
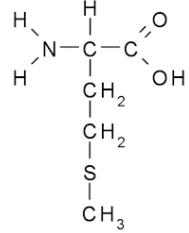


Name:			
Enrolment No:			
UPES End Semester Examination, April- May 2024			
Course: Principles of Biochemistry Program: BSc Microbiology & F N&D Course Code: HSCC1027		Semester : II Duration : 3 Hours Max. Marks: 100	
Instructions:			
S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
Q1	Define pKa.	1.5	CO1
Q2	The Henderson Hasselbalch equation explains the relationship between- a.) pH and pOH, b.) pH and logKa, c.) pH and pKa, d.) pOH and pKa	1.5	CO1
Q3	Define free energy (ΔG).	1.5	CO1
Q4	An apoenzyme without cofactor is called holoenzyme. True/False	1.5	CO1
Q5	Recall the structure of myristic acid (14:0).	1.5	CO1
Q6	Peptide bond is a _____ a) Covalent bond, b) Ionic bond. c) Metallic bond, d) Hydrogen bond	1.5	CO1
Q7	Define Km.	1.5	CO1
Q8	Define domain.	1.5	CO1
Q9	Non-protein part of enzyme called as.....	1.5	CO1
Q10	If an organic cofactor binds covalently to an enzyme called as.....	1.5	CO1
Q11	In which of the following, glucose residues are linked by $\beta(1-4)$ glycosidic bonds? a) Starch, b) Cellulose, c) Glycogen, d) Amylose	1.5	CO2
Q12	Which one is false a) Fatty acids may be saturated or unsaturated. b) Fatty acids are water soluble.	1.5	CO2
Q13	The bond between C-C α and N-C α are called as and, respectively.	1.5	CO2
Q14	Recall Michaelis-Menten equation.	1.5	CO2
Q15	Both cellulose and alpha amylose consist of (1-4) linked D-glucose units. Despite the similarities, a person having alpha amylose in diet gain weight while person on diet of cellulose will starve. Why?	1.5	CO2
Q16	For a spontaneous reaction to occur, $\Delta G > 0$ (True/False) Explain.	1.5	CO2
Q17	Define exergonic reactions.	1.5	CO2
Q18	Identify the below given structure:	1.5	CO2

			
Q19	Define cofactors with example.	1.5	CO2
Q20	Explain the relationship between chain length of fatty acid and melting point.	1.5	CO2
Section B (4Qx5M=20 Marks)			
Q 1	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.	5	CO1
Q 2	What are enzymes. What enzyme does in a reaction? Or Explain biochemistry of changing of straight hair to curling hairs.	5	CO2
Q 3	Describe lactic acid formation from pyruvate. Or Describe in detail the structure of collagen and its importance.	5	CO3
Q 4	Derive Henderson Hasselbalch equation. Write the importance of the equation.	5	CO5
Section C (2Qx15M=30 Marks)			
Q 1	Differentiate among primary, secondary, tertiary and quaternary structures with examples.	15	CO3
Q 2	Define metabolism. Defend the given below statement (draw the glycolysis pathway): One Glucose molecule converted in two molecules of pyruvate through multistep process and net yield is two ATP per glucose.	3+12	CO5
Section D (2Qx10M=20 Marks)			
Q 1	Write three steps of TCA cycle where NADH molecules are produced.	7+3	CO4
Q2	Define gluconeogenesis. Contrast three steps of gluconeogenesis that differ from glycolysis. Or Define lipids. What are fatty acids. Draw the structure of steric acid. Explain why unsaturated fatty acids liquid and saturated fatty acids are waxy in nature at room temperature.	2+8 2+2+3+3	CO4