvate.	5	CO2
Q 2	Define isoelectric point (pI). The pKa and pKb of an amino acid are 4.2 and 9.0, respectively. Calculate the pI of the amino acid.	2+3	CO1
Q 3	Explain biochemistry of changing of straight hair to curling hairs. Or Discuss the structure of collagen in detail.	5	CO3
Q 4	The stability of an α -helix is determined not only by the intrastrand H bonds, but also by the pH and nature of amino acid side chains. Predict whether the following will form ordered α -helices or not in solution. Give brief reasons for your predictions. a. Polyalanine at pH 7.0 b. Polyarginine at pH 7.0 Or Estimate the distance covered by 170 amino acids long α -helix.	5	CO4
Section C (2Qx15M=30 Marks)			
Q 1	Define Enzymes. Explain the classification of enzymes with suitable examples.	3+12	CO3
Q 2	a. The primary structure of a protein DOES NOT contain information that determines its tertiary structure. The given statement is true or false. Explain. b. During the folding of a protein into its 3-D structure, amino acids that are far apart in the linear polypeptide chain never come close to each other. The given statement is true or false. Explain. c. Differentiate between primary, secondary, and tertiary structures.	3+3+9	CO4
Section D (2Qx10M=20 Marks)			

Q 1	<p>Write three reaction steps of TCA cycle where NADH molecules are produced.</p> <p>Or</p> <p>Explain the process of oxidative phosphorylation, including the role of each complex in the electron transport chain (ETC) and how ATP is generated. Illustrate how the proton gradient is established and how ATP synthase uses this gradient to produce ATP.</p>	10	CO3
Q 2	<p>Discuss protein deficiency and overconsumption. Examine the excretion pathway of excess nitrogen resulting from the breakdown of amino acid in the form of urea molecule inside the cell.</p> <p>Or</p> <p>Describe the payoff phase of glycolysis (detailed chemical reaction mechanism)</p>	10	CO4