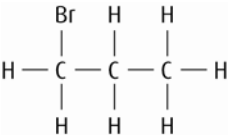
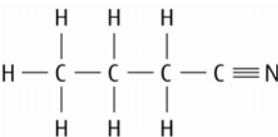
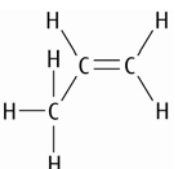
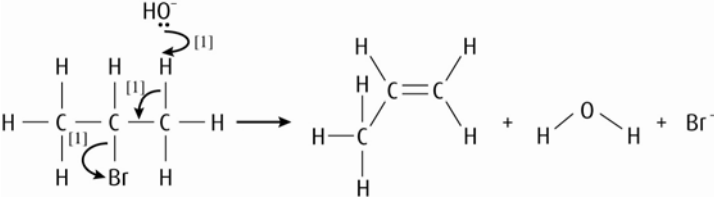
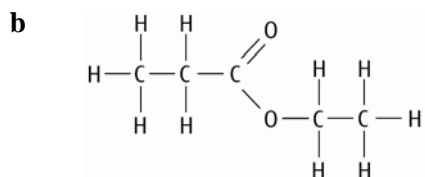


## Marking scheme for AHL Worksheet – Chapter 10

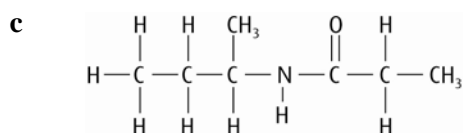
- 1 a** 2-methylpentanenitrile [1]
- b** butan-2-amine/2-aminobutane/1-methylpropylamine [1]
- c** ethyl pentanoate [1]
- d** *N*-methylpropanoate [1]
- 2** tertiary halogenoalkane [1]  
 $S_N2$  unfavourable due to steric effects [1]  
 $S_N1$  favoured due to stabilisation of tertiary carbocation [1]  
 electron-releasing effect/positive inductive effect of alkyl groups [1]
- 3 E**  [1]  
 1-bromopropane [1]
- F**  [1]  
 butanenitrile [1]
- 4 a**  [1]
- b**  [1]  
 accept  $C_2H_5O^-$  as the base
- c** 2, *cis* and *trans* isomers of pent-2-ene [1]

5 a propyl ethanoate [1]  
H<sub>2</sub>O [1]



[1]

H<sub>2</sub>O [1]

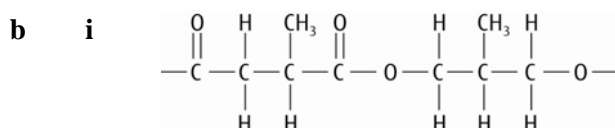


[1]

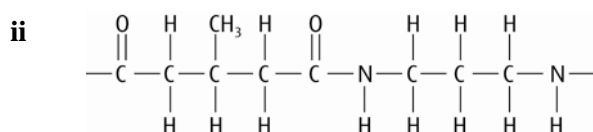
H<sub>2</sub>O [1]

6 a addition polymerisation: alkene molecules joined together to form a long chain, nothing lost [1]

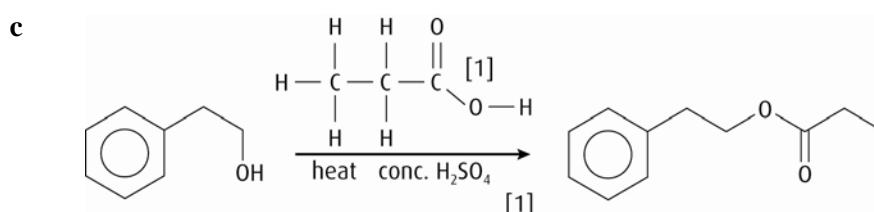
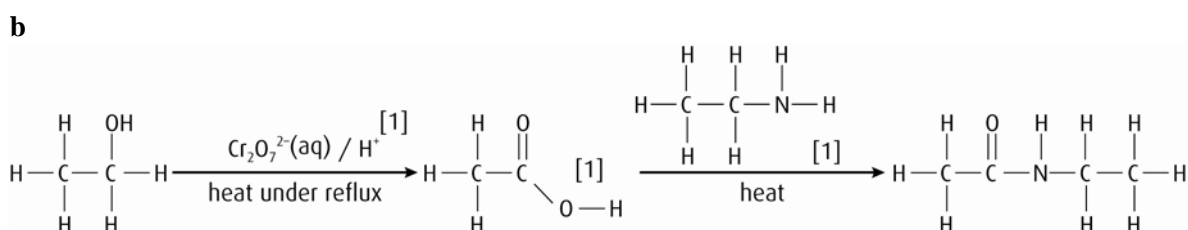
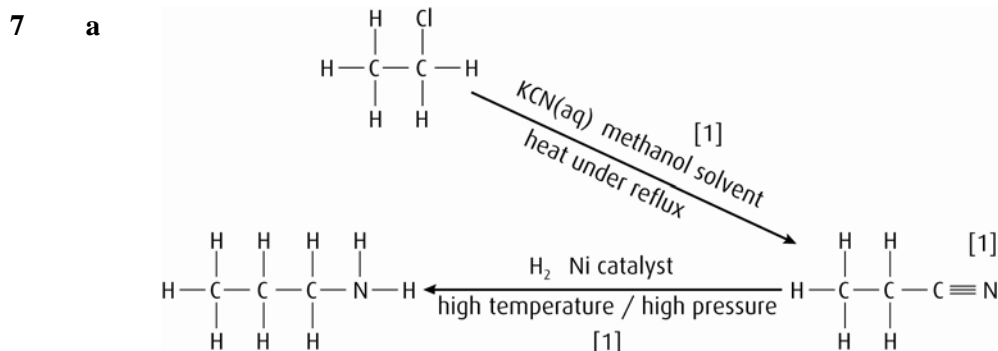
condensation polymerisation: molecules containing two functional groups joined together to form a long chain with the elimination of small molecules (such as water) [1]



