Oxford Cambridge and RSA

GCSE Biology A (Gateway)

J247/03 B1-B3 and B7 Higher (Higher Tier)

Question Set 15

1 Yeast cells can respire anaerobically.

(a) Complete the word equation for **anaerobic** respiration in yeast.

glucose ⟶ .....ethanol..... + ...carbon dioxide.....

[1]

(b) Write down **two** ways in which anaerobic respiration in yeast cells is different from anaerobic respiration in human muscle cells.

[2]

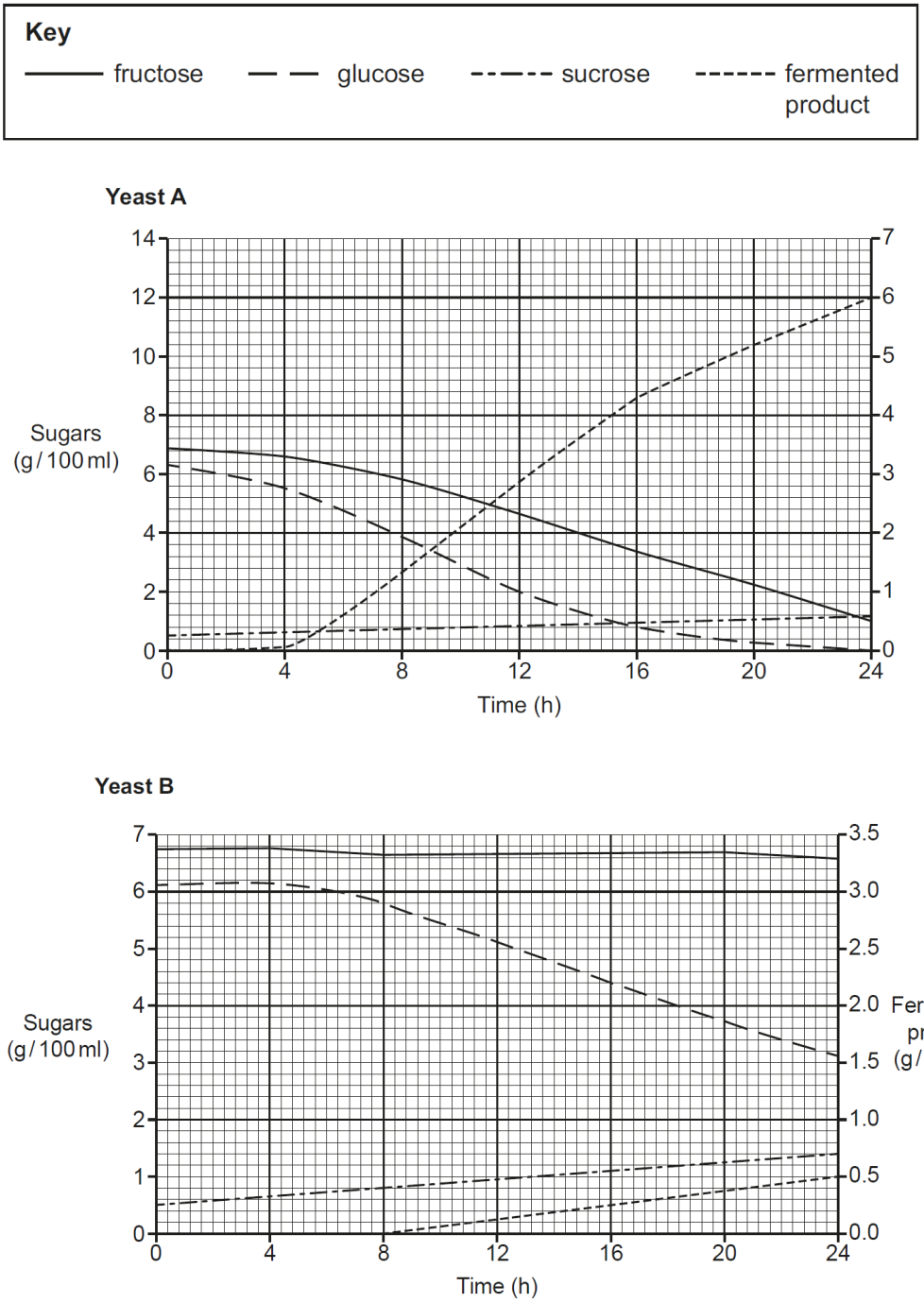
1. Ethanol is produced in yeast cells but not in human muscle cells (produces lactic acid).
2. Carbon dioxide is produced in yeast cells but not in human muscle cells.

(c) Date fruits contain three different sugars, fructose, glucose and sucrose.

Different strains of yeast can ferment different sugars to produce a fermented product.

Scientists investigate how two different strains of yeast, **A** and **B**, ferment sugars inside datefruits.

Look at their results.



(i) Which sugar is **not** fermented by either strain of yeast?

Tick (✓) **one** box.

- Fructose ✓
- Glucose
- Sucrose

[1]

(ii) After 24 hours, how many times higher is the fermented product yield of yeast **A** compared to yeast **B**?

$6 \div 0{\cdot}5 = 12$ ∴ 12 times higher **[2]**

(iii) Which sugar would increase fermentation the **most** if added to either yeast **A** or yeast **B**?

Tick (✓) **one** box.

Fructose	
Glucose	✓
Sucrose	

[1]

(iv) Fermented dates are used to supply both fructose and fermented product.

Explain why it would be best to use yeast **B** to ferment dates to supply both fructose and fermented product. **[2]**

Fructose is only fermented to a small extent by yeast B, reducing from 6·75 to 6·6 g/100ml, whereas it is fermented almost completely in 24 hours by yeast A. To supply both fructose and fermented product, yeast B is thus most appropriate. Although less fermented product is produced by yeast B (0·5 in comparison to 6 g/100ml), it would break down the other sugars in dates without completely fermenting the fructose.

Total Marks for Question Set 15: 9