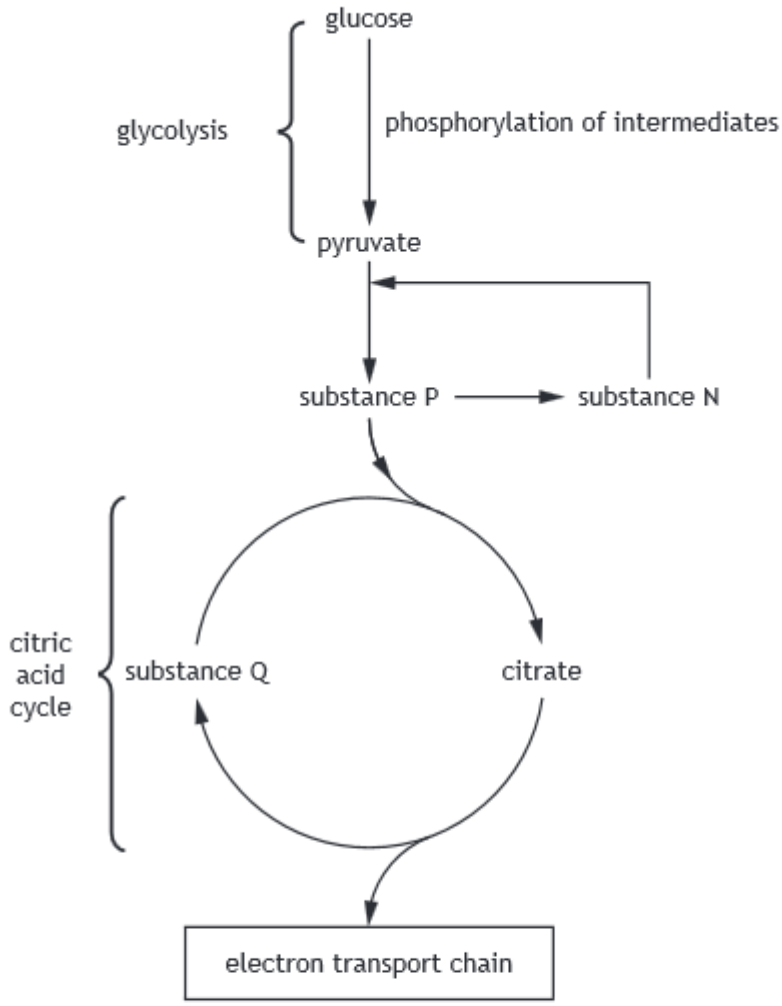
Cellular Respiration

5. The diagram shows some stages in the aerobic respiration of glucose.



(a) Name substances P and Q. **2**

Substance P _____

Substance Q _____

(b) Explain why the phosphorylation of intermediates in glycolysis is referred to as an energy investment stage. **2**

_____

_____

(c) Describe the role of the coenzyme NAD. **2**

(d) People who suffer from chronic fatigue syndrome have mitochondria in which some of the proteins embedded in the inner mitochondrial membrane are damaged.

Explain how this might result in the tiredness that is a feature of this condition. **2**

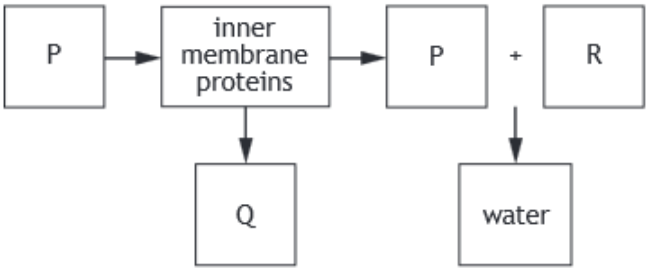
1. The following substances are products of fermentation.

1 ATP
2 Lactate
3 Carbon dioxide

Which of these are products of fermentation in human muscle cells?

A 2 only
B 1 and 2 only
C 2 and 3 only
D 1, 2 and 3

2. The diagram represents a stage of cellular respiration that occurs in a mitochondrion.



Which row in the table identifies substances P, Q and R?

	Substances		
	P	Q	R
A	ATP	hydrogen ions and electrons	oxygen
B	hydrogen ions and electrons	oxygen	ATP
C	oxygen	ATP	hydrogen ions and electrons
D	hydrogen ions and electrons	ATP	oxygen

A Write notes on the citric acid cycle of cell respiration. **7**

11. Stages of aerobic respiration are shown below.

1 Glycolysis
2 Citric acid cycle
3 Electron transfer chain

Which stage(s) involve(s) **both** phosphorylation of intermediates and generation of ATP?

A 1 only

B 3 only

C 1 and 2 only

D 1 and 3 only

12. Which row in the table below identifies a stage of aerobic respiration, its site and an event which occurs during that stage?

	Stage	*Site*	*Event*
A	electron transfer chain	inner mitochondrial membrane	carbon dioxide is released
B	electron transfer chain	matrix of mitochondrion	hydrogen ions combine with oxygen
C	citric acid cycle	inner mitochondrial membrane	hydrogen ions combine with oxygen
D	citric acid cycle	matrix of mitochondrion	carbon dioxide is released