[1]



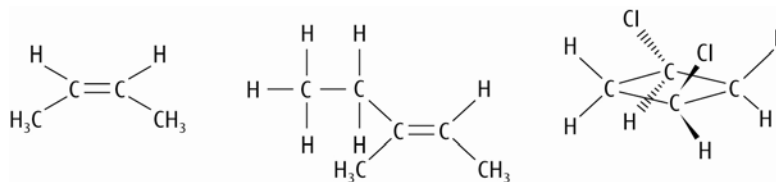
[1]



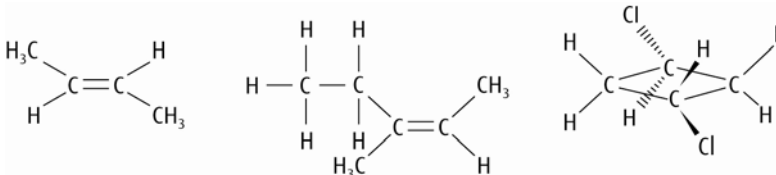
8 a but-2-ene [1]  
4-methylpent-2-ene [1]

1,3-dichlorocyclobutane [1]

b *cis*:

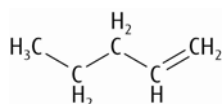


*trans*:

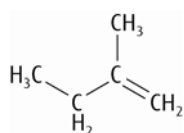


[3]

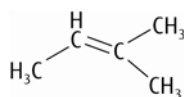
c 10 marks for all correct, lose 1 mark for each isomer missing, repeated or mis-named [10]



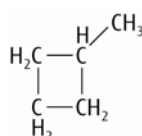
pent-1-ene



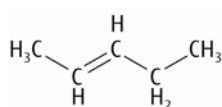
2-methylbut-1-ene



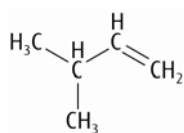
2-methylbut-2-ene



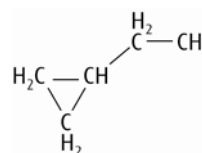
methylcyclobutane



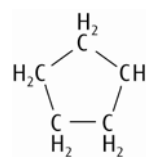
*cis/trans*-pent-2-ene



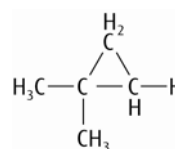
3-methylbut-1-ene



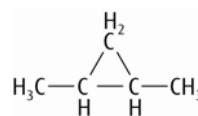
ethylcyclopropane



cyclopentane

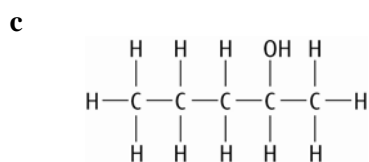
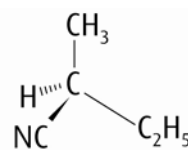
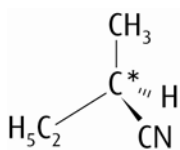
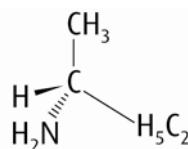
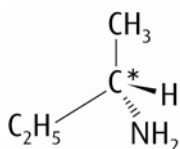
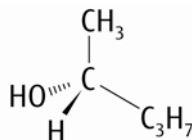
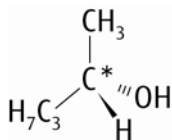


1,1,-dimethylcyclopropane

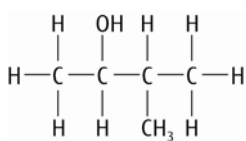


*cis/trans*-1,2-dimethylcyclopropane

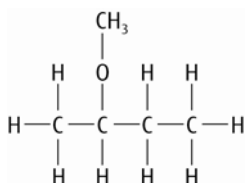
- 9 a pentan-2-ol [1]  
butan-2-amine [1]  
2-methylbutanenitrile [1]
- b 1 mark for each clear diagram; the chiral centre must be marked on at least one molecule in each pair [6]



[1]



[1]



[1]

- d plane-polarised light is passed through the isomers [1]  
they rotate the plane of polarisation of the plane-polarised light [1]  
in opposite directions [1]