

Mark schemes

Q1.

(a) (mass =)

$$\frac{39.8}{29.6} (\times 1)$$

1

= 1.34 (g)

allow 1.34459459 (g) correctly rounded to at least 2 significant figures

1

(b) all six points plotted correctly

allow a tolerance of $\pm \frac{1}{2}$ a small square

allow 1 mark for four or five points plotted correctly

2

(c) 40.6 (kJ)

allow a value in the range 40.4 - 40.8 (kJ)

allow a value consistent with the plotted points

1

(d) calcium hydroxide

1

(e) (limewater turns) milky / cloudy

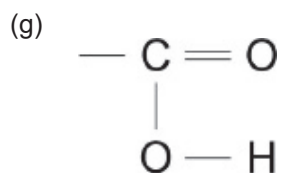
allow white precipitate (formed)

allow calcium carbonate is produced

1

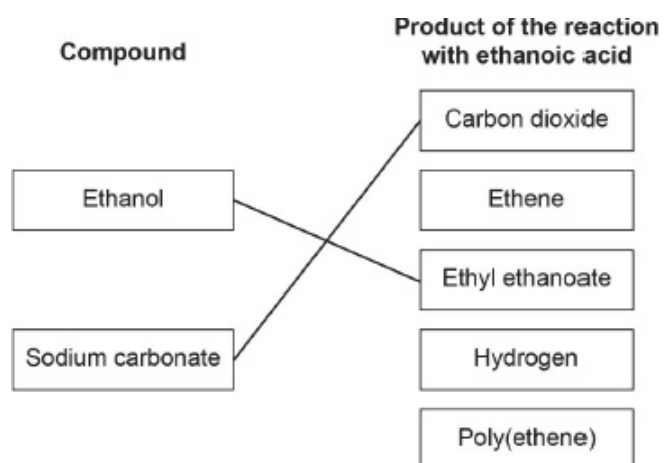
(f) an oxidising agent

1



1

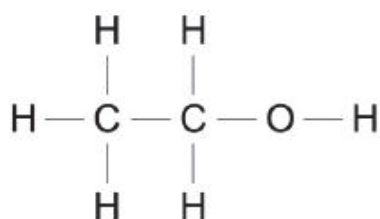
(h)



do **not** accept more than **one** line from a box on the left

Q2.

(a)



1

(b) in hand gel to kill microbes

1

(c) **Level 3:** The method would lead to the production of a valid outcome. The key steps are identified and logically sequenced.

3-4

Level 1: The method would not lead to a valid outcome. Some relevant steps are identified, but links are not made clear.

1-2

No relevant content

0

Indicative content

- **draw pencil start line**
- **place spot of ink on start line**
- name suitable solvent
- place solvent in beaker
- **place paper in solvent so solvent is below start line**
- use a lid
- **allow solvent / dyes to travel up paper** (until near top)
- dry
- count spots

(d) yeast

1

(e) (mass =) $\frac{4.4 \times 5}{100}$

1

= 0.22 (kg)

1

(conversion 0.22 kg = 220 (g)

allow a correct conversion of an incorrectly calculated mass

1

alternative approach:

(conversion 4.4 kg = 4400 g (1)

$$(\text{mass} =) \frac{4400 \times 5}{100} (1)$$

allow correct use of an incorrectly converted mass

$$= 220 \text{ (g) } (1)$$

- (f) E10 contains more ethanol (produced from sugar than E5)

1

(so) more sugar is used

allow (so) more plants are grown

1

(so more) carbon dioxide is absorbed by plants (when growing)

allow (so more) carbon dioxide is used in photosynthesis (by plants)

1

allow converse argument for E5

- (g) (E10 has) less energy (in a fixed mass)

allow cannot travel as far (on a full tank of E10)

1

[14]