

**M1.(a)** Methane

1

(b) Sea levels rising

1

(c) Burning of fossil fuels

1

(d) carbon dioxide concentration stayed constant from 1850 to 1900

1

carbon dioxide concentration slowly increased from 1900

1

carbon dioxide concentration increased more rapidly from 1965

*allow values from 1965 – 1975*

1

[6]

M2. (a) (i) bar drawn between 84 and 86 1

(ii) sulfur dioxide linked to acid rain 1

carbon particles linked to global dimming 1

(b) (i) any **one** from:  

- plants / trees absorb (carbon dioxide)
- coal 'locks up' (carbon dioxide)

1

(ii) it increases the amount (of CO<sub>2</sub>) 1

because carbon in coal (forms carbon dioxide)  
*accept because carbon / coal burns / reacts with oxygen (to produce CO<sub>2</sub>)*  
1

[6]

- M3.** (a) crust  
*ignore Earth's* 1
- core  
*ignore inner and/or outer* 1
- (b) bar chart 1
- all heights are correct  
*accept correctly plotted points* 1
- all labels are correct for nitrogen, oxygen and other / argon 1
- (c) (i) decomposed 1
- (ii) global warming 1

[7]

- M4.** (a) sulfur dioxide / SO<sub>2</sub>  
*allow sulfur oxide* 1
- (b) global dimming 1
- (c) oxygen / O<sub>2</sub> 1
- (d) (oil is a) limited resource / finite / non-renewable  
*accept running out of oil or wood is sustainable*  
*accept (burning oil) increases amount of carbon dioxide in the atmosphere / global warming or releases locked up carbon / global dimming / acid rain*  
*accept the oil (may become) too expensive* 1
- (e) carbon dioxide produced (from burning wood)  
*ignore global warming* 1
- carbon dioxide used by plants / trees or for photosynthesis  
*if no other mark awarded*  
*allow carbon emissions used by plants / trees or for photosynthesis for 1 mark* 1

[6]

M5. (a) acid rain → sulfur dioxide 1

global warming → carbon dioxide 1

global dimming → carbon particles 1

(b) (i) oxygen 1

(ii) carbon monoxide 1

(c) (i) decreasing 1  
*accept running out / none left*

(ii) any **two** from: 1  
*it = coal*

- world needs (more) energy  
*accept population is increasing*  
*allow (greater) demand for coal / fuels / energy*
- plentiful supply  
*accept readily available*  
*allow coal will 'last longer'*
- (many) countries have coal
- easy to find / extract
- oil / gas is running out

*accept need to use less oil / gas*

*accept need to use it to replace oil / gas*

- cheap **or** cheaper than oil

2

[8]

- M6.** (a) curve of best fit drawn through  
or close to all of the points 1
- (b) (i) 313 1
- (ii) 1989 +/- 1 1
- (c) concentration / amount of carbon dioxide has increased 1
- recently the rate of increase is increasing 1

[5]

- M7.** (a) (i) sulfur dioxide /  $\text{SO}_2$  1
- (ii) global dimming 1
- (iii) carbon dioxide /  $\text{CO}_2$   
*ignore ozone* 1
- increases the levels (of carbon dioxide)  
*accept it is a greenhouse gas or causes global warming /  
 greenhouse effect* 1
- (b) gas / oil bar correct length 1
- coal bar correct length 1

[6]



M8. (a) hydrogen

*ignore formulae*

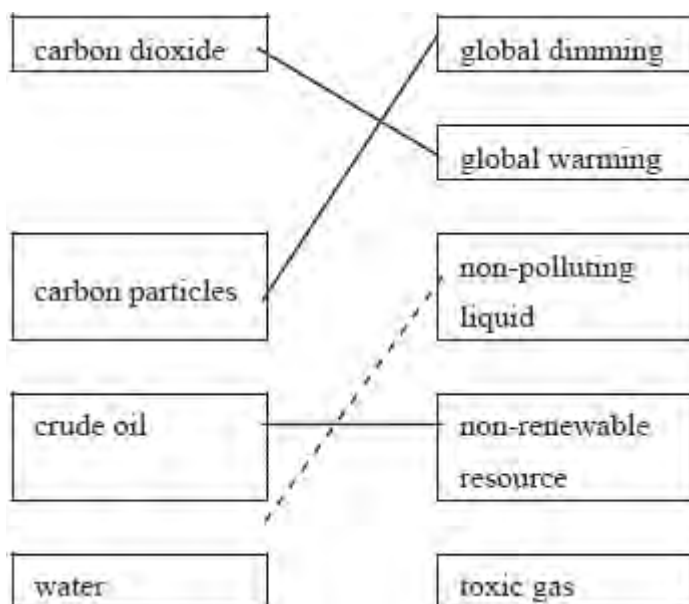
1

(b) any **two** from:

- different sized molecules / more or less (carbon) atoms (in molecules)  
*ignore different densities*
- fuels have different boiling points
- fuels condense at different temperatures

2

(c)



*all three correct = 3 marks*

*two correct = 2 marks*

*one correct = 1 mark*

3

[6]

**M9.** (a) respiration

combustion

*1 mark each*

2

(b) methane

water

*1 mark each*

*accept steam*

*do **not** accept natural gas for methane*

*do **not** accept hydrogen oxide*

2

(c) greenhouse effect (increased)

*accept (global) warming*

*accept polar ice caps melt*

*accept rising sea levels*

*accept problems with climatic change*

*do **not** accept changes to the weather **or** acid rain*

1

[5]