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- 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.

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..... [2]

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

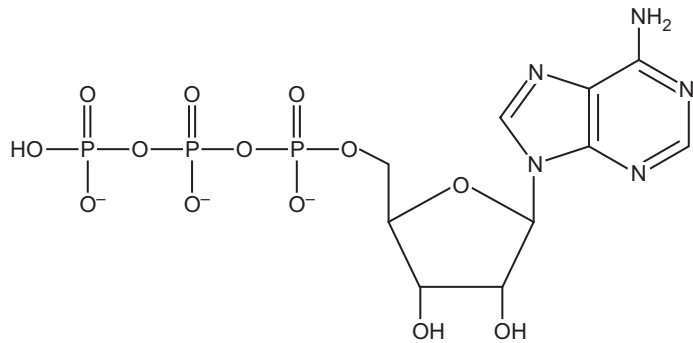


Fig. 1.1

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

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..... [4]

- (c) Identify the type of phosphorylation reaction to synthesise ATP that occurs during glycolysis and the Krebs cycle.

..... [1]

- (d) (i) Pyruvate moves into the matrix of the mitochondrion only when a particular inorganic molecule is present.

Name the inorganic molecule that must be present in the cell for pyruvate to enter the matrix of the mitochondrion.

..... [1]

- (ii) Explain how the presence of the inorganic molecule named in (d)(i) affects the ATP yield from respiration.

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..... [3]

[Total: 11]