

# 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 <sub>2</sub> produced?		
name of final product		

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

[Total: 4]

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

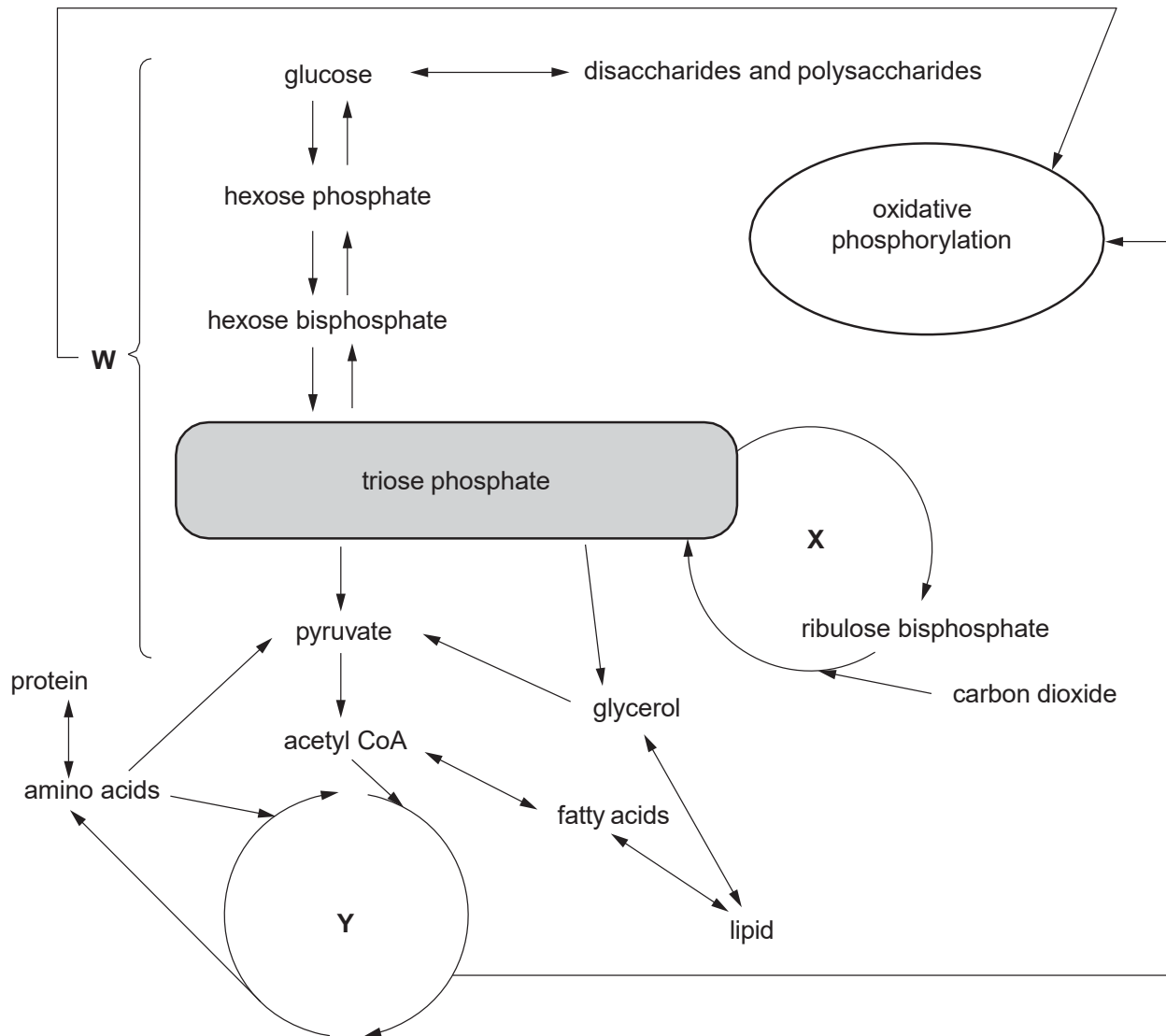


Fig. 3.1

(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.

