



12.	The class of enzymes to which dehydrogenase belongs is a) ligases      b) hydrolases      c) oxidoreductases      d) lyases	1	1
13.	When $V = \frac{1}{2} V_{max}$ , $K_m$ is equal to the concentration of _____ a) inhibitor      b) enzyme      c) substrate      d) coenzyme	1	1
14.	A cytochrome is _____ transporting protein that contains a haem prosthetic group a) an electron      b) two electrons c) hydrogen ion      d) an electron and hydrogen ion	1	1
15.	The value of HbA1c to classify as normal or in the prediabetic range should be below a) 5.7%      b) 6.5%      c) 7.0%      d) 4.5%	1	1

Q. No.	SECTION B (15 x 1 = 15 marks)	CO	KL	
	<b>Answer in a line or two;</b>			
16.	What is Ionic product of water?	2	2	
17.	Define Endergonic reactions.	2	2	
18.	What should be the ratio of concentration of bicarbonate to carbonic acid to maintain the pH of blood?	2	2	
19.	Define coenzymes.	2	2	
20.	What is the type of bonding between glucose molecules in amylose?	2	2	
	<b>Fill in the Blanks:</b>			
21.	ATP is _____ triphosphate.	2	2	
22.	Carbohydrates which on hydrolysis give 2-10 molecules of monosaccharide are called _____ .	2	2	
23.	Coenzyme A functions as a carrier of _____ groups in oxidative decarboxylation.	2	2	
24.	Phenolphthalein turns _____ in acidic solution.	2	2	
25.	The electrolyte which is the chief extra cellular cation is _____	2	2	
	<b>Match the following:</b>			
26.	Phosphoenol pyruvate to pyruvate	a) Homopolysaccharide	2	2
27.	Cellulose	b) Disorderliness of a system	2	2
28.	Fischer's lock and key	c) Substrate level phosphorylation	2	2
29.	Entropy	d) Intermolecular fit	2	2
30.	Hemophilia A	e) Oxidative phosphorylation	2	2
		f) Clotting factor VIII		
		g) System's heat energy		

Q. No.	SECTION C (6 x 5 = 30 marks)	CO	KL
	<b>Answer any six questions</b>		
31.	Construct the metabolic pathway of glycogenesis.	3	3
32.	Predict the effect of temperature and substrate concentration on enzyme action.	3	3
33.	Relate acidosis and alkalosis to imbalance of the pH of blood.	3	3
34.	Apply the role of insulin and glucagon in the maintenance of blood glucose level.	3	3

35.	Classify the composition of blood.	3	3
36.	For the reaction $\text{CO (g) + H}_2\text{O (g) } \rightarrow \text{CO}_2 \text{ (g) + H}_2 \text{ (g)}$ $\Delta H^\circ = -41.2 \text{ kJ and } \Delta S^\circ = -135 \text{ J/K}$ i) <ul style="list-style-type: none"> <li>a) Calculate <math>\Delta G^\circ</math> at 298K (2)</li> <li>b) Predict whether the reaction is spontaneous. (1)</li> </ul> ii) Calculate the pH of lime juice having $[\text{H}^+]$ concentration of 0.0035M. (2)	3	3
37.	Illustrate and explain the Fischer's lock and key model and Koshland's induced fit model of enzyme action.	3	3

Q. No.	SECTION D Answer any four questions (4 x 5 = 20 marks)	CO	KL
38.	Distinguish between <ul style="list-style-type: none"> <li>a) Hemophilia and sickle cell anemia. (2)</li> <li>b) Glucose and sucrose (3)</li> </ul>	4	4
39.	Differentiate between <ul style="list-style-type: none"> <li>a) entropy and enthalpy</li> <li>b) spontaneous and non-spontaneous reactions. (2+3)</li> </ul>	4	4
40.	Examine the TCA cycle and infer the total number of ATP's gained by the complete oxidation of one mole of acetyl CoA.	4	4
41.	Analyse the role of buffers and electrolytes in the body.	4	4
42.	Classify the enzymes based on the type of reactions they catalyse with an example each.	4	4

Q. No.	SECTION E (2 x 10 = 20 marks)	CO	KL
43. a	i) Explain the buffering action of bicarbonate buffer system. ii) Interpret the molecular logic of life. (5+ 5)	5	5
	<b>(OR)</b>	5	5
43.b	Explain the mechanism of blood coagulation. (10)		
44. a	i) Deduce the structure of phenolphthalein in the acidic and basic medium. (2) ii) Highlight the importance of the clinical significance of RBC and platelet count (4) iii) Explain the digestion of di and poly saccharides in the body. (4)	5	5
	<b>(OR)</b>		
44.b	Explain the biochemical reactions of the metabolic pathway of glycolysis and justify the net gain of eight ATPs for the complete aerobic oxidation of one mole of glucose to pyruvate. (10)	5	5

