

Topic 7 Energy From Fuels Homework

1. When using the equation below

$$E_h = -cm\Delta T$$

C stands for

- A the concentration of the solution
- B the colour of the fuel
- C the constant for specific heat capacity of water
- D the concentration of the fuel

2.

A reaction is exothermic if

- A energy is absorbed from the surroundings
- B energy is released to the surroundings
- C energy is required to start the reaction
- D there is no energy change.

3. When using the equation below

$$E_h = -cm\Delta T$$

m is measured in

- A kilograms of water
- B grams of water
- C kilograms of fuel
- D grams of fuel

4. The lowest temperature at which a hydrocarbon ignites is called its flash point.

<i>Hydrocarbon</i>	<i>Formula</i>	<i>Boiling point (°C)</i>	<i>Flash point (°C)</i>
hexene	C_6H_{12}	63	-25
hexane	C_6H_{14}	69	-23
cyclohexane	C_6H_{12}	81	-20
heptane	C_7H_{16}	98	-1
octane	C_8H_{18}	126	15

Using information in the table, identify the correct statement.

- A Octane will ignite at 0 °C.
B Hydrocarbons with the same molecular mass have the same flash point.
C The flash point of a hydrocarbon increases as the boiling point increases.
D In a homologous series the flash point decreases as the number of carbon atoms increases.
5. Petrol is a mixture of hydrocarbons.

The tendency of a hydrocarbon to ignite spontaneously is measured by its octane number.

	<i>Hydrocarbon</i>	<i>Octane number</i>
1	3-methylpentane	74.5
2	butane	93.6
3	pentane	61.7
4	2-methylpentane	73.4
5	hexane	24.8
6	methylcyclopentane	91.3

A student made the hypothesis that as the chain length of a hydrocarbon increases, the octane number decreases.

Which set of three hydrocarbons should have their octane numbers compared in order to test this hypothesis?

- A 1, 4, 6
B 1, 2, 4
C 2, 3, 5
D 3, 4, 5

6.

A reaction is endothermic if

- A energy is required to start the reaction
- B heat is released during the reaction
- C the temperature drops during the reaction
- D the temperature rises during the reaction.

7.

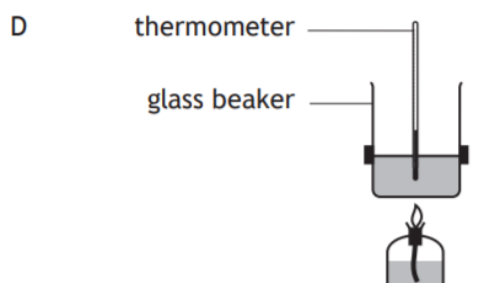
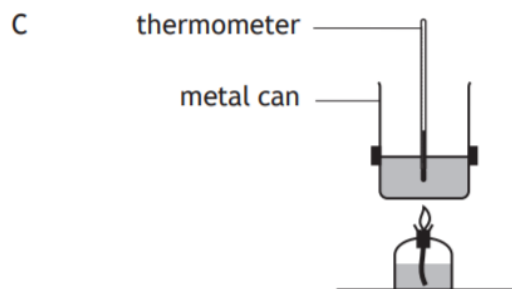
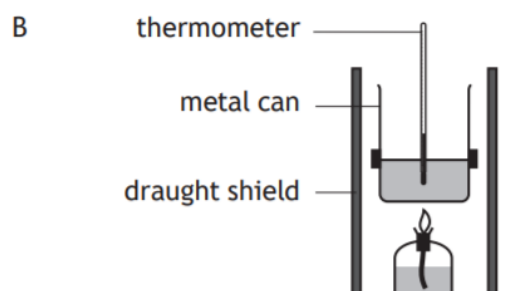
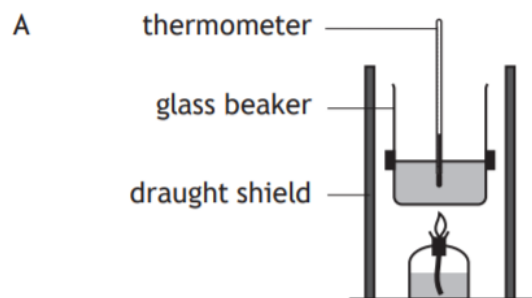
In which of the following reactions is oxygen used up?

- A Combustion
- B Neutralisation
- C Addition
- D Polymerisation

8.

A student set up an experiment to determine the quantity of energy released when a hydrocarbon burns.

Which of the following diagrams shows the apparatus which would produce the most accurate result?



9.

When using the equation below

$$E_h = -cm\Delta T$$

The ΔT part is calculated by

- A the change in time
- B the change in temperature of the water
- C the change in temperature of the fuel

10.

25 kg of water at 10°C is heated by burning some petrol.

Calculate the energy, in kJ, required to increase the temperature of the water to 30°C

- A -1045 kJ
- B -2090 kJ
- C +2090 kJ
- D +1045 kJ