1 Give three pieces of evidence that show that benzene’s structure is better represented by structure A rather than structure B.

1. All C-C bonds are same length
2. Does not undergo addition reactions easily
3. Enthalpy of hydrogenation is less exothermic than B would be

2 For the following conversion:
• Write a balanced equation
• Name the product
• Give reagents and conditions
• Give the mechanism name
• Outline the mechanism

3,5-Dimethyl-1-nitrobenzene
Conc NH₃ and conc H₂SO₄ at 50°C
Electrophilic substitution

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\begin{align*}
\text{HNO}_3 + 2 \text{H}_2\text{SO}_4 & \rightarrow \text{NO}_2^+ + 2 \text{HSO}_4^- + \text{H}_3\text{O}^+ \\
\end{align*}
\]