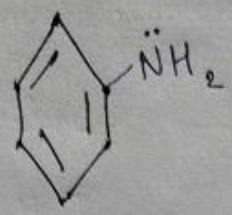
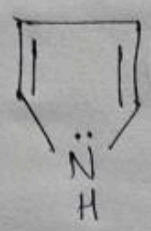
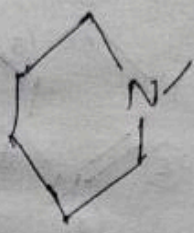
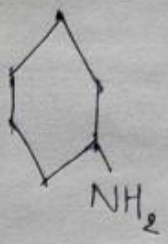
5. Among the following compounds, the increasing order of their basic strength is: (Mains - 2017)

A) 

B) 

C) 

D) 

a) A < B < D < C

b) A < B < C < D

c) B < A < D < C

d) B < A < C < D,

→ c) is the correct answer.

Solution → A and B are less basic than C and D because their e⁻ pair is being used in resonance, which decrease the e⁻ density available for the proton.

In C and D, C is more basic since it has one e⁻ donating methyl group attached to nitrogen, which increases e⁻ density by +I effect.

In A and B, the e⁻ pair in B is being used to aromaticize the compound. If it gets attacked by a proton, the compound will not be aromaticized anymore and would lose stability. So, the e⁻ pair in B is not available for any proton. In A, the benzene ring is already stable and aromatic, so the resonance is only distributing the e⁻ density over the molecule. So, the e⁻ pair is still available for reactions.

Hence, basicity goes, B < A < D < C.