

Q1. Which one of the following pairs of reagents reacts to form an organic product that shows only 2 peaks in its proton n.m.r. spectrum?

- A** butan-2-ol and acidified potassium dichromate(VI)
- B** ethanoyl chloride and methanol
- C** propanoic acid and ethanol in the presence of concentrated sulphuric acid
- D** ethene and hydrogen in the presence of nickel

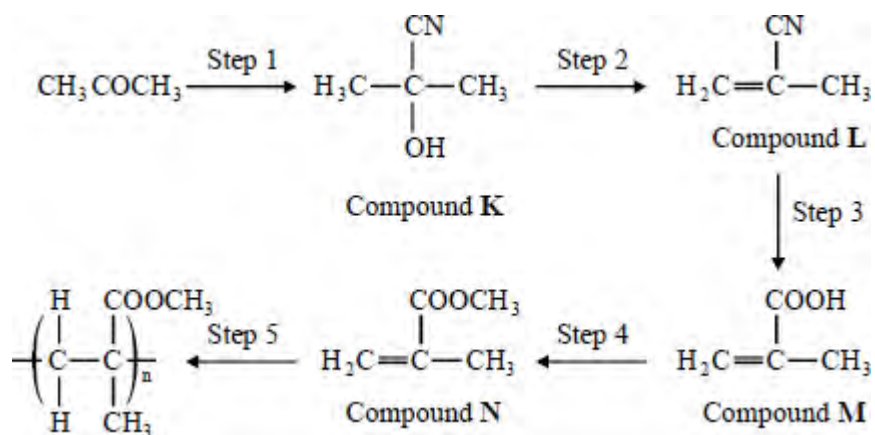
(Total 1 mark)

Q2. Which one of the following pairs reacts to form an organic product with only 2 singlets in its proton n.m.r. spectrum?

- A** ethene and bromine
- B** propan-2-ol and acidified potassium dichromate(VI)
- C** ethanol and concentrated sulphuric acid
- D** epoxyethane and water in the presence of dilute sulphuric acid

(Total 1 mark)

Q3. This question concerns the preparation of the plastic poly(methyl 2-methylpropenoate) (*Perspex*), starting from propanone.

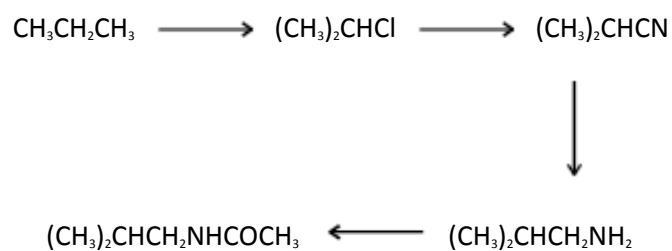


Which one of the following sets of reagents is **not** suitable for the step indicated?

- A Step 1 HCN (NaCN then dilute HCl)
- B Step 2 hot ethanolic KOH
- C Step 3 warm aqueous H₂SO₄
- D Step 4 CH₃OH with an acid catalyst

(Total 1 mark)

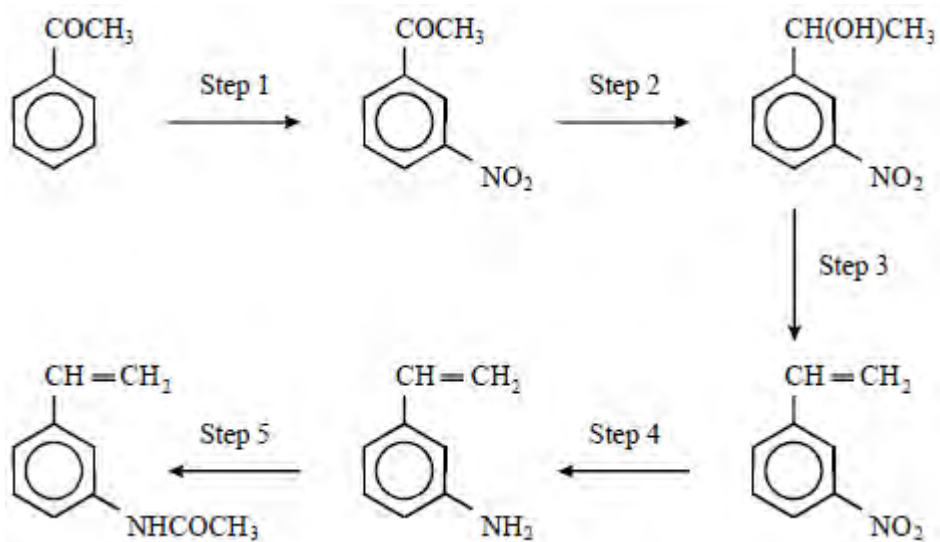
Q6. Which one of the following types of reaction mechanism is **not** involved in the above sequence?



