
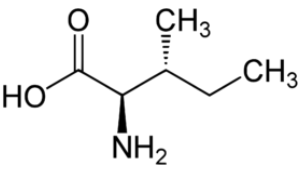


Name:			
Enrolment No:			
<b>UPES</b> <b>End Semester Examination, May 2024</b>			
<b>Course: Biochemistry</b> <b>Program: Bachelor of Pharmacy</b> <b>Course Code: BP203T</b>		<b>Semester : II</b> <b>Duration : 03 Hours</b> <b>Max. Marks: 75</b>	
<b>Instructions: The question paper comprises of THREE sections; all sections are compulsory.</b> <b>Read the instructions before each section carefully.</b>			
<b>SECTION A</b> <b>(20Qx1M=20 Marks)</b>			
<b>Attempt ALL Questions.</b>			
S. No.		Marks	COs
Q 1	Which of the following is <b>NOT</b> a monosaccharide? a. Glucose b. Maltose c. Fructose d. Galactose	1	CO1
Q 2	Which of the following is <b>FALSE</b> about isomerism of carbohydrates? a. D-L isomerism is dependent on the orientation of the –H and –OH groups around the carbon atom adjacent to the alcohol carbon. b. D-isomer has the -OH group at the right side of the carbon atom adjacent to the alcohol carbon. c. Most naturally occurring sugars are L-isomers. d. D-L isomerism is determined by its relationship to glyceraldehyde.	1	CO1
Q 3	Identify the amino acid side group for isoleucine.  a. Aromatic b. Imino c. Amide d. Aliphatic	1	CO1
Q 4	Identify the amino acid that <b>DOES NOT</b> have pK <sub>R</sub> . a. Serine b. Alanine c. Cysteine d. Threonine	1	CO1

<b>Q 5</b>	Identify the amino acid which is produced only by post-translational modification. a. Hydroxyproline b. Methionine c. Lysine d. Alanine	<b>1</b>	<b>CO1</b>
<b>Q 6</b>	Identify the <b>BEST</b> description of prosthetic group. a. A simple molecule of polypeptide that does not contribute any function to proteins. b. A tight bound, specific non-polypeptide unit required for the biological function of some proteins. c. A globular protein which plays the role of oxygen storage in mammalian muscle. d. A protein which comprises of several domains of continuous polypeptide chain.	<b>1</b>	<b>CO1</b>
<b>Q 7</b>	The backbone of tertiary structures in proteins are stabilized by ... a. disulphide linkages. b. electrostatic attraction. c. hydrophobic interaction. d. hydrogen bonds.	<b>1</b>	<b>CO1</b>
<b>Q 8</b>	State <b>TWO</b> physicochemical properties of lipids.	<b>1</b>	<b>CO1</b>
<b>Q 9</b>	Identify the <b>CORRECT</b> statement about triacylglycerols. a. Their melting point increases with fatty acid chain length. b. They consist of ester with an alcohol, glycerol with 3 fatty acids by carboxyl bond. c. They are the derivatives of phosphatidic acid, in which the phosphate is esterified with the -OH of a suitable alcohol. d. They are the storage form of energy.	<b>1</b>	<b>CO1</b>
<b>Q 10</b>	Define an exergonic reaction.	<b>1</b>	<b>CO1</b>
<b>Q 11</b>	List <b>TWO</b> examples of phospholipids.	<b>1</b>	<b>CO1</b>
<b>Q 12</b>	State the collective term for carbohydrates that have a chemical structure with a six-membered ring system.	<b>1</b>	<b>CO1</b>
<b>Q 13</b>	List <b>TWO</b> examples of amino acid with hydroxy (-OH) group.	<b>1</b>	<b>CO1</b>
<b>Q 14</b>	Define conjugated proteins with <b>ONE</b> example.	<b>1</b>	<b>CO1</b>
<b>Q 15</b>	List any <b>TWO</b> enzymes involved in the first phase of glycolysis.	<b>1</b>	<b>CO2</b>
<b>Q 16</b>	Define transamination reaction.	<b>1</b>	<b>CO3</b>
<b>Q 17</b>	Which of the following terms is used to describe the process by which proteins are synthesized from a genetic code? a. Reproduction b. Replication c. Translation d. Transcription	<b>1</b>	<b>CO4</b>
<b>Q 18</b>	List <b>TWO</b> cardiac enzyme used as clinical markers in clinical biochemistry.	<b>1</b>	<b>CO5</b>
<b>Q 19</b>	List any <b>TWO</b> enzymes involved in de novo biosynthesis of pyrimidines.	<b>1</b>	<b>CO5</b>

