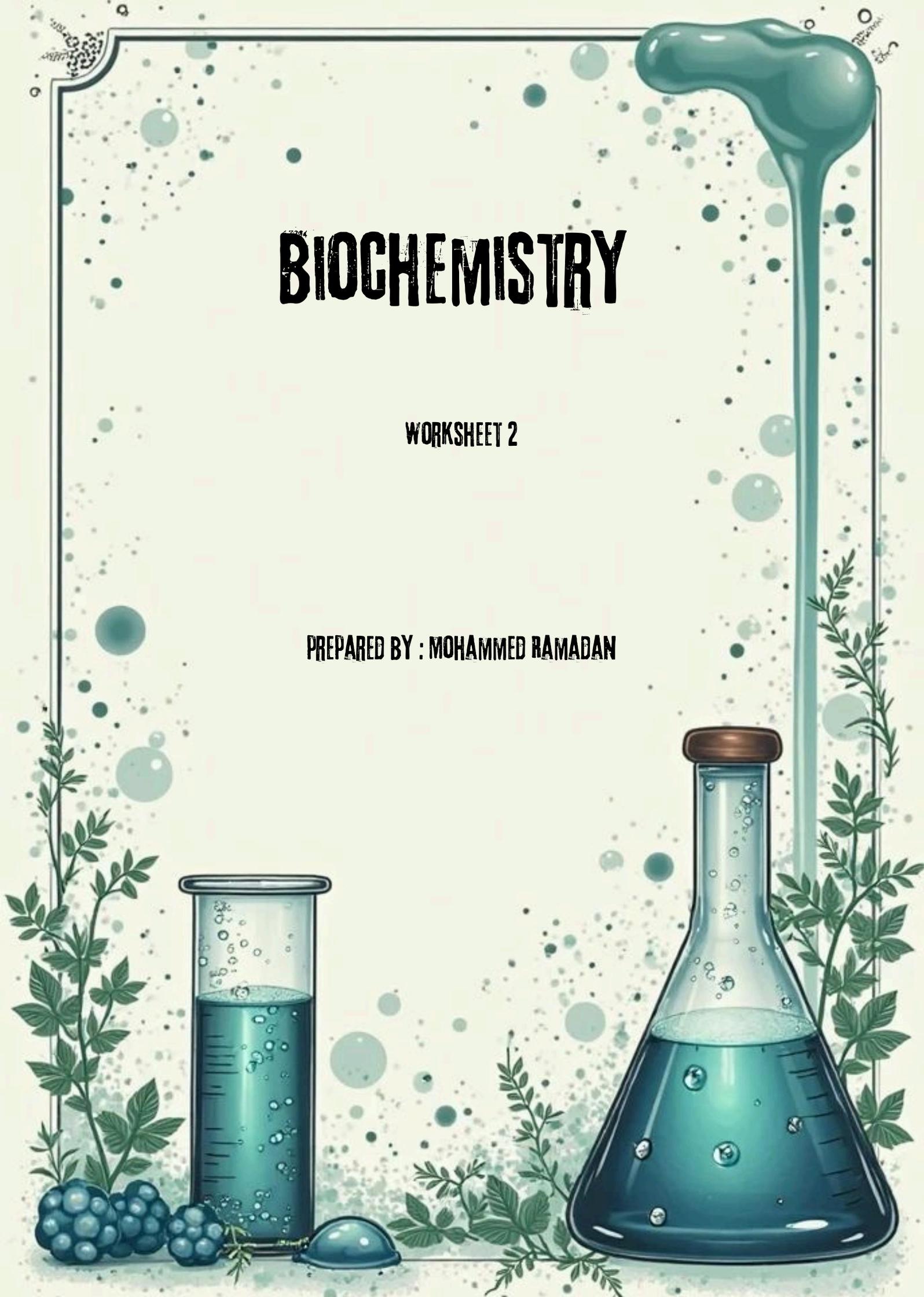


# BIOCHEMISTRY

## WORKSHEET 2

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1) A patient's seminal fluid analysis shows abnormally low energy production by spermatozoa despite normal sperm count. Which monosaccharide deficiency is most likely responsible?

- a) Glucose deficiency
- b) Galactose deficiency
- c) Fructose deficiency
- d) Ribose deficiency
- e) Mannose deficiency

Ans : c

2) A newborn develops cataracts after consuming milk. Laboratory tests show accumulation of a sugar alcohol in the lens. Which enzyme pathway is most likely defective?

