

Respiration

Question Paper 6

Level	International A Level
Subject	Biology
Exam Board	CIE
Topic	Energy and respiration
Sub Topic	Respiration
Booklet	Theory
Paper Type	Question Paper 6

Time Allowed : 78 minutes

Score : / 65

Percentage : /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

1 (a) Fig. 8.1 outlines some steps in glucose metabolism in mammalian cells.

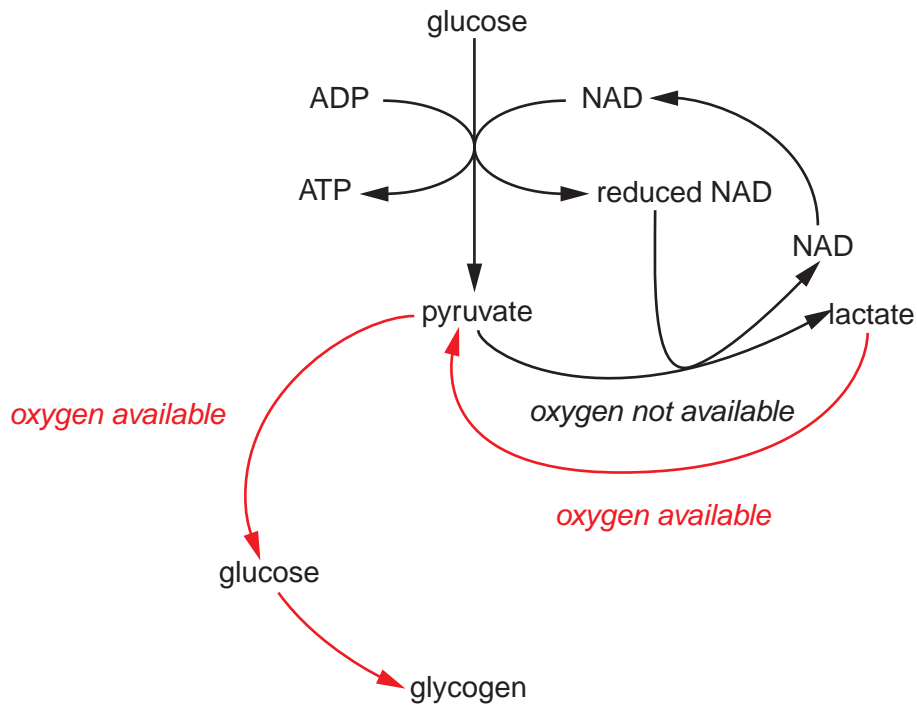


Fig. 8.1

With reference to Fig. 8.1:

- (i) name the part of the cell where glucose is converted to pyruvate
 [1]
- (ii) explain why, in the absence of oxygen, pyruvate needs to be converted to lactate

 [2]
- (iii) name the enzyme responsible for the conversion of pyruvate to lactate
 [1]
- (iv) name the type of reaction **and** the type of bonds formed when glucose molecules are used to make glycogen.
 reaction
 bonds [2]

- (b) Describe how anaerobic respiration in yeast cells differs from anaerobic respiration in mammalian cells.

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..... [4]

- (c) The respiratory quotient (RQ) is used to determine the type of respiratory substrate, such as carbohydrate or lipid, which an organism uses at any one time.

- (i) State how the RQ is calculated.

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.....
..... [2]

- (ii) State the typical RQ values obtained from the respiration of carbohydrates and lipids.

carbohydrate
lipid..... [2]

- (iii) Suggest what would happen to the RQ value when respiration becomes anaerobic.

..... [1]

[Total: 15]

- 2 During the process of glycolysis, glucose is converted by a series of steps into two molecules of pyruvate.

Fig. 6.1 outlines glycolysis.

