

## INTERNATIONAL CENTRE FOR APPLIED SCIENCES

(Manipal University)

Reg.No.

IV SEMESTER B.S. DEGREE EXAMINATION - APRIL/ MAY 2017

SUBJECT: BIOCHEMISTRY (CH 241) (BRANCH: CHEMICAL & BIOMED)

Thursday, 27 April 2017

## Time: 3 Hours

Max. Marks: 100

- ✓ Answer ANY FIVE full Questions.
- ✓ Missing data, if any, may be suitably assumed
  - **1A**. Draw the Haworth projection for the following dimers of glucose: A b(1->4) linkage with both molecules of glucose in the b-form
  - 1B. Give the biochemical and common names of the disaccharide you drew in (1A)
  - 1C. Name the polysaccharide that is extended from this disaccharide and brief their properties [6+6+8]
  - 2A. Describe about mutarotation with an example
  - 2B. Draw the structure of sucrose and explain why it is not a reducing sugar?
  - 2C. Explain the different type of linkages among monomeric units of carbohydrates and their biochemical importance [6+6+8]
  - 3A. List out the characteristics of a peptide bond
  - **3B.** How is an alpha helix structure in proteins are maintained?
  - 3C. Describe the specificity of enzymes involved in the glycolytic pathway

[6+6+8]

- **4A.** Which of the fatty acids would you expect to be a liquid at room temperature? Linolenic acid or stearic acid, why?
- 4B. Draw the structure of cholesterol and list out its biological significance
- **4C.** Explain the types of rancidity and how would you prevent it?

[6+6+8]

- 5A. Describe the action mechanism of an enzyme
- **5B.** Differentiate between active and allosteric sites of enzymes
- **5C.** Elaborate on the structure of haemoglobin [6+6+8]
- 6A. Explain the anaerobic processes of glucose metabolism6B. Calculate the number of ATPs formed in TCA cycle [10+10]
- 7A. Explain the metabolism of even chain fatty acids7B. Describe the separation of amino acids using paper chromatography [10+10]
- 8. An animal was injected with radioactive pyruvate labeled with <sup>14</sup>C in the methyl group (\*).

After a few minutes, the carbon dioxide exhaled by the animal was trapped and found to be highly radioactive. Show the steps to outline the series of enzyme-catalyzed reactions that would account for the appearance of  ${}^{14}C$  in the exhaled CO<sub>2</sub>.

[20]

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