

Respiration

Question Paper

Level	Pre U
Subject	Biology
Exam Board	Cambridge International Examinations
Topic	The Cell
Sub Topic	Respiration
Booklet	Question Paper

Time Allowed: 59 minutes

Score: /49

Percentage: /100

(ii) Describe an example of ATP acting as an ‘energy currency’.

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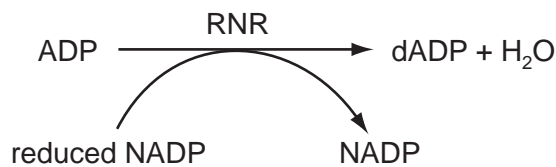
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..... [2]

(b) The enzyme ribonucleotide reductase (RNR) is needed for DNA synthesis. The enzyme catalyses the reaction in which adenosine diphosphate is converted to deoxyadenosine diphosphate (dADP).



(i) State how adenosine diphosphate differs from deoxyadenosine diphosphate.

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..... [1]

(ii) Suggest how dADP is used in the synthesis of DNA.

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..... [2]

- (c) Excess adenosine is deaminated to deoxyinosinol in a reaction catalysed by the enzyme, adenosine deaminase (ADA), which consists of one polypeptide.

Fig. 21.2 shows a ribbon model of ADA.



Fig. 21.2

Describe the structure of the enzyme, ADA, as shown in Fig. 21.2. You may add labels to the diagram to help your answer if you wish.

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A deficiency of ADA is a cause of severe combined immunodeficiency syndrome (SCID).

Children with non-functional adenosine deaminase are at risk of infections as a toxic product builds up inside T lymphocytes (T cells) and kills these cells.

(d) Outline the roles of named T lymphocytes in the immune system.

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..... [3]

(e) Gene therapy has been used to treat SCID.

Explain the problems encountered in using gene therapy as a treatment for genetic diseases, such as SCID.

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..... [4]

[Total: 19]

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