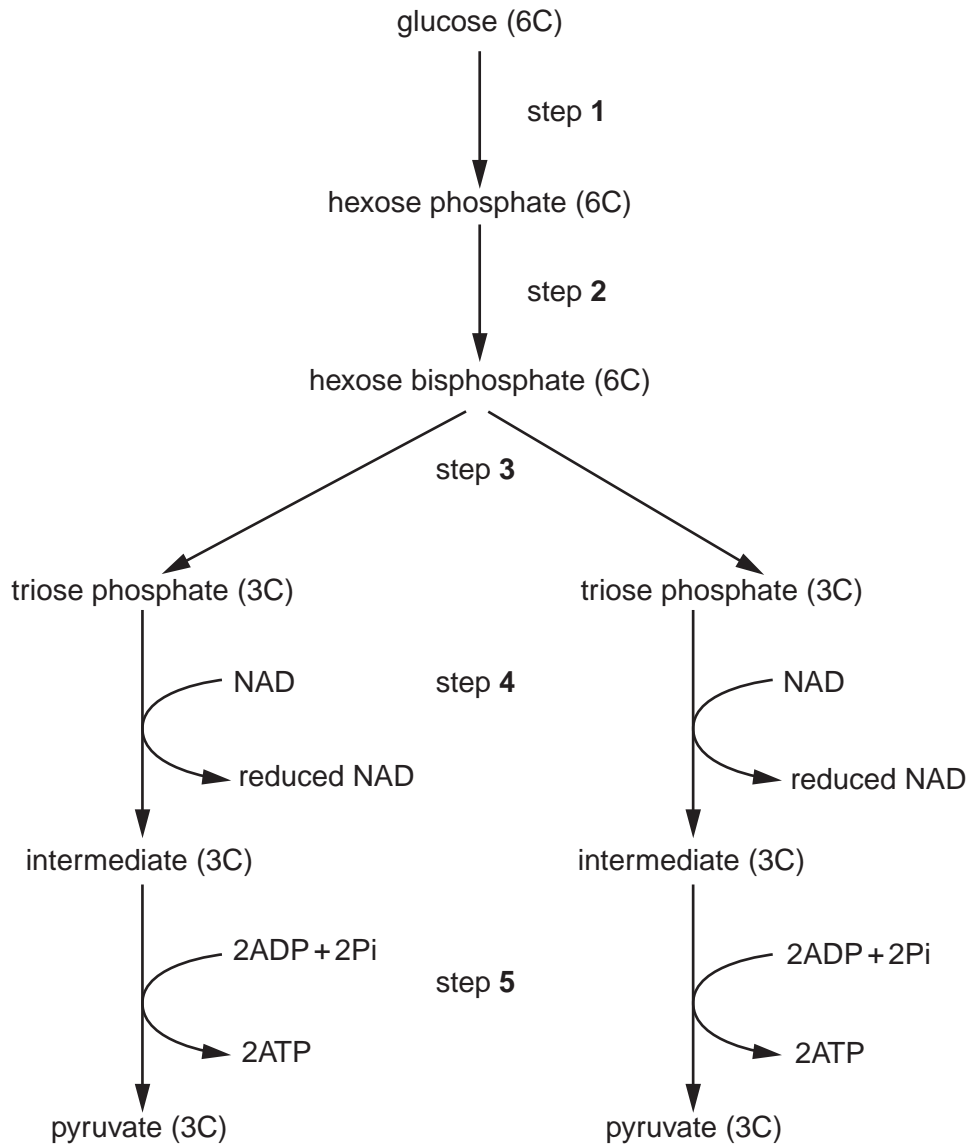


Fig. 6.1

(a) With reference to Fig. 6.1, state the process occurring at:

- (i) steps 1 and 2[1]
- (ii) step 3[1]
- (iii) step 4.[1]

(b) Explain why glucose needs to be converted to hexose biphosphate.

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..... [2]

(c) Pyruvate can enter a mitochondrion when oxygen is present.

Describe what happens to pyruvate in a yeast cell when oxygen is **not** present.

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..... [4]

[Total: 9]

- (c) Explain why anaerobic respiration results in a small yield of ATP compared with aerobic respiration.

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..... [3]

[Total: 11]

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