- A** free-radical substitution
- B** nucleophilic substitution
- C** elimination
- D** nucleophilic addition-elimination

(Total 1 mark)

Q7. Refer to the following reaction sequence:

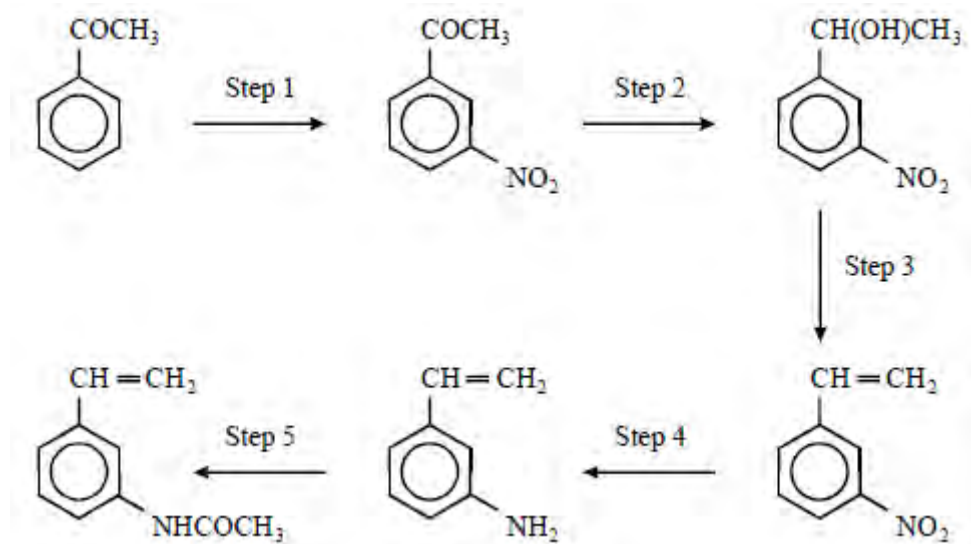


Which one of the following types of reaction is **not** involved in the above sequence?

- A acylation
- B oxidation
- C reduction
- D dehydration

(Total 1 mark)

Q8. Refer to the following reaction sequence:

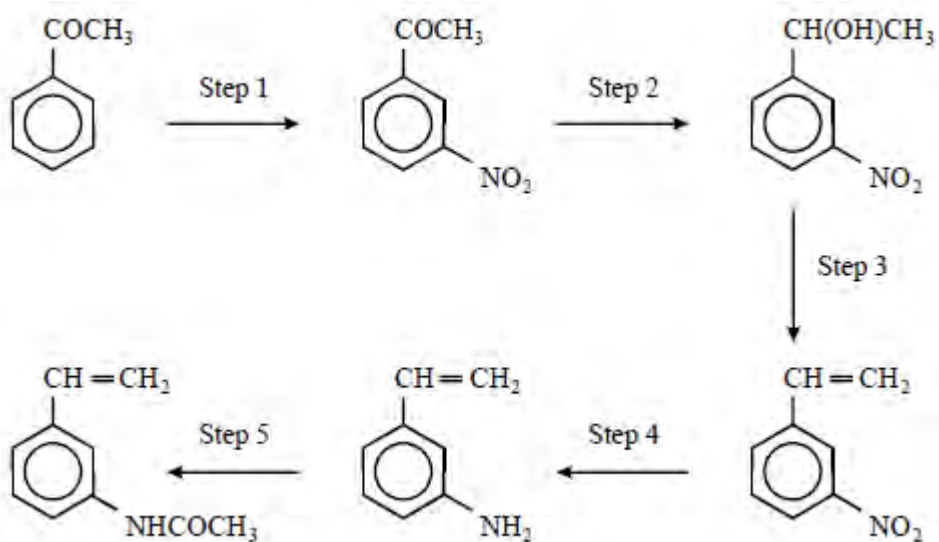


Which one of the following types of reaction mechanism is **not** involved in the above sequence?

- A electrophilic addition
- B electrophilic substitution
- C addition-elimination
- D elimination

(Total 1 mark)

Q9. Refer to the following reaction sequence:



Which one of the following would be the most appropriate to carry out Step 2?

- A H_2 / Ni
- B Sn / HCl
- C NaBH_4
- D Fe / HCl

(Total 1 mark)