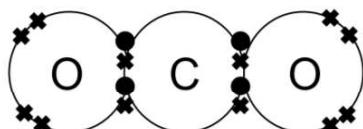


## 1. This question is about carbon dioxide

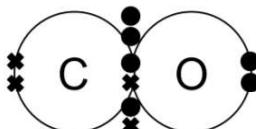
Mark

(a)

(i)



carbon dioxide



carbon monoxide

*One mark each. Allow any combination of dots and crosses.*

(ii)  $\text{CO}_2 = +4$     $\text{CO} = +2$

Difference = 2

Allow -2.



(b)

(i)  $c = k \times p(\text{CO}_2)$

 $0.099 \text{ mol dm}^{-3}$ 

(ii) 1.09 g

*ECF answer =  $(11.01 \times \text{answer to part (i)}) \text{ g}$* 

(iii)  $2.45 \times 10^5 \text{ Pa}$

*ECF answer =  $(2.25 \times 10^5 \times \text{answer to part (ii)}) \text{ Pa}$* 

(iv)

- high pressure and low temperature
- high pressure and high temperature
- low pressure and low temperature
- low pressure and high temperature

*No marks if more than one box ticked.*

(c)

Accept values in range 57—63 °C



(d)

CO 33.3 moles

H<sub>2</sub>O 33.3 molesCO<sub>2</sub> 26.7 molesH<sub>2</sub> 26.7 moles*All four correct two marks. No partial credit.*

(e)

$$\text{enthalpy of reaction} = -393.5 \text{ kJ mol}^{-1} - (-110.5 + -241.1) \text{ kJ mol}^{-1}$$

$$= -41.9 \text{ kJ mol}^{-1}$$

*Do not award mark for positive answer.*

Total out of 11

11