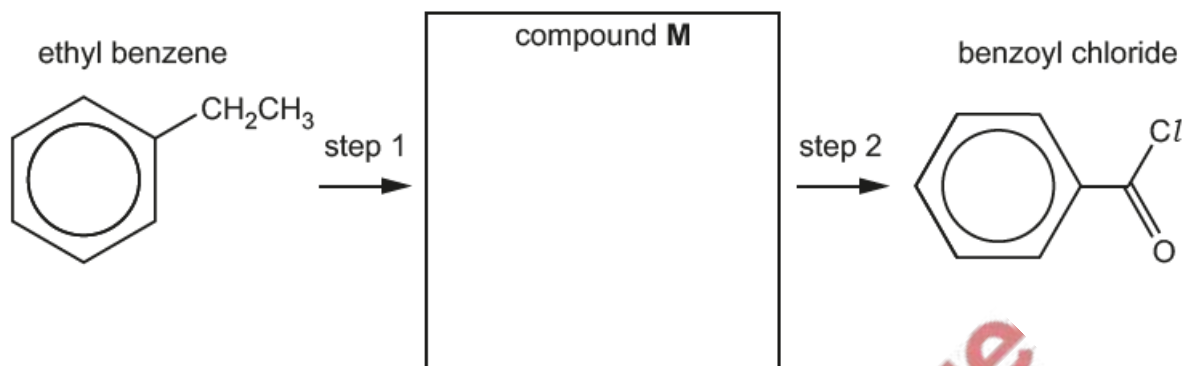


**1. Nov/2023/Paper\_9701/41/No.9**

(a) Benzoyl chloride,  $C_6H_5COCl$ , can be made from ethyl benzene in a two-step process.

A reaction scheme is shown.



(i) Draw the intermediate organic compound **M** in the box. [1]

(ii) Suggest suitable reagents and conditions for step 1 and step 2.

step 1 .....

step 2 .....

[2]

(iii) Identify the type of reaction in step 1 and step 2.

step 1 .....

step 2 .....

[2]





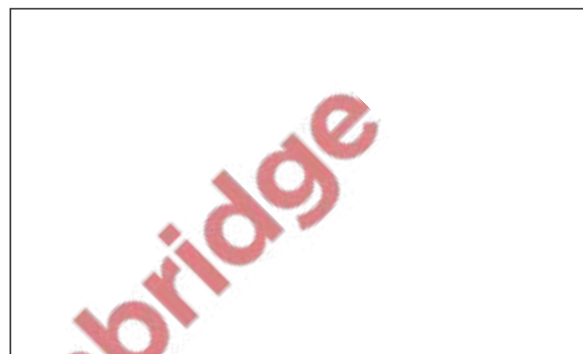
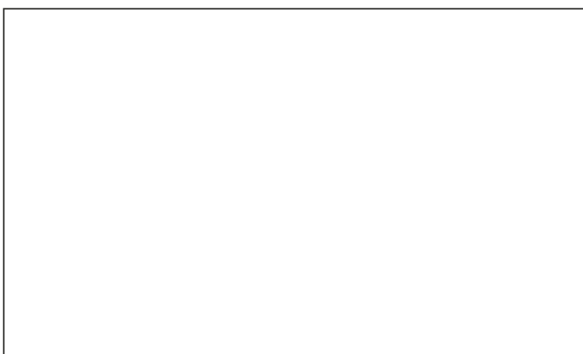
(a) Compound **H** has the structural formula  $\text{CH}_2=\text{CHCH}(\text{NH}_2)\text{COOH}$ .

(i) Name all the functional groups in **H**.

.....  
..... [2]

(ii) Compound **H** exhibits stereoisomerism.

Draw three-dimensional structures for the two stereoisomers of **H**.  
Name this type of stereoisomerism.



type of stereoisomerism ..... [2]

(b) Compound **H** can be prepared from the reaction of **J** with an excess of hot aqueous acid.

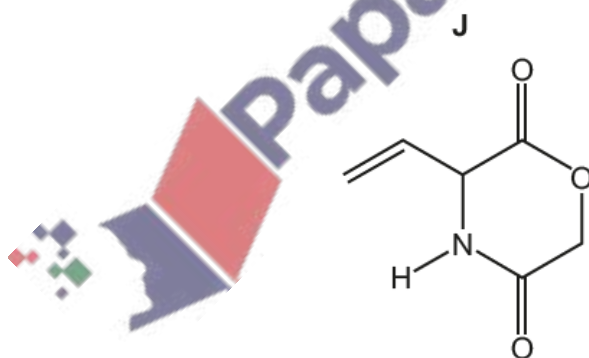


Fig. 6.1

