C5 Energy Changes

Can you…?	☺	😐	☹
5.1.1 Energy transfer during exothermic and endothermic reactions			
Recall that Energy is conserved in chemical reactions. The amount of energy in the universe at the end of a chemical reaction is the same as before the reaction takes place. If a reaction transfers energy to the surroundings the product molecules must have less energy than the reactants, by the amount transferred.			
Describe what an exothermic reaction is and give examples.			
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State every day uses of exothermic reactions.			
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Distinguish between exothermic and endothermic reactions on the basis of the temperature change of the surroundings.			
Evaluate uses and applications of exothermic and endothermic reactions given appropriate information.			
5.1.2 Reaction profiles			
State what must occur for particles to react.			
Explain what the activation energy is.			
Recall that reaction profiles can be used to show the relative energies of reactants and products, the activation energy and the overall energy change of a reaction.			
Draw simple reaction profiles (energy level diagrams) for exothermic and endothermic reactions showing the relative energies of reactants and products, the activation energy and the overall energy change, with a curved line to show the energy as the reaction proceeds.			
Use reaction profiles to identify reactions as exothermic or endothermic.			
5.1.3 The energy change of reactions (HT only)			
Recall that during a chemical reaction energy must be supplied to break bonds in the reactants and energy is released when bonds in the products are formed.			
Recall that the energy needed to break bonds and the energy released when bonds are formed can be calculated from bond energies.			
State how the energy needed to break bonds and the energy released when bonds are formed differ in endothermic and exothermic reactions.			
Calculate the energy transferred in chemical reactions using bond energies supplied.			
5.2.1 Cells and batteries (Chemistry only)			
Recall that cells contain chemicals which react to produce electricity.			
State how a simple cell can be made.			

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State factors that affect the voltage produced by a cell.			
State what a battery is.			
Explain the difference between rechargeable and non-rechargeable cells.			
Recall that alkaline batteries are non-rechargeable.			
Interpret data for relative reactivity of different metals and evaluate the use of cells.			
5.2.2 Fuel cells (Chemistry only)			
Describe what a fuel cell is and how they function.			
State the equation for the overall reaction in a hydrogen fuel cell.			
Recall that hydrogen fuel cells offer a potential alternative to rechargeable cells and batteries.			
Evaluate the use of hydrogen fuel cells in comparison with rechargeable cells and batteries.			
Write the half equations for the electrode reactions in the hydrogen fuel cell. (HT only)			