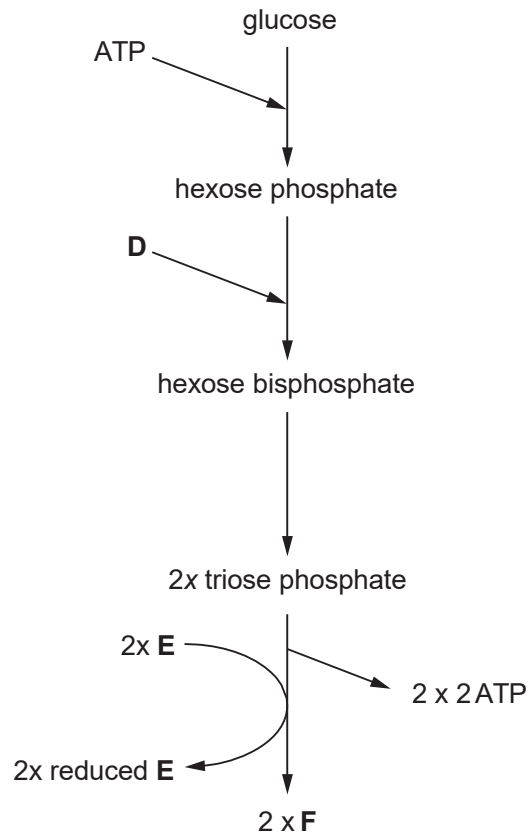
State the products of oxidative phosphorylation. [2]

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

[3]

[Total: 13]

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



**Fig.2.1**

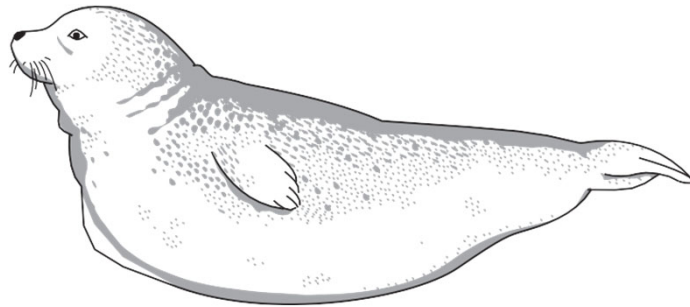
- (i) Name the stage represented by Fig. 2.1. [1]
- (ii) State precisely where this stage takes place in the cell. [1]
- (iii) Identify the compounds **D**, **E** and **F**. [3]
- D**
- E**
- F**

(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]

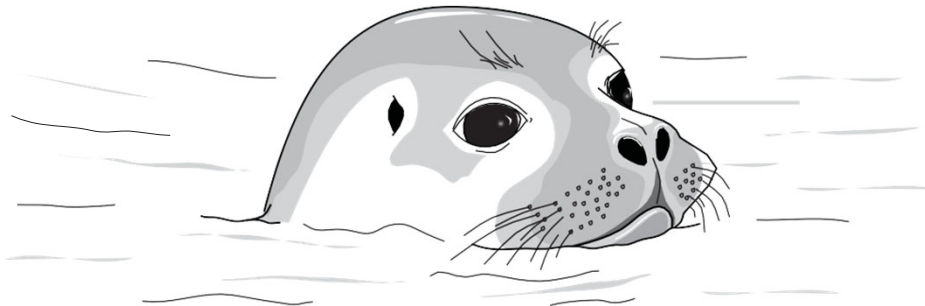
(c) Fig. 2.2 is a drawing of a common seal, *Phoca vitulina*, an aquatic mammal.



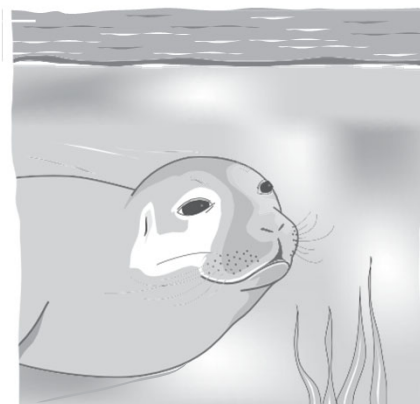
**Fig. 2.2**

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]**