

# MARK SCHEME

# GCSE

## CHEMISTRY

## AQA - TRIPLE SCIENCE

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C7 - TEST 1

ORGANIC CHEMISTRY

Beginner

## Mark schemes

<b>1.</b>	(a) elements	1
	(b) (i) nucleus	1
	(ii) six	1
	(c) (i) CH <sub>4</sub>	1
	(ii) bond	1
	(d) (i) oxygen	1
	(ii) any <b>one</b> from:	
	• (water) does not pollute <i>accept no harmful gas(es)</i> <i>allow less pollution</i>	
	• (only) water is produced	
	• <u>no</u> carbon dioxide / monoxide (is produced) <i>accept <u>no</u> greenhouse gas(es) / effect <b>or</b> <u>no</u> global warming</i>	1
		<b>[7]</b>
<b>2.</b>	(a) substances/chemicals/compounds <i>gains 1 mark</i>	
	<i>but</i> gases (accept vapours) <i>gains 2 marks</i>	
	heat (accept light) <i>for 1 mark</i>	3
	(b) carbon dioxide/CO <sub>2</sub> water (vapour)/H <sub>2</sub> O sulphur dioxide/SO <sub>2</sub> ( <u>accept correct formulae</u> ) <i>in any <u>order</u> for 1 mark each</i>	3
		<b>[6]</b>

- 3.** (a) N<sub>2</sub> 1
- 20–21%  
*accept an answer in this range* 1
- Ar 1
- (b) (i) compound of carbon and hydrogen only  
*do not accept 'mixture'* 1
- (ii) Oxygen **or** O<sub>2</sub> 1
- (iii) exothermic  
*accept combustion **or** oxidation* 1
- (iv) **increases** greenhouse effect 1
- global warming **or** example 1

[8]

- 4.** (a) (i) any **one** from: 1
- bond / join (together)  
*ignore polymerisation / heat*
  - double bond opens
- (ii) any **one** from: 1
- heat / energy  
*ignore many processes / distillation / cracking / polymerisation*
  - cost of fuels / the crude oil
  - construction of the factory / plant
  - wages / salaries

(iii) any **two** from:

*ignore gases released / burning / habitats*

- non-biodegradable  
*accept remains a long time*
- landfill sites are filling up / limited  
*accept land / space used up*
- waste of a resource / could be recycled / reused  
*accept crude oil is running out*

2

(b) any **two** from:

- renewable / sustainable  
*ignore recycling*  
*ignore crude oil is running out*
- less fuel burned  
*accept less energy / heat needed*
- biodegradable
- natural resource
- plants absorb carbon dioxide

2

[6]

5.

(a) (iron (steel) is) strong

*allow abundant **or** easy to extract **or** cheap*  
*ignore other correct properties*

1

(b) less dense

*allow low mass*

1

more abundant

*accept copper is 'running out'*  
*allow copper is more expensive*  
*ignore other correct statements*

1

(c) (i) C<sub>2</sub>H<sub>4</sub>

1

(ii) double bond

1

(iii) poly(ethene)

1

[6]

6.

(a)  $C_5H_{12}$

1

(b) Alkanes

1

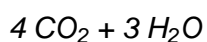
(c) (3)  $CO_2$

1

(4)  $H_2O$

1

*allow for 1 mark*



(d) contains hydrogen and carbon

1

(hydrogen and carbon) only

1

(e) (*diesel*)

