InkBiology

QUESTION WORKBOOK

Spending ATP to make ATP: glycolysis and the link reaction

Respiration and cellular energy · Unit B12

AQA 3.5.2 · OCR A 5.2.2 · Edexcel A Topic 7.3–7.4 · CAIE 12.1, 12.2

6 questions · 20 marks

NAVY SCREEN EDITION

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SECTION A · Short, 1 to 2 marks

A1 State where in a cell glycolysis takes place, and state where the link reaction takes place. [2]

SECTION B · Standard, 3 to 5 marks

B1 Describe what happens during glycolysis, using the terms phosphorylation, lysis and oxidation, and give the net yield per molecule of glucose. [4]

B2 Eight molecules of glucose pass through glycolysis in a cell. Calculate the number of molecules of ATP produced, the number used, the net gain in ATP, and the number of molecules of reduced NAD formed. [4]

B3 Describe what happens to a molecule of pyruvate during the link reaction, and give the products of the link reaction per molecule of glucose. [4]

B4 Explain why ATP is a suitable immediate source of energy for a cell, when the complete oxidation of glucose releases roughly 2880 kJ per mole. [3]

B5 A mature red blood cell has neither a nucleus nor any mitochondria. Suggest how such a cell still makes ATP, and suggest what limits the amount of ATP it can obtain from each molecule of glucose. [3]