Respiration

Question Paper 3

Level	A Level
Subject	Biology
Exam Board	OCR
Module	Communication, homeostasis and energy
Topic	Respiration
Booklet	Question Paper 3

Time allowed: **41 minutes**

Score: **/30**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E
>69%	56%	50%	42%	34%	26%

Question 1

Organisms require energy in order to carry out essential metabolism. Organisms are able to release energy by carrying out both aerobic and anaerobic respiration.

(a) Complete the table to compare **anaerobic** respiration in mammals and yeast. **[3]**

	mammal	yeast
name of hydrogen acceptor after glycolysis		
is CO_2 produced?		
name of final product		

(b) Suggest **one** benefit of anaerobic respiration to an organism. **[1]**

[Total: 4]

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Question 2

Fig. 3.1 represents some of the reactions that take place in a leaf cell of a flowering plant.

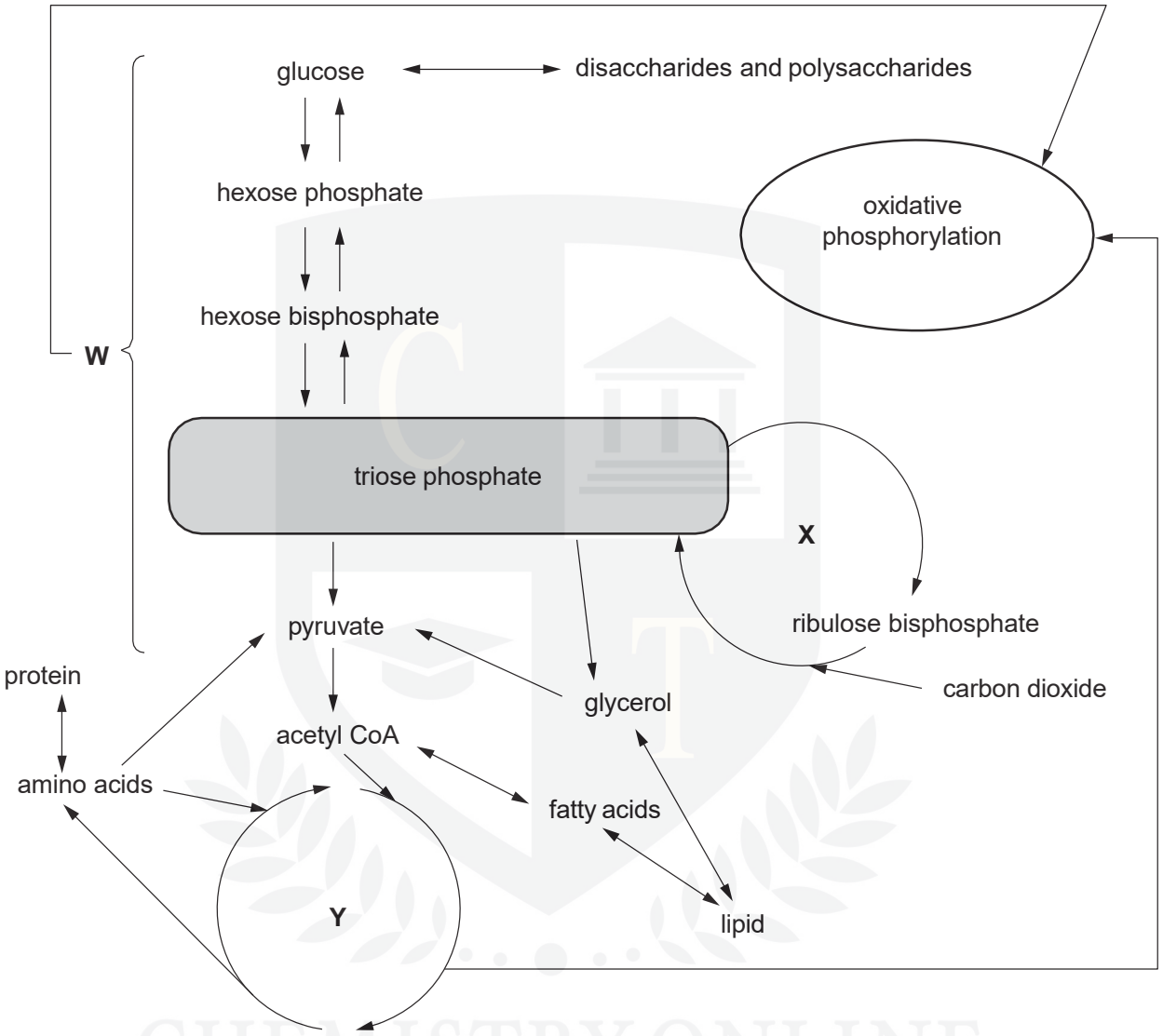

Fig. 3.1

(a) (i) Name the reaction pathways indicated by the letters **W**, **X** and **Y**. **[3]**

W

X

Y

(ii) Triose phosphate is a compound that is central to the metabolism of this cell.

Explain how **the three** reaction pathways (**W**, **X** and **Y**) are able to work independently of each other in the same leaf cell.

