A-Level Chemistry

Amines

(Multiple Choice)

Question Paper

Time available: 10 minutes
Marks available: 8 marks

1. Methylamine reacts with bromoethane by nucleophilic substitution to produce a mixture of products.

Which is **not** a possible product of this reaction?

A $C_2H_5NHCH_3$ ⬭

B $(C_2H_5)_2NCH_3$ ⬭

C $[(C_2H_5)_2N(CH_3)_2]^+ Br^-$ ⬭

D $[(C_2H_5)_3NCH_3]^+ Br^-$ ⬭

(Total 1 mark)

2. Methylamine reacts with bromoethane by substitution to produce a mixture of products.

Which compound is not a possible product of this reaction?

A $C_2H_5NHCH_3$ ⬭

B $(C_2H_5)_2NCH_3$ ⬭

C $[(C_2H_5)_3NCH_3]^+ Br^-$ ⬭

D $[(C_2H_5)_2N(CH_3)_2]^+ Br^-$ ⬭

(Total 1 mark)

3. Aqueous solutions of ammonia, ethylamine and phenylamine are prepared.
Each solution has the same concentration.

Which is the correct order for the pH values of these solutions?

A ammonia > ethylamine > phenylamine ⬭

B ammonia > phenylamine > ethylamine ⬭

C ethylamine > ammonia > phenylamine ⬭

D ethylamine > phenylamine > ammonia ⬭

(Total 1 mark)

4. Which compound is the strongest base?

A Ammonia ⬭

B Ammonium chloride ⬭

C Methylamine ⬭

D Phenylamine ⬭

(Total 1 mark)

5. What type of reaction is used to convert $(CH_3)_3N$ into the cationic surfactant $[(CH_3)_3N(CH_2)_{15}CH_3]Cl$?

A Bronsted–Lowry acid-base reaction ⬭

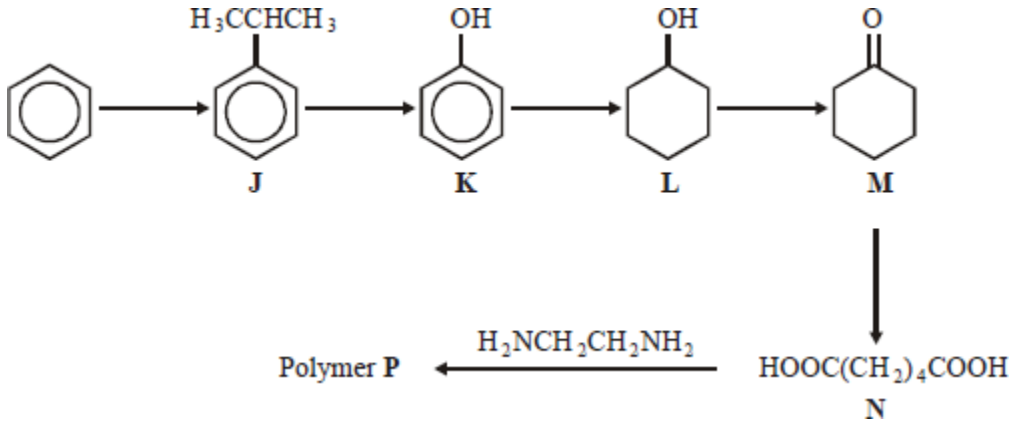
B Nucleophilic addition ⬭

C Nucleophilic addition-elimination ⬭

D Nucleophilic substitution ⬭

(Total 1 mark)

6. This question is about the following reaction scheme which shows the preparation of polymer **P**.



Polymer **P** is formed in a two-step reaction from **N**. The first stage is a neutralisation reaction. The volume, in cm^3, of a 0.20 mol dm^{-3} solution of $H_2NCH_2CH_2NH_2$ required to neutralise 6.8×10^{-3} mol of the acid **N** is

A 17

B 34

C 68

D 136

(Total 1 mark)

7. Which statement about $HOCH_2CH(NH_2)COOH$ is correct?

A It decolourises bromine water. ⬭

B It is a component of DNA. ⬭

C It is insoluble in water. ⬭

D It reacts with hydrochloric acid. ⬭

(Total 1 mark)

8. Which one of the following reactions does **not** involve donation of an electron pair?

A $H^+ + CH_3NH_2 \rightarrow CH_3NH_3^+$

B $AlCl_3 + Cl^- \rightarrow AlCl_4^-$

C $CH_3Cl + CN^- \rightarrow CH_3CN + Cl^-$

D $\frac{1}{2}Cl_2 + I^- \rightarrow Cl^- + \frac{1}{2}I_2$

(Total 1 mark)