- a) Glucose → Sorbitol pathway
- b) Galactose → Galactitol pathway
- c) Fructose → Mannitol pathway
- d) Mannose → Mannitol pathway
- e) Ribose → Ribitol pathway

Ans : b

3) Patient X cannot digest milk properly but has no problem with fruits and vegetables. However, when given lactose-free milk fortified with individual monosaccharides, they still experience issues. Which component is problematic?

- a) Free glucose
- b) Free fructose
- c) Free galactose
- d) Sucrose additive
- e) Mannose supplement

Ans : c

4) During DNA synthesis, a cell requires large amounts of deoxyribose. If ribose availability is normal but deoxyribose is insufficient, which step in sugar modification is likely impaired?

- a) Oxidation of hydroxyl groups
- b) Reduction of hydroxyl groups
- c) Replacement of OH with H
- d) Addition of amino groups
- e) Formation of glycosidic bonds

Ans : c

5) Two patients consume the same amount of carbohydrates. Patient A feels energetic quickly, while Patient B experiences sustained energy over hours. Patient A likely consumed \_\_\_\_, while Patient B consumed \_\_\_\_.

- a) Starch; glucose
- b) Glucose; starch
- c) Fructose; galactose
- d) Sucrose; cellulose
- e) Maltose; lactose

Ans : b

6) An enzyme shows high activity with glucose, moderate activity with fructose, but no activity with amino acids. When the same enzyme is tested with galactose, it shows moderate activity. What type of specificity does this enzyme demonstrate?

- a) Absolute specificity
- b) Group specificity
- c) Linkage specificity
- d) No specificity
- e) Regulatory specificity

Ans : b

7) Which type of glycosidic bond cannot be hydrolyzed by human digestive enzymes?

- a)  $\alpha$ -1,4 glycosidic bond
- b)  $\alpha$ -1,6 glycosidic bond
- c)  $\beta$ -1,4 glycosidic bond
- d)  $\alpha$ -1,2 glycosidic bond
- e)  $\beta$ -1,6 glycosidic bond

Ans : c

7) In a controlled lab experiment, two groups of lab rats were fed different diets for two weeks.

- Group A received 50g of carbohydrates daily.
- Group B received 50g of lipids (fats) daily.

At the end of the experiment, scientists measured the energy levels (in kilocalories) generated by both groups. Assuming complete metabolism and no other energy sources, Which of the following outcomes best supports the experimental hypothesis

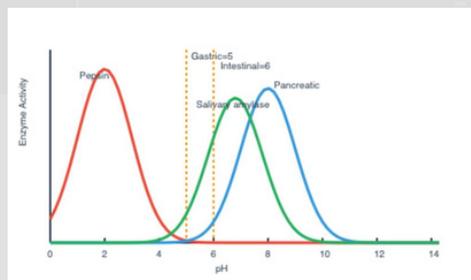
- A. Group A produced 200 kcal, and Group B produced 250 kcal
- B. Group A produced 400 kcal, and Group B produced 800 kcal
- C. Group A produced 600 kcal, and Group B produced 600 kcal
- D. Group A produced 800 kcal, and Group B produced 400 kcal
- E. Group A produced 700 kcal, and Group B produced 1000 kcal

Ans : b

8) A patient has digestive problems. Gastric PH = 5.0 and intestinal PH = 6.0

Which enzyme will be least affected by?

- a) pepsin
- b) pancreatic enzymes
- c) salivary amylase
- d) all will be equally affected
- e) can't be determined from the graph

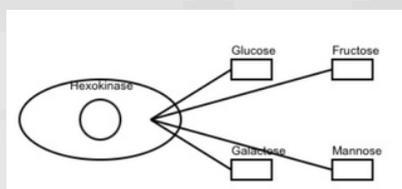


Ans : c

9) The diagram below shows enzyme specificity types .

Which type is represented?

- a) Absolute specificity
- b) Group specificity
- c) linkage specificity
- d) No specificity
- e) Regulatory specificity



Ans : b

# لجبت

## طب الأسنان

*Studying is not just about passing exams or getting good grades; it's about shaping your mind, building your character, and preparing yourself to face a world full of challenges with wisdom, confidence, and resilience.*