

1 Rice, *Oryza sativa*, is a crop plant that has adapted to grow in flooded fields.

Fig. 1.1 outlines the effects on rice plants of growing in flooded fields.

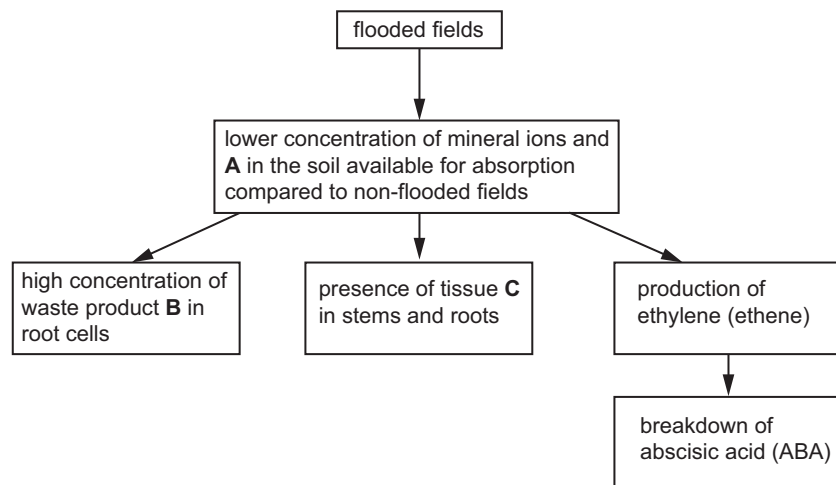


Fig. 1.1

(a) With reference to Fig. 1.1, name:

substance A

substance B

tissue C

[3]

(b) Describe how root cells respond to a high concentration of substance B.

.....

 [1]

(c) Gibberellin is involved in the growth of stems in rice plants.

Fig. 1.2 shows the effect of gibberellin concentration on the length of stems in rice plants.

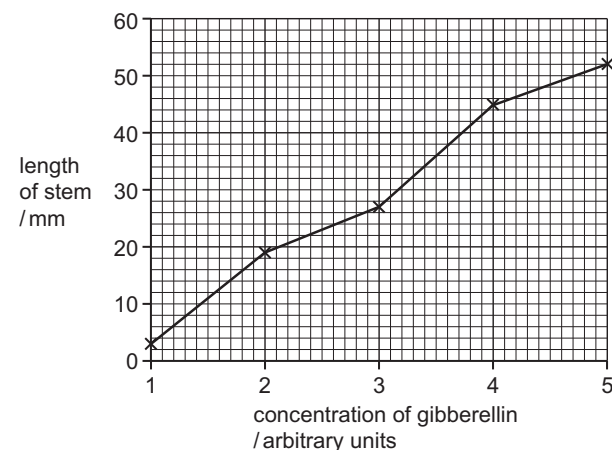


Fig. 1.2

(i) Describe the relationship shown in Fig. 1.2.

.....

 [2]

(ii) ABA in rice plant cells inhibits the action of gibberellin.

With reference to Fig. 1.1 and Fig. 1.2, explain the importance of ethylene production for the growth of rice plants in flooded fields.

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 [3]

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

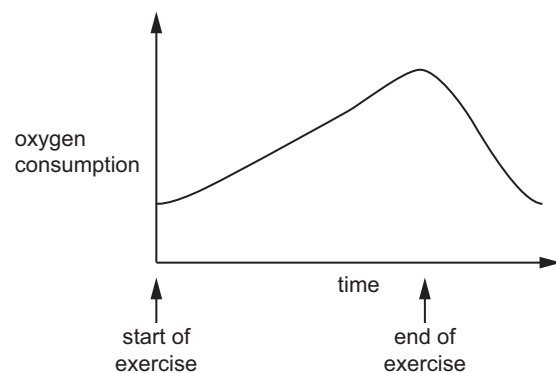


Fig. 9.2

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

[3]

[Total: 12]

- 1 Organisms need a source of energy for many cellular processes. Respiration involves the release of energy from energy-rich molecules for the synthesis of ATP molecules. ATP is described as the energy currency of cells.

(a) Name **two** energy-rich molecules that enter the respiration pathway to synthesise ATP.

[2]

(b) Fig. 1.1 shows a molecule of ATP.

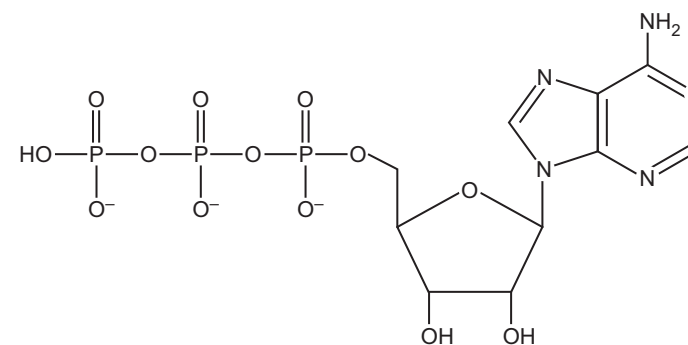


Fig. 1.1

Explain the features of ATP that make it suitable to be the universal energy currency of cells.

[4]

- (b) A student determined the rate of respiration of woodlice at a temperature of 5 °C and at a temperature of 20 °C.

Predict **and** explain how the rate of respiration of woodlice differs at 5 °C compared to 20 °C.

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..... [1]

[Total: 5]