[3]

(iii) Identify which of **these three** reaction pathways (**W**, **X** and **Y**) are associated with: **[2]**

photosynthesis

aerobic respiration

(iv) Fig. 3.1 shows that compounds from two of the three pathways are used in oxidative phosphorylation.

State the products of oxidative phosphorylation. **[2]**

(b) Explain the role of coenzymes in this leaf cell, with respect to the metabolic reactions outlined in Fig. 3.1.

[3]

[Total: 13]

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Question 3

(a) Fig. 2.1 represents the first stage of respiration.

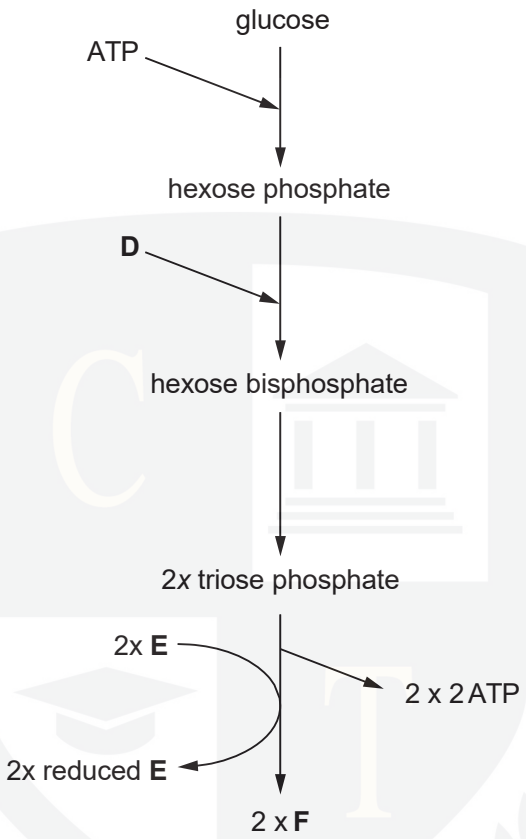

Fig. 2.1

(i) Name the stage represented by Fig. 2.1. **[1]**

(ii) State precisely where this stage takes place in the cell. **[1]**

(iii) Identify the compounds **D**, **E** and **F**. **[3]**

D

E

F

(b) Compound **F** does not proceed to the link reaction in **anaerobic** conditions.

Describe the fate of compound **F** during anaerobic respiration in an animal cell **and** explain the importance of this reaction.

[*5*]

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(c) Fig. 2.2 is a drawing of a common seal, *Phoca vitulina*, an aquatic mammal.

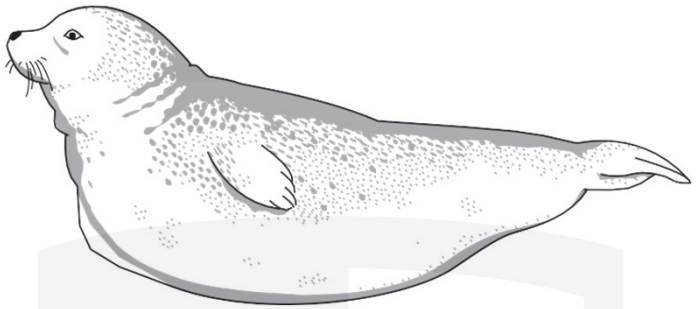

Fig. 2.2

The seal comes to the surface of the water to obtain air and it can then stay underwater for over 20 minutes.

Fig. 2.3 shows a seal at the surface of the water and Fig. 2.4 shows the same animal then submerging again.

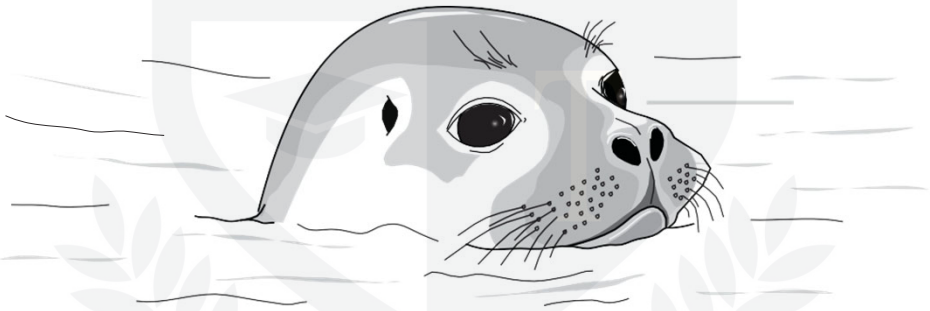

Fig. 2.3

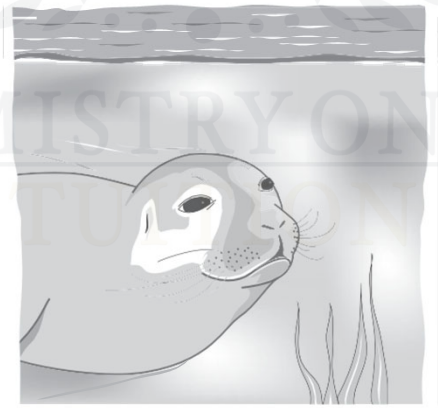

Fig. 2.4

Suggest how the seal is adapted to respire for such a long time underwater. **[3]**

[Total: 13]