Question Paper

Exam Date & Time: 14-Nov-2018 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
(MAHE, Manipal)
III SEMESTER B.S. DEGREE EXAMINATION - NOV/ DEC 2018
SUBJECT: BIOCHEMISTRY (IBT 231)
(BRANCH: BIOTECHNOLOGY)

BIO-CHEMISTRY [IBT 231 - S2]

Marks: 100 **Duration: 180 mins.**

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Answer 5 out of 8 questions.

Answer ANY FIVE full Questions.
Missing data, if any, may be suitably assumed

1) (a) Convert the Fischer projection of the monosaccharide D-glucose to a Haworth projection with a 6-membered ring. Show all possible stereoisomers of D-glucose (only Fischer projections) [08] (20)

(b) Name FOUR different polymers of glucose (with a-1,4 glycosidic linkage) and brief their properties [06]

(c) What is the common disaccharide obtained from the above polysaccharide (as in question 1b) due to hydrolysis? Draw its structure and mention whether it is reducing or non-reducing? Is this polysaccharides digestible by humans? Why? Or why not? [06]

2) (a) Describe about mutarotation with an example [06] (20)
(b) Draw the structure of sucrose and explain why it is not a reducing sugar? [06]
(c) Explain the different type of linkages among monomeric units of carbohydrates and their biochemical importance [08]

3) (a) List out the characteristics of a peptide bond [06] (20)
(b) Brief about the essential amino acids and their importance [06]

(c) Write an account on simple, conjugated and derived proteins [08]

4) (a) Describe about (i) saturated (ii) unsaturated and (iii) cyclic fatty acids with examples [10] (20)
(b) Draw and describe the sterols of biological importance [10]

5) (a) Write an account on simple, conjugated and derived lipids [10] (20)
(b) Describe about autoxidation and rancidity [10]

6) (a) Describe deamination, transamination and transdeamination with an example [10] (20)
(b) Tabulate the energy produced in TCA cycle [10]

7) (a) Describe the barriers of gluconeogenesis [10] (20)
(b) Explain the steps of β-oxidation with an illustration [10]

8) (a) Explain the primary, secondary, super-secondary, tertiary and quaternary structures of proteins [10] (20)

(b) Glucose is labeled with 14C at C-1 and incubated with the glycolytic enzymes and necessary cofactors. Trace the carbon atoms (highlight/mark 'C-1'). What is the distribution of 14C in the pyruvate that is formed? [10]

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