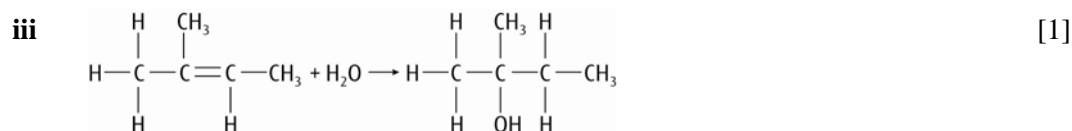
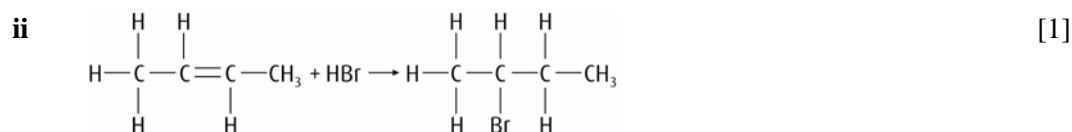
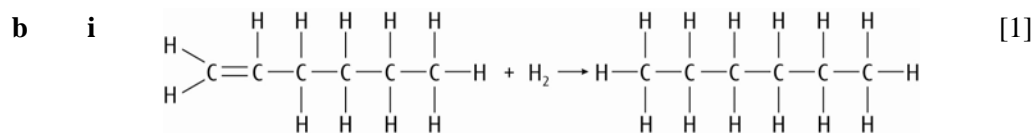
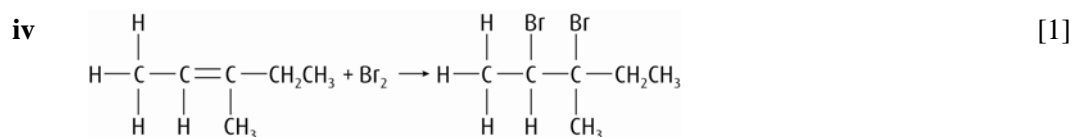


**Marking scheme for Core Worksheet – Chapter 10**

- 1**
- a** ketone [1]
  - b** carboxylic acid [1]
  - c** aldehyde [1]
  - d** ester [1]
- 2**
- a** propanal [1]
  - b** ester or ketone + alcohol or aldehyde + alcohol, etc. [1]
  - c** ketone or alcohol + alkene or alcohol + carbon ring or ether + alkene or cyclic ether [1]
  - d** a carboxylic acid or ketone + alcohol or aldehyde + alcohol, etc. [1]
- 3**
- b** [1]
  - hydrogen bonding between molecules [1]
  - others only have dipole–dipole interactions between molecules, which are weaker [1]
- 4**
- a** 2-methylpentane [1]
  - b** 2-methylpentane [1]
  - c** 2,2-dimethylpropane [1]
  - d** 2,3-dimethylbutane [1]
- 5**
- a**  $C_5H_{12} + 8O_2 \rightarrow 5CO_2 + 6H_2O$  [1]
  - b**  $2C_4H_{10} + 9O_2 \rightarrow 8CO + 10H_2O$  [1]
- 6**
- a** in the presence of UV light [1]
  - b**
    - i**  $Br_2 + \bullet CH_2CH_3 \rightarrow \bullet Br + BrCH_2CH_3$  [1]
    - ii**  $Cl_2 + \bullet CH_2Cl \rightarrow \bullet Cl + CH_2Cl_2$  [1]
    - iii**  $\bullet CH_2CH_3 + \bullet CH_2CH_3 \rightarrow CH_3CH_2CH_2CH_3$  [1]
    - iv**  $\bullet CH_2CH_2Br + \bullet Br \rightarrow BrCH_2CH_2Br$  [1]
- 7**
- a**
    - i** hex-1-ene [1]
    - ii** but-2-ene [1]
    - iii** 2-methylbut-2-ene [1]
    - iv** 3-methylpent-2-ene [1]



accept H and OH the other way round



**c** shake with bromine water [1]

bromine water decolorised by 7a i but not by 4a [1]

**8 a** acidified (potassium) dichromate(VI) [1]

$\text{Cr}_2\text{O}_7^{2-}/\text{H}^+$  [1]

or acidified (potassium) manganate(VII) [1]

$\text{MnO}_4^-/\text{H}^+$  [1]

**b** partial:  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + [\text{O}] \rightarrow \text{CH}_3\text{CH}_2\text{CHO} + \text{H}_2\text{O}$  [1]

complete:  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + 2[\text{O}] \rightarrow \text{CH}_3\text{CH}_2\text{COOH} + \text{H}_2\text{O}$  [1]

**c i** ethanoic acid [1]

**ii** propanone [1]

**iii** 2-methylpropan-1-ol (i.e. no oxidation) [1]



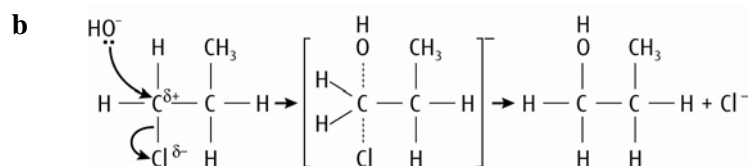
secondary [1]



secondary [1]



tertiary [1]



[4]

**c** substitution – one atom or group replaced by another atom or group

[1]

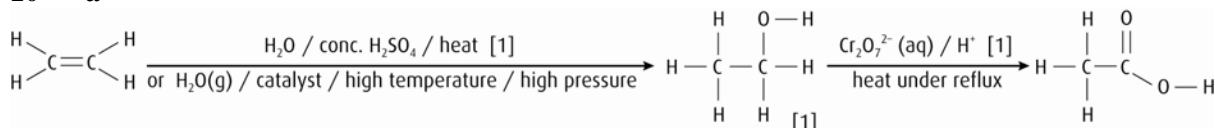
nucleophile – species with a lone pair that is attracted to more positively charged areas in a molecule and donates a pair of electrons to form a dative covalent bond

[1]

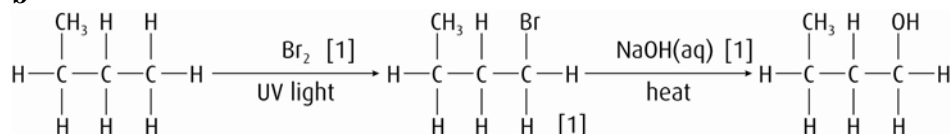
1 – unimolecular/one molecule involved in the rate-determining step

[1]

**10 a**



**b**



**c**

