Mark schemes

Q1.

(a) colourless

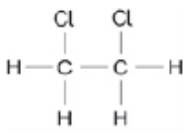
ignore clear

1

(b) damp litmus paper

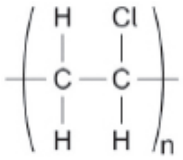
1

(c)



1

(d)



1

(e) 1.5 × 10 0.9 × 10

1

(ratio =) 15 : 9

1

= 5 : 3

allow correct determination of the simplest whole number ratio from an attempt at a density ratio

1

alternative approach

(ratio =)

$\frac{1.5}{0.9}$ $\frac{0.9}{0.9}$ (1)

1.666 : 1 (1)

= 5 **:** 3 (1)

allow correct determination of the simplest whole number ratio from an attempt at a density ratio

(f) the pipes will melt

or

the polymers will melt

allow the melting point of both polymers is below 300°C

1

(g) oil is non-renewable
or
paper is obtained from a renewable source
allow oil is finite

1

[9]

Q2.

(a) Mars

1

(b) 20%

1

(c) algae and plants evolved

1

photosynthesis took place

1

(d) (*y*-axis labelled) 5, 10, 15, (20)
allow (y-axis labelled) 4, 8, 12, 16, (20)

ignore correct intermediate values

1

oxygen bar drawn to 16%
allow a tolerance of ± ½ a small square

1

(e) test tube **A**

1

(f) a glowing splint

1

(g) manganese dioxide is a catalyst in this reaction

1

[9]

Q3.

(a) to reduce the escape of gas

1

(b) (mean rate =)

$$\frac{0.78 + 0.81 + 0.81}{3}$$

1

0.80 (cm^3/s)

1

allow

$$\frac{0.78 + 0.81 + 0.68 + 0.81}{4}$$

*= 0.77 (cm^3/s) for **1** mark*

$$0.80 = \frac{20}{\text{mean time taken}}$$

allow correct use of incorrectly determined mean rate

1

$$(\text{mean time taken} =) \frac{20}{0.80}$$

1

= 25 (s)

1

alternative approach:

$$0.78 = \frac{20}{\text{time}}$$

or

$$0.81 = \frac{20}{\text{time}}\ (1)$$

$$(\text{trial 1 time} = \frac{20}{0.78} =) 25.6\ (1)$$

(trial 2 and 4 time =

$$\frac{20}{0.81} =) 24.7\ (1)$$

(mean time =)

$$\frac{25.6 + (2 \times 24.7)}{3}\ (1)$$

= 25 (s) (1)

allow correct use of incorrectly determined value(s) for time

allow $\frac{25.6 + 29.4 + (2 \times 24.7)}{4}$

= 26.1 (s)
*for **1** mark*

(c) use a lower temperature

1

use sulfuric acid of a lower concentration

1

(d) (test)
burning / lit splint
allow flame
*do **not** accept glowing splint*

1

(result)
burns with a (squeaky) pop sound
allow pops

1

MP2 is dependent upon MP1 being awarded

[10]