19. Nitrogen compounds

19.1 Primary amines

Paper 2

Question Paper

1 **(b)** H_2O reacts with both inorganic and organic compounds.

(ii) Write an equation for the reaction of CH_3CN with H_2O in acidic conditions.

CH_3CN + ...H_2O + ...H^+ .....

[1]

2 Fig. 3.1 describes a sequence of reactions that can be used to produce a food additive, compound **Y**, from CH_3CH_2Cl.

Fig. 3.1

(a) **(iii)** Identify the type of reaction that occurs when dilute acid is added to **X** in step 2.

..... [1]

3 **(c)** $Ba(OH)_2$ is used to hydrolyse organic compounds.

Fig. 2.2 shows the reaction of **B** with $Ba(OH)_2$, followed by acidification.

Draw the structures of the organic products of the process shown in Fig. 2.2.

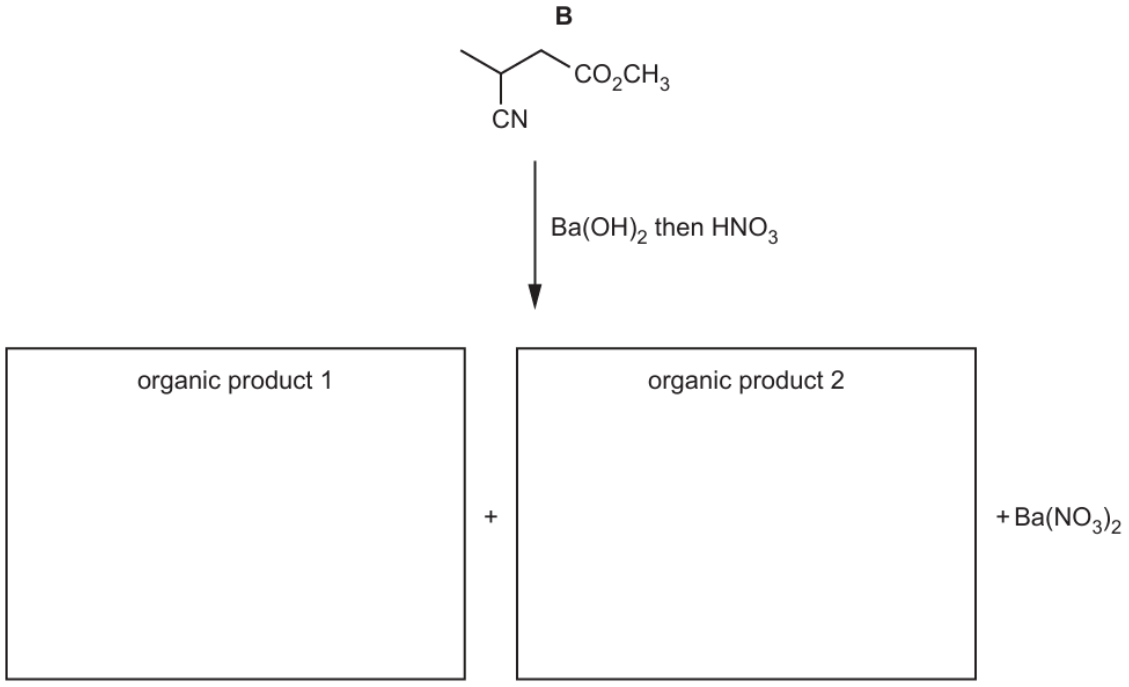

Fig. 2.2

[3]

4 **S** is a secondary alcohol with molecular formula $C_4H_{10}O$.

(b) **S** is converted to **V** in a three-step reaction sequence.

In step 1, the secondary alcohol **S** reacts with PBr_3 to produce **T**, which has molecular formula C_4H_9Br.

(iv) Step 3 involves heating C_4H_9CN with dilute acid to form **V**.

Complete the equation for this reaction.

.....C_4H_9CN + ...H^+ + ...H_2O → ..... [2]