

**PARUL UNIVERSITY**  
**PARUL INSTITUTE OF APPLIED SCIENCES**  
**MID SEMESTER INTERNAL EXAMINATION, OCTOBER 2017**  
**B. Sc. Semester I**  
**Subject: Biotechnology/Microbiology**

**Paper Code: 11103101**

**Title of the paper: Biochemistry-1**

**Date: 10 /10 /2017**

**Time: 10:00-11:30AM**

**Maximum Marks: 40**

**Instructions:**

- 1. All questions are compulsory and options are given in first and second question only.**
  - 2. Numbers to the right of question indicate the marks of respective question.**
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**Q. 1** Attempt any one question of the following. **(08)**

- (i) What are the general properties of biomolecules? Discuss in detail.
- (ii) What are polysaccharides? Discuss any polysaccharide in detail.

**Q. 2** Attempt any three questions of the following. **(12)**

- (i) Write the reactions of Kiliani–Fischer synthesis starting from D-ribose
- (ii) What are bioelements?
- (iii) What is mutarotation? Explain with the help of an example.
- (iv) Describe the action of hydrazine on sugars.
- (v) Explain optical isomerism in Glucose.

**Q. 3** Do as directed. Attempt all five questions. **(05)**

- (i) Draw the structures of  $\alpha$ -D-glucopyranose and  $\beta$ -D-glucopyranose
- (ii) What is the storage form of carbohydrate in animals and where it is stored?
- (iii) Name any two biotechnologically important carbohydrates.
- (iv) List name of any two glycosaminoglycans.
- (v) Give one example of epimers.

**Q. 4** Write correct option in your answer sheet for following 15 multiple choice questions. **(15)**

MCQ 1 Ketoses are reducing sugars because in their non-cyclic form they contain

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|--------------------|------------------|
| (A) Aldehyde group | (B) Ketone group |
| (C) Hydroxyl group | (D) Ester group  |

MCQ 2 What is the relationship between mannose and galactose?

- |                            |                      |
|----------------------------|----------------------|
| (A) They are stereoisomers | (B) They are epimers |
| (C) They are aldoses       | (D) All of the above |

MCQ 3 Which of the following results when the galactose is reduced

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|-----------------------|----------------|
| (A) Galacturonic acid | (B) Galactitol |
| (C) Galactonic acid   | (D) None       |

MCQ 4 What is a storage form of carbohydrate in plants?

- |               |            |
|---------------|------------|
| (A) Glycogen  | (B) Starch |
| (C) Cellulose | (D) Chitin |

MCQ 5 What best describes amylose?

- |   |   |
|---|---|
| (A) Unbranched linear polymer with alpha 1-4 glycosidic | (B) Unbranched linear polymer with beta 1-4 glycosidic linkages |
|---|---|

- linkages
- (C) Highly branched, branched sites contain alpha 1-6 glycosidic linkages
- (D) Highly branched, branched sites contain beta 1-6 glycosidic linkages
- MCQ 6 Which of the following pairs of sugars consists of anomers
- (A) d-glucose and d-fructose (B)  $\alpha$ -d-glucose and  $\beta$ -d-glucose
- (C) d-galactose and d-glucose (D) d-glucose and d-mannose
- MCQ 7 The red precipitate formed when glucose is heated with "Benedict's reagent" is
- (A) Cupric hydroxide (B) Cuprous hydroxide
- (C) Cupric oxide (D) Cuprous oxide
- MCQ 8 One of the following does not have Sulfuric acid groups
- (A) Keratin sulphate (B) Chondroitin sulphate
- (C) Hyaluronic acid (D) Heparin
- MCQ 9 Example for "Fructosan" is
- (A) Starch (B) Inulin
- (C) Cellulose (D) Chitin
- MCQ 10 Chitin is polymer of
- (A) Glucose (B) N-Acetylglucosamine
- (C) Amylopectin (D) Hyaluronic acid
- MCQ 11 Example of trace element is
- (A) K (B) Mg
- (C) C (D) I
- MCQ 12 What type of biomolecule is an enzyme
- (A) Lipid (B) Protein
- (C) Carbohydrate (D) Nucleic acid
- MCQ 13 Which of the following tests distinguishes between aldoses and ketoses
- (A) Bial's Test (B) Barfoed's Test
- (C) Seliwanoff's Test (D) Molisch's test
- MCQ 14 Which of the following is not a hexose
- (A) Fructose (B) Ribose
- (C) Mannose (D) Galactose
- MCQ 15 A sugar with 4 asymmetric carbon atoms will have following number of possible isomers
- (A) 8 (B) 32
- (C) 16 (D) 4

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