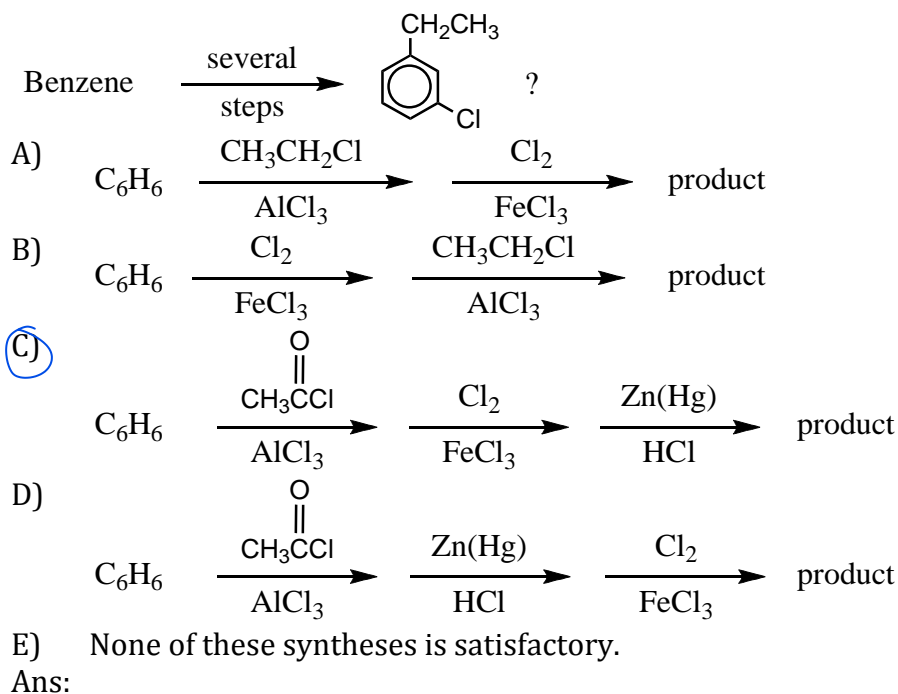
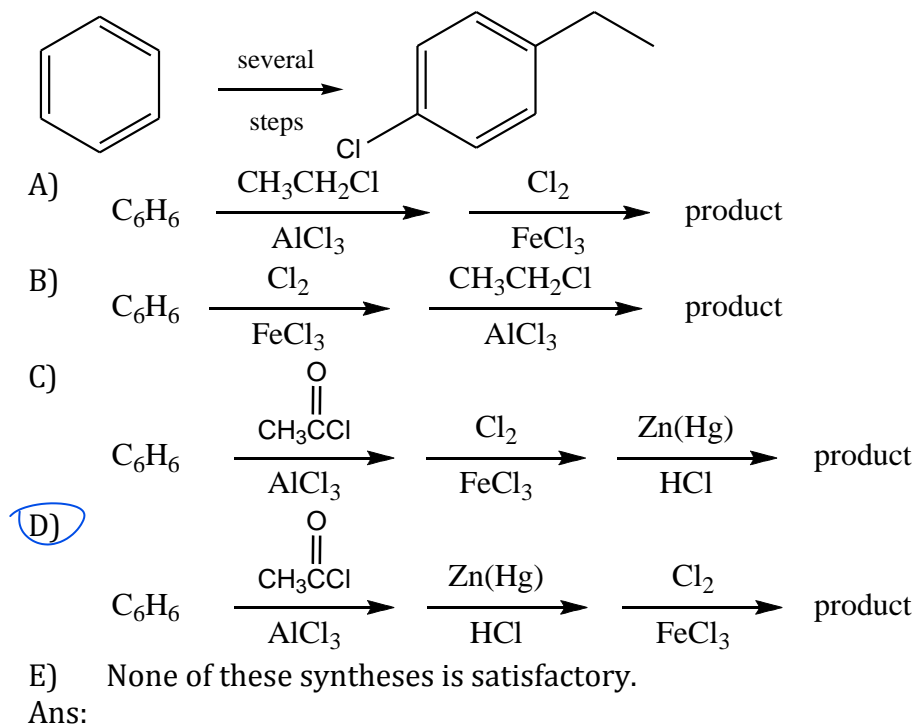


