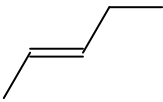
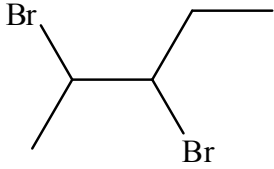
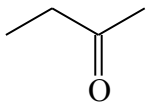
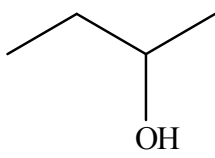
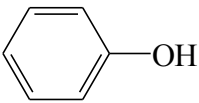
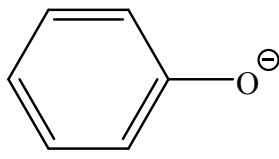
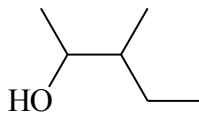
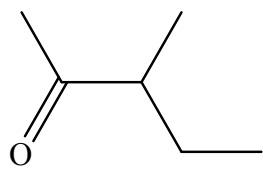
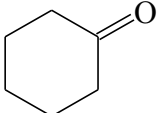
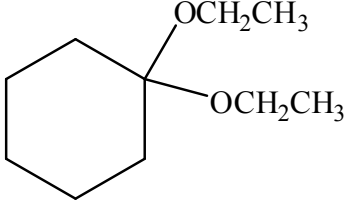
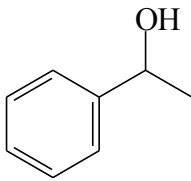
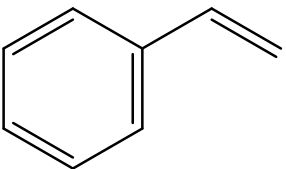
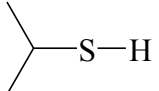
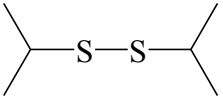
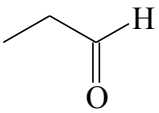
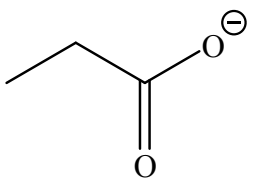
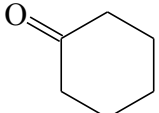
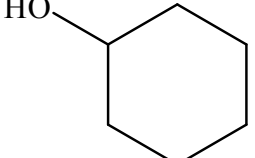


- Complete the following table.

**Marks**  
**10**

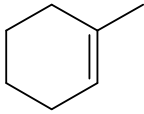
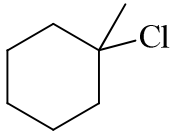
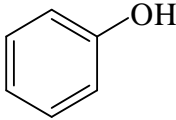
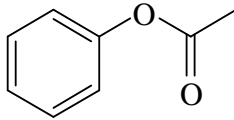
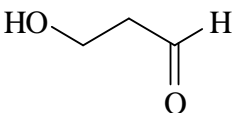
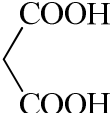
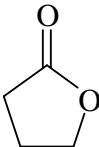
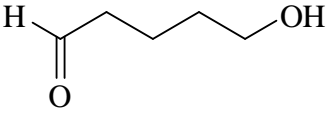
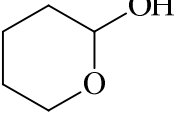
STARTING MATERIAL	REAGENT/CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
 Name: <b>(E)-pent-2-ene</b>	excess Br <sub>2</sub> CCl <sub>4</sub> solvent	
 Name: <b>butan-2-one</b>	1. LiAlH <sub>4</sub> 2. dilute HCl	
 Name: <b>phenol</b>	dilute NaOH	
 HO	Na <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> in dilute sulfuric acid	
 Name: <b>cyclohexane</b>	excess CH <sub>3</sub> CH <sub>2</sub> OH conc. H <sub>2</sub> SO <sub>4</sub> catalyst heat	

• Complete the following table.

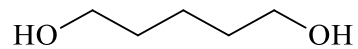
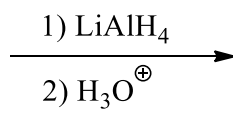
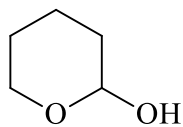
STARTING MATERIAL	REAGENT/CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
	hot conc. H <sub>2</sub> SO <sub>4</sub>	
	I <sub>2</sub>	
	[Ag(NH <sub>3</sub> ) <sub>2</sub> ] <sup>⊕</sup> / dilute NaOH	
	2. dilute H <sup>⊕</sup> /H <sub>2</sub> O	

Marks  
7

- Complete the following table.

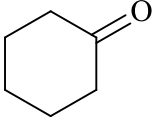
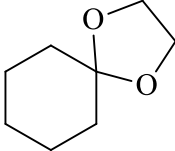
STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
	HCl / CCl <sub>4</sub> solvent	
	CH <sub>3</sub> COCl	
CH <sub>3</sub> CH <sub>2</sub> CH(Br)CH <sub>2</sub> CH <sub>3</sub>	N(CH <sub>3</sub> ) <sub>3</sub>	CH <sub>3</sub> CH <sub>2</sub> CH(Br <sup>⊖</sup> )CH <sub>2</sub> CH <sub>3</sub> N <sup>⊕</sup> (CH <sub>3</sub> ) <sub>3</sub>
	Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup> / H <sup>⊕</sup>	
	3 M NaOH / heat	HO-CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CO <sub>2</sub> <sup>⊖</sup>
	catalytic H <sup>⊕</sup>	

- Give the constitutional formula(s) of the major organic products formed in each of the following reactions:

**1**

**Marks**  
**1**

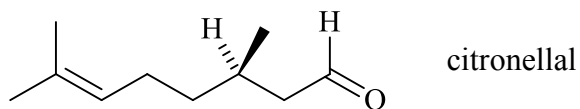
- Complete the following table.

Starting material	Reagent / Conditions	Major organic products(s)
	$\text{HO}-\text{CH}_2-\text{CH}_2-\text{OH} / \text{H}^{\oplus}$	

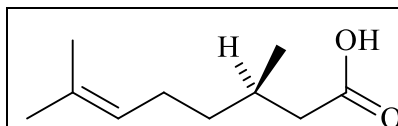
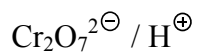
**THE REMAINDER OF THIS PAGE IS FOR ROUGH WORKING ONLY.**

- (+)-Citronellal is a widely occurring natural product present in citronella oil, lemon and lemon grass. It is used as a soap perfume and in insect repellents.

**Marks**  
**2**



Draw the constitutional formula of the product(s) formed when citronellal is treated with each of the following reagents.



excess  $\text{CH}_3\text{OH}$  / catalytic amount  $\text{H}_2\text{SO}_4$

