

1.4 Carbohydrates

Name: _____ Class: _____ Date: _____

Total: 11 marks

KEY WORDS cellulose 纤维素 • polysaccharides 多糖 • monosaccharides 单糖
• carbohydrates 碳水化合物 • monomers 单体

Objective

Build the skills to answer exam questions on **carbohydrates**.

You must be able to:

- identify **monosaccharides** 单糖, disaccharides, and **polysaccharides** 多糖
- state the functions (energy storage and structure)
- link structure to function (starch, glycogen, cellulose)

1 Worked examples

Study these first. Each one shows the method for a question type used later — follow the steps and you can do the Practice and Exam-style questions yourself.

■ The sugar building blocks

Carbohydrates are made of sugar monomers (**monosaccharides**, such as glucose). Two joined make a disaccharide; many joined make a **polysaccharide**.

■ Storage polysaccharides

Starch (plants) and **glycogen** (animals) store glucose for energy. Their branched/coiled shapes pack many glucose units for quick release.

■ Structural polysaccharides

Cellulose (plant cell walls) is made of glucose linked in a way that forms strong, straight fibers — providing support, not easily digested.

■ Structure sets function

The **same** glucose monomer builds both starch (storage) and cellulose (structure); the **difference is the type of bond**, which changes the shape and therefore the role.

2 Practice

Now apply the methods above.

2.1 Name the monomer of carbohydrates. [1]

2.2 State one storage polysaccharide and one structural polysaccharide. [2]

2.3 Which polysaccharide makes up plant cell walls? [1]

3 Exam-style questions

3.1 The monomer that makes up starch, glycogen, and cellulose is [1]

A	B
C	D

A glucose

B an amino acid

C a nucleotide

D glycerol

3.2 Starch and cellulose are both polymers of glucose but have different functions.

(a) State the function of each. [2]

(b) Explain how they can differ if they share the same monomer. [2]

3.3 Explain why glycogen's branched structure suits its role in animals. [2]