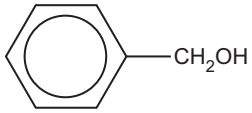
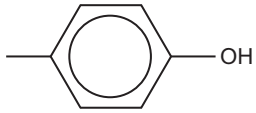
7 Phenylmethanol and 4-methylphenol are isomers.

phenylmethanol



4-methylphenol



(a) Complete Table 7.1 to show the relative acidities of benzoic acid (C_6H_5COOH), phenylmethanol, 4-methylphenol and water.

Explain your answer.

Table 7.1

	name of compound
most acidic ↓	
least acidic	

explanation .....

.....

.....

.....

.....

.....

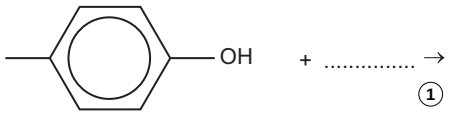
.....

.....

[4]

(b) 4-methylphenol reacts readily with sodium.

Complete the equation for this reaction.



(1)

[1]

(c) Under certain conditions, ethane-1,2-diol, $HOCH_2CH_2OH$, reacts with propane-1,3-dioic acid, $HOOCCH_2COOH$, to form different organic products, as shown in Fig. 7.1.

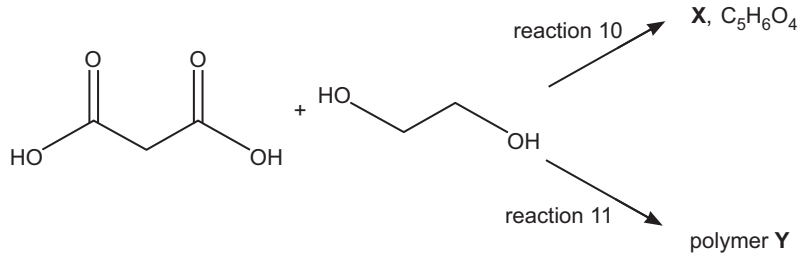


Fig. 7.1

(i) **X** does **not** react with Na metal.

Draw the structure of the organic product **X**, $C_5H_6O_4$, shown in Fig. 7.1.

[1]

(ii) Reactions 10 and 11 in Fig. 7.1 are different types of reaction.

Name the type of reaction for reaction 10 and for reaction 11.

reaction 10 .....

reaction 11 .....

[1]

(iii) Draw a section of polymer **Y** showing only **one** repeat unit.

The new functional group formed should be displayed.

(2)

[2]

[Total: 9]