Honor 5-6

1. How might the following synthesis be carried out:



2. How might the following synthesis be carried out:

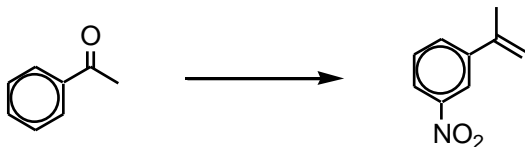


3. Which is the best sequence of reactions for the preparation of p-bromostyrene from ethylbenzene?

- A) ethylbenzene $\xrightarrow[\text{CCl}_4]{\text{NBS, } h\nu}$ $\xrightarrow[\text{Fe}]{\text{Br}_2}$ $\xrightarrow[\text{CH}_3\text{CH}_2\text{OH}]{\text{KOH}}$ product
- B) ethylbenzene $\xrightarrow[\text{Fe}]{\text{Br}_2}$ $\xrightarrow[\text{CCl}_4]{\text{NBS, } h\nu}$ $\xrightarrow[\text{CH}_3\text{CH}_2\text{OH}]{\text{KOH}}$ product
- C) ethylbenzene $\xrightarrow[\text{CCl}_4]{\text{NBS, } h\nu}$ $\xrightarrow[\text{CH}_3\text{CH}_2\text{OH}]{\text{KOH}}$ $\xrightarrow[\text{Fe}]{\text{Br}_2}$ product
- D) ethylbenzene $\xrightarrow[630^\circ\text{C}]{\text{ZnO}}$ $\xrightarrow[\text{Fe}]{\text{Br}_2}$ product
- E) None of these syntheses is satisfactory.

Ans:

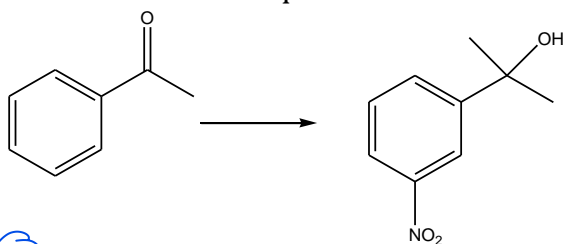
4. Which is the best sequence of reactions for the following transformation?



- A) i) $\text{HNO}_3, \text{H}_2\text{SO}_4$; ii) $\text{CH}_3\text{MgBr}, \text{Et}_2\text{O}$; iii) H_3O^+ , heat
- B) i) $\text{CH}_3\text{MgBr}, \text{Et}_2\text{O}$; ii) H_3O^+ , heat; iii) $\text{HNO}_3, \text{H}_2\text{SO}_4$
- C) i) $\text{HNO}_3, \text{H}_2\text{SO}_4$; ii) $\text{NaBH}_4, \text{H}_2\text{O}$; iii) H_3O^+ , heat
- D) i) $\text{HNO}_3, \text{H}_2\text{SO}_4$; ii) $\text{LiAlH}_4, \text{H}_2\text{O}$; iii) H_3O^+ , heat
- E) None of these syntheses is satisfactory.

Ans:

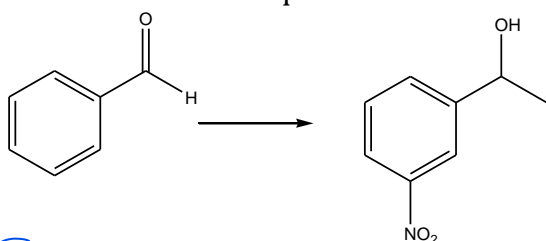
5. Which is the best sequence of reactions for the following transformation?



- A) i) HNO_3 , H_2SO_4 ; ii) CH_3MgBr , Et_2O ; iii) H_2O , NH_4Cl
 B) i) CH_3MgBr , Et_2O ; ii) H_3O^+ , heat; iii) HNO_3 , H_2SO_4
 C) i) HNO_3 , H_2SO_4 ; ii) NaBH_4 , H_2O ; iii) H_3O^+ , heat
 D) i) HNO_3 , H_2SO_4 ; ii) LiAlH_4 , H_2O ; iii) H_3O^+ , heat
 E) None of these syntheses is satisfactory.