produces more oxides of nitrogen

*allow converse answers in terms of petrol*

1

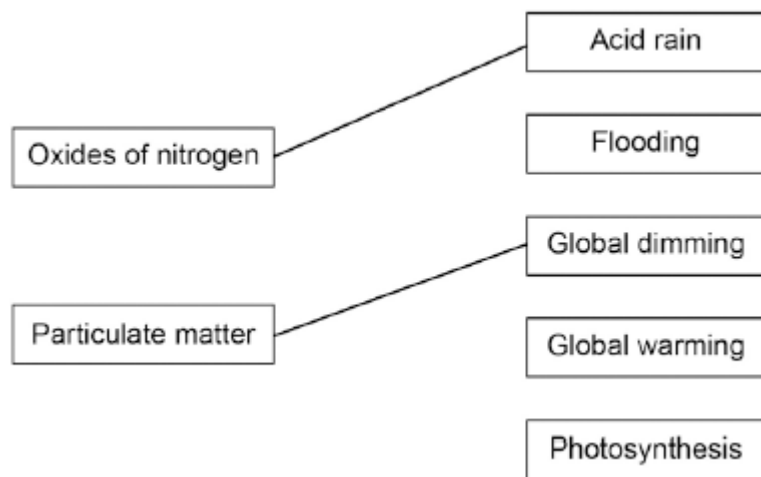
produces (more) particulate matter

1

produces less carbon dioxide

1

(f)



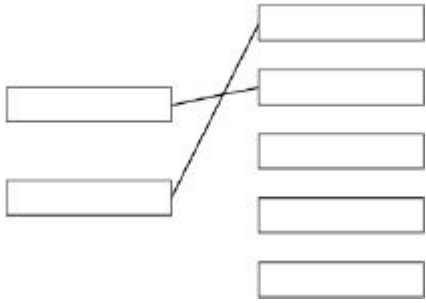
2

[11]

7.	(a) (i) (conical) flask	1
	(ii) measuring cylinder / pipette / burette	1
	(b) (i) any <b>two</b> from:	
	• so anomalous results could be identified / ignored	
	• so a mean / average could be taken	
	• (to improve) accuracy	2
	(ii) 19	1
	(iii) increases / gets longer / gets bigger	1
	(iv) anomalous / does not agree with other times for C <sub>10</sub> H <sub>22</sub>	1
	(v) any <b>one</b> from:	
	• shorter hydrocarbon used	
	• volume of hydrocarbon too small	
	• started timing late	
	• stopped timing too early / when liquid left in funnel	
	<i>must suggest why the result is <b>lower</b> than the others.</i>	
	<i>allow the temperature was higher <b>or</b> the students used a wider funnel.</i>	1
	(c) (i) flammable	1
	(ii) suitable safety precaution	1
	reason that links the safety precaution to the hazard symbols	
	eg:	
	• wear gloves	
	• (because) it is hazardous to health / harmful / toxic / irritant	
	<b>or</b>	
	• do not pour down sink <b>or</b> dispose of properly	
	• (because) it is harmful to the environment / kills fish	
	<b>or</b>	
	• wear a mask or do it in the fume cupboard or a well-ventilated area	
	• respiratory irritant	1

- (d) (i) points plotted correctly (within half small square)  
*all six points correct scores 2*  
*3, 4 or 5 points correct scores 1* 2
- smooth curve of best fit 1
- (ii) point at 46 °C circled  
*allow point furthest from the line as drawn* 1
- (iii) working shown on graph 1
- value read from graph line drawn (within half small square) 1
- (iv) the higher the temperature the lower the viscosity  
*allow the higher the temperature the lower / shorter the time taken for 1 mark* 2
- non-linear **or** change gets smaller as temperature gets higher  
*answer relating temperature to time taken can score a maximum of 2 marks.* 1
- (v) identifying source of the error 1
- method of avoiding the error
- eg:
- *the temperature will drop*
  - *insulate the funnel*
- or**
- *runs out before all added*
  - *put a tap on the funnel*
- [22]**
- 8.** (a)  $C_{12}H_{26}$  1
- (b) alkane 1
- (c) air  
*allow atmosphere* 1

(d)



*particulates – global dimming*

1

*sulfur dioxide – acid rain*

1

(e) carbon dioxide

1

carbon monoxide

1

(f) develop fuel efficient engines

use electric cars

1

**[9]**