Birla Institute of Technology and Sciences, Pilani, Pilani-Campus, Rajasthan
Mid-term examination (CLOSED BOOK)
I Semester 2022-2023
Course Name: Biological Chemistry Course Code: PHA F242
Date: 31/10/2022 Duration: 50 min Max. Marks: 20

Instructions

1. All questions are compulsory.
2. Please write correct question number in answer sheets.
3. Draw structures wherever necessary.

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1. Explain the entire process (along with structures) how the carbon skeleton of pyruvate formed in glycolysis is degraded into carbon-dioxide. [8]

2. Explain briefly with examples (wherever necessary): [2+2]
   (i) Covalent catalysis
   (ii) Warfarin is an anti-coagulant

3. Deficiency of vitamin D is associated with hypertension. Explain the regulation of blood pressure by vitamin D stating its impact on pathway regulating it. [4]

4. Giving the structure of Vitamin B2 explain what is meant by multiple oxidation states. [4]

Birla Institute of Technology and Sciences, Pilani, Pilani-Campus, Rajasthan
Mid-term examination (OPEN BOOK)
I Semester 2022-2023
Course Name: Biological Chemistry Course Code: PHA F242
Date: 31/10/2022 Duration: 40 min Max. Marks: 10

Instructions

1. All questions are compulsory.
2. Please write correct question number in answer sheets.
3. Draw structures wherever necessary.

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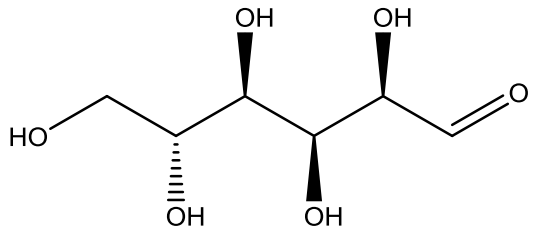
1. Suppose a hypothetical situation where in a non aqueous environment, protonation of a molecule of propionate yields acetaldehyde. What is the category of enzyme catalyzing this reaction according international enzyme classification? Give reason [3]

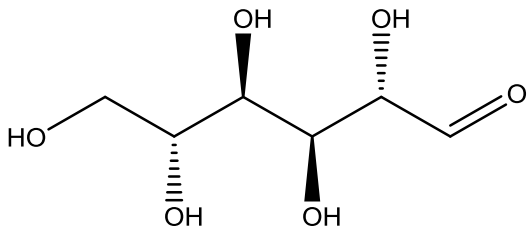
2. Explain briefly [2]
   (i) GLUT-4 transporters do not transport glucose out of the cell.
   (ii) RBCs produce lactate from pyruvate.

3. Which coenzymes exhibits multiple redox states and how? [2]

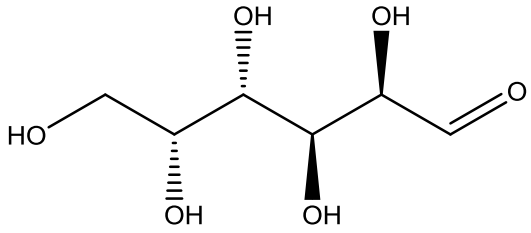
4. The following are structures of aldohexoses [3]



(a)



(b)



(c)

(i) Identify (a), (b) and (c)

(ii) Explain the reason why the statements written below are true or false?

A. D-glucose and D-mannose are epimers because they differ in the stereochemistry at the C-2 position.

B. D-Galactose and D-mannose are epimers because they differ in the stereochemistry at the C-3 position.

C. D-glucose and D-galactose are epimers because they differ in the stereochemistry at the C-4 position.

D. D-galactose and D-glucose are epimers because they differ in the stereochemistry at the C-5 position.