## 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*	А	В	С	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.

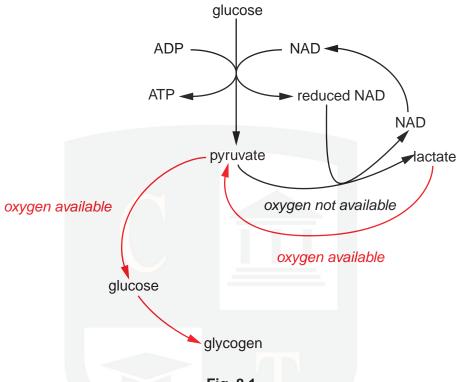


Fig. 8.1

With reference to Fig. 8.1:

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

(b)		cribe how anaerobic respiration in yeast cells differs from anaerobic respiration in mmalian cells.
		[4]
(c)		respiratory quotient (RQ) is used to determine the type of respiratory substrate, has carbohydrate or lipid, which an organism uses at any one time.
	(i)	State how the RQ is calculated.
		[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.

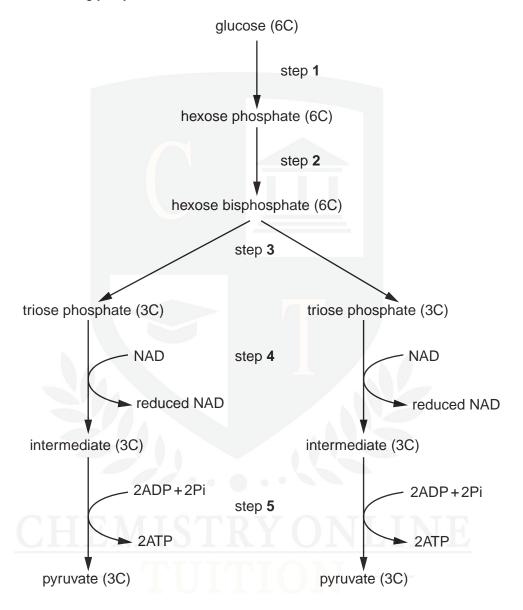


Fig. 6.1

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

(1)	steps 1 and 2	[1]
(ii)	step 3	.[1]
(iii)	step <b>4</b>	[1]

(b)	Explain why glucose needs to be converted to hexose bisphosphate.
	[2]
(c)	Pyruvate can enter a mitochondrion when oxygen is present.
	Describe what happens to pyruvate in a yeast cell when oxygen is <b>not</b> present.
	[4]
	[Total: 9]

(a) Fig. 6.1 outlines anaerobic respiration in yeast cells.

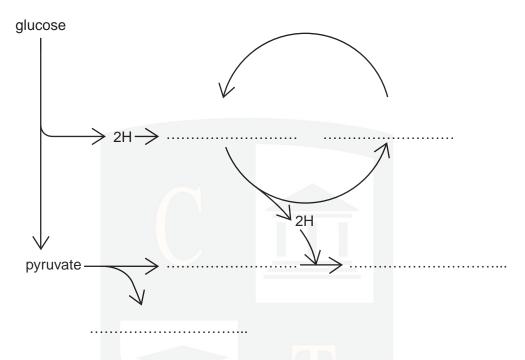


Fig. 6.1

Complete Fig. 6.1 by writing in the missing compounds.

[5] (b) Describe how anaerobic respiration in mammalian cells differs from anaerobic respiration in yeast cells.

(c)	Explain why anaerobic respiration results in a small yield of ATP compared with aerobic respiration.
	[3]
	[Total: 11]

4	(a)	Outl	ine th	e ne	ed fo	or en	ergy ii	n living (	orga	nisms usi	ng na	med	exan	nples.		[9]
	(b)		olain ostrat		differ	ent	energ	y value:	s of	carbohyo	drate,	lipid	and	protein	as	respiratory [6]
																[Total: 15]
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[9]	(a) Outline the main features of the Krebs cycle.
[6]	(b) Explain the role of NAD in aerobic respiration.
[Total: 15]	
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