<b>Q 20</b>	Identify the <b>CORRECT</b> lactate dehydrogenase isoenzymes present in the heart tissue. a. LDH-1 b. LDH-2 c. LDH-4 d. LDH-5	<b>1</b>	<b>CO5</b>
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**SECTION B (20 Marks)**  
**(2Qx10M=20 Marks)**

**Attempt 2 Question out of 3**

<b>Q 1</b>	Andrew, 4-month-old male infant, was normal at birth but in the past several days tremors in his extremities appeared. Last night he presented with gross twitching movements in his crib. When the infant was examined, a musty odour was noted from the baby's wet diaper. Based on the above information, predict the underlying condition, the possible therapy, and the consequences of leaving it untreated. Justify your answer.	<b>10</b>	<b>CO3</b>
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<b>Q2</b>	An enzyme hydrolyzed a substrate concentration of 0.03 mmol/L, the initial velocity was $1.5 \times 10^{-3}$ mmol/L.min <sup>-1</sup> and the maximum velocity was $4.5 \times 10^{-3}$ mmol/L.min <sup>-1</sup> . Calculate the K <sub>m</sub> value. Predict the type of enzyme inhibition if the K <sub>m</sub> value for the same reaction becomes 0.08 mmol/L in presence of an enzyme inhibitor.	<b>10</b>	<b>CO5</b>
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<b>Q3</b>	A 65-year-old male was admitted to emergency department with complaint of chest pain for last 1 hour. Laboratory investigations presented the following data. Analyse the scenario and predict the associated medical problem.	<b>10</b>	<b>CO5</b>																								
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**SECTION-C (35 Marks)**  
**(7Qx5M=35 Marks)**

**Attempt 7 Question out of 9**

<b>Q 1</b>	Describe the general properties of monosaccharides.	<b>5</b>	<b>CO1</b>
<b>Q 2</b>	Discuss the ionization properties of amino acids.	<b>5</b>	<b>CO1</b>
<b>Q 3</b>	Discuss the biological significance of ATP and phosphoryl group transfer.	<b>5</b>	<b>CO1</b>
<b>Q 4</b>	Discuss the biochemical regulation of glycogenolysis.	<b>5</b>	<b>CO2</b>
<b>Q 5</b>	Discuss the role of amino acids in gluconeogenesis and cite <b>FOUR</b> examples of glucogenic amino acids.	<b>5</b>	<b>CO2</b>
<b>Q 6</b>	Illustrate the conversion of ornithine to citrulline in urea cycle and relate the enzymes involved in the conversion process with the disorders of urea cycle.	<b>5</b>	<b>CO3</b>
<b>Q 7</b>	Illustrate the fate of lipids in fasting condition using a suitable diagram.	<b>5</b>	<b>CO3</b>

<b>Q 8</b>	Explain the Lesh-Nyhan syndrome in relation to the disorder in the metabolism of nucleotides.	<b>5</b>	<b>CO4</b>
<b>Q 9</b>	Propose a standard procedure to determine the effect of drug on hepatobiliary functions in human by using <b>TWO</b> blood serum enzymes as parameters. Explain the possible changes on these parameters proposed to indicate the liver toxicity.	<b>5</b>	<b>CO5</b>