9 **(a)** In aerobic conditions, pyruvate that has formed during glycolysis enters the mitochondrion and takes part in the link reaction.

Name the **two** coenzymes involved in the link reaction.

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[2]

(b) Enzymes play an important role in the functioning of the Krebs cycle.

The enzymes in the Krebs cycle can be affected by the presence of hydrogen peroxide. Hydrogen peroxide is a product of some of the reactions that occur within the mitochondrion.

An investigation was carried out to measure the effect of two different concentrations of hydrogen peroxide on an enzyme of the Krebs cycle. The activity of the enzyme was measured over 10 minutes when exposed to the two different concentrations of hydrogen peroxide.

The results are shown in Fig. 9.1.

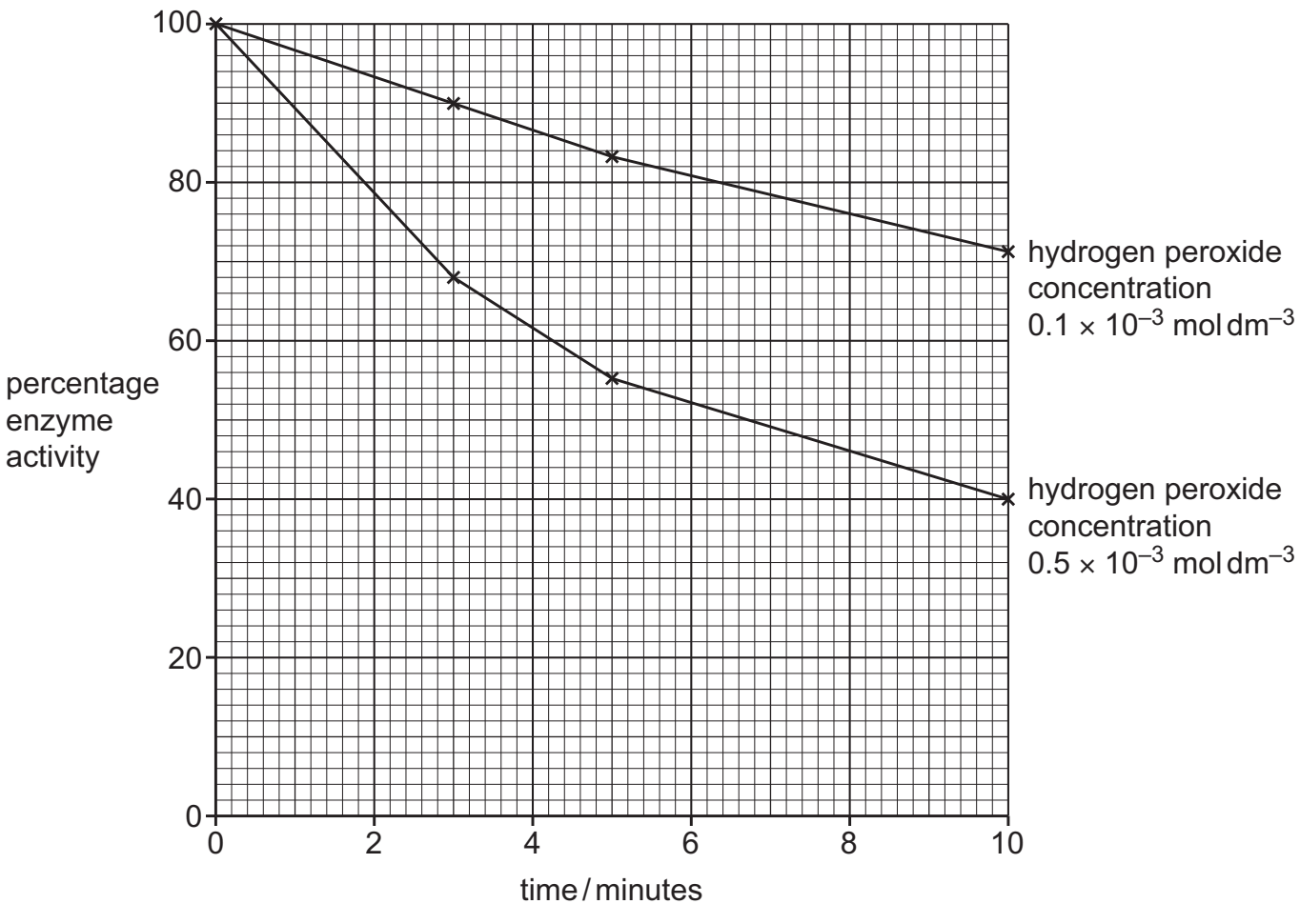

Fig. 9.1

Describe the effect shown in Fig. 9.1 of hydrogen peroxide concentration on the activity of the Krebs cycle enzyme.

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..... [3]

(c) Reduced NAD and reduced FAD are produced during the Krebs cycle. They carry hydrogen to the inner mitochondrial membrane where oxidative phosphorylation occurs.

The first two steps in oxidative phosphorylation are:

1. Hydrogen atoms split into protons and electrons.
2. Electrons move along the electron transport chain, releasing energy.

Outline the steps that occur to complete oxidative phosphorylation.

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..... [4]

(d) Fig. 9.2 shows the oxygen consumption of a person who is carrying out a fast-running exercise.

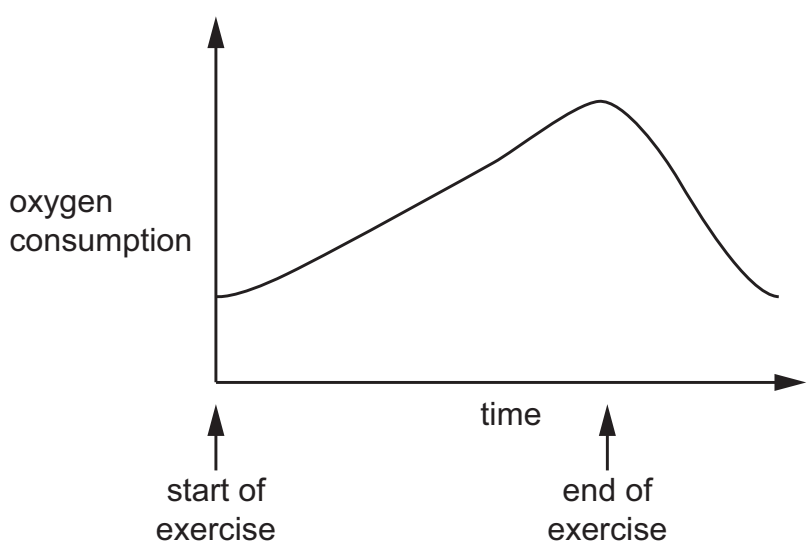

Fig. 9.2

Suggest why the oxygen consumption takes time to return to normal after exercise.

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..... [3]

[Total: 12]