Ans:

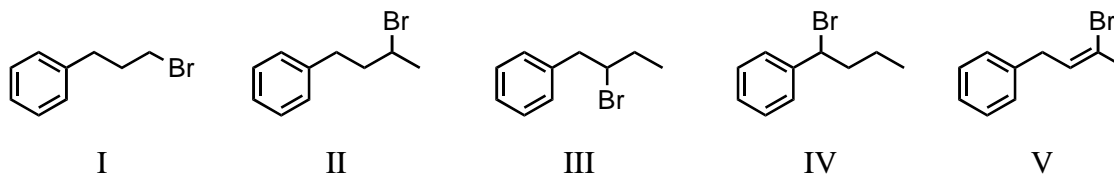
6. Which is the best sequence of reactions for the following transformation?



- A) i) HNO_3 , H_2SO_4 ; ii) CH_3MgBr , Et_2O ; iii) H_2O , NH_4Cl
 B) i) CH_3MgBr , Et_2O ; ii) H_3O^+ , heat; iii) HNO_3 , H_2SO_4
 C) i) HNO_3 , H_2SO_4 ; ii) NaBH_4 , H_2O ; iii) H_3O^+ , heat
 D) i) HNO_3 , H_2SO_4 ; ii) LiAlH_4 , H_2O ; iii) H_3O^+ , heat
 E) None of these syntheses is satisfactory.

Ans:

7. Which compound is capable of undergoing both $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reactions in ordinary nonacidic solvents?

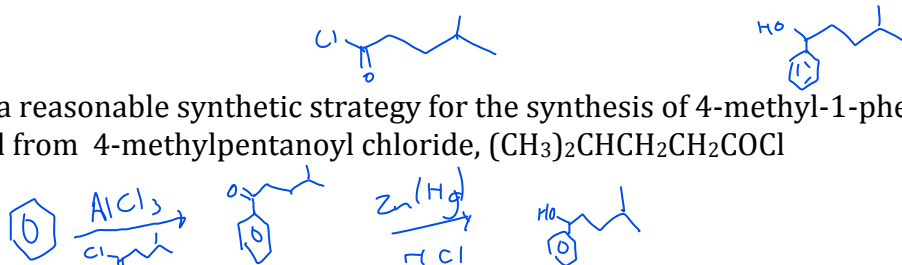


- A) I
 B) II
 C) III
 D) IV
 E) V

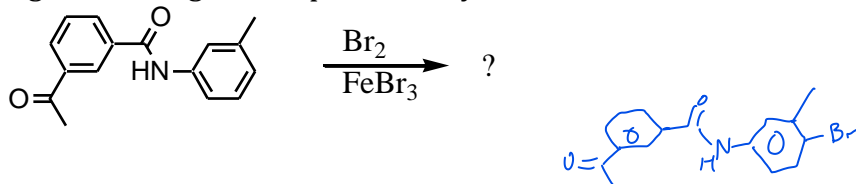
Ans:

8. Suggest a reasonable synthetic strategy for the synthesis of 4-methyl-1-phenyl-1-pentanol from 4-methylpentanoyl chloride, $(\text{CH}_3)_2\text{CHCH}_2\text{CH}_2\text{COCl}$

Ans:

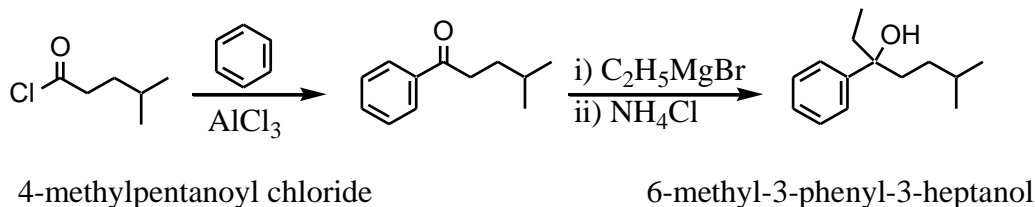


9. When the following substance is treated with $\text{Br}_2/\text{FeBr}_3$, the major product is obtained in good yield, and only very small amounts of minor products are found. What is this major product and why are the minor products not formed to any significant degree? Explain clearly.



10. Suggest a reasonable synthetic strategy for the synthesis of 6-methyl-3-phenyl-3-heptanol from 4-methylpentanoyl chloride, $(\text{CH}_3)_2\text{CHCH}_2\text{CH}_2\text{COCl}$

Ans:



Pan a synthesis to make the following products:

