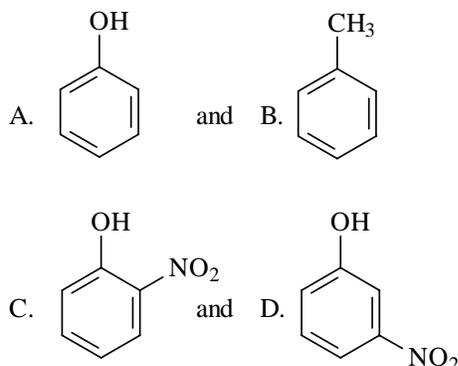
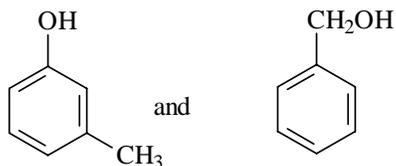


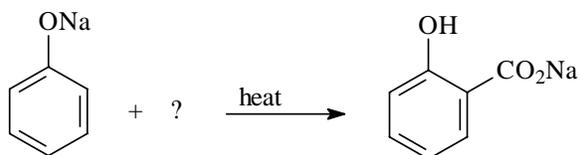
1. Which compound in each of the following pairs of compounds has the higher boiling point?



- 1) A and C 2) A and D 3) B and C 4) B and D
2. Which one of the following tests provides a simple method of distinguishing between the two compounds shown below?

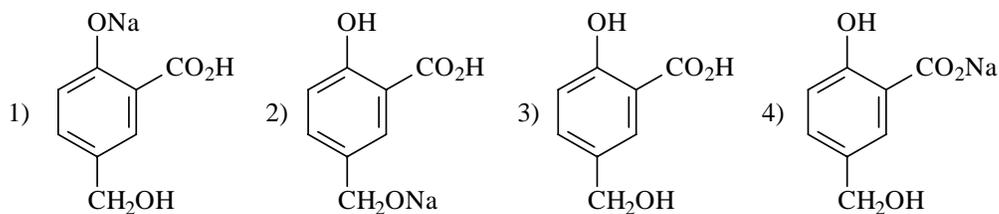
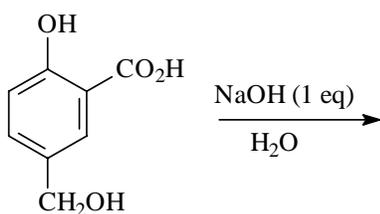


- 1) Reaction of each with sodium metal.
2) Reaction of each with acetic anhydride and catalytic sulfuric acid.
3) Solubility test of each in water.
4) Solubility test of each in aqueous sodium hydroxide.
3. Which one of the following is the missing reagent in the Kolbe-Schmitt reaction?



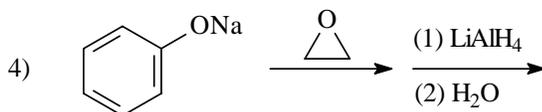
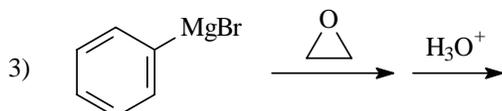
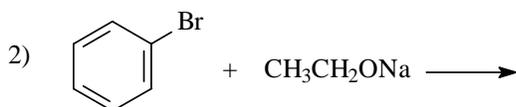
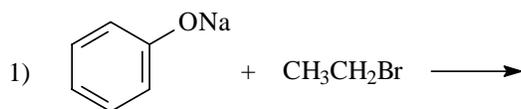
- 1) HCO_2Et 2) $(\text{EtO})_2\text{C}=\text{O}$ 3) CO_2 4) HCO_2Na

4. Identify the major species in solution from the reaction shown below.



1) 1 2) 2 3) 3 4) 4

5. Which one of the following reactions gives ethyl phenyl ether, $\text{CH}_3\text{CH}_2\text{OC}_6\text{H}_5$, as the major product?



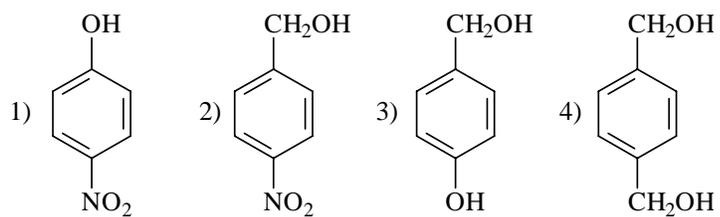
1) 1 2) 2 3) 3 4) 4

6. Arrange the following in order of decreasing acidity.

- A. phenol
- B. *m*-nitrophenol
- C. *p*-nitrophenol

1) C>A>B 2) C>B>A 3) B>A>C 4) B>C>A

10. Which of the following is the strongest acid?



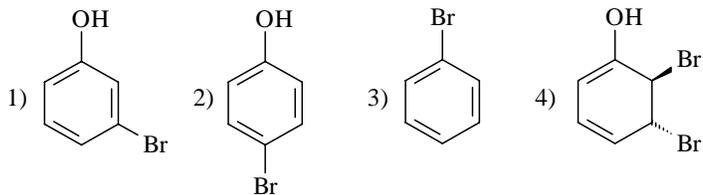
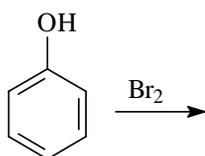
1) 1

2) 2

3) 3

4) 4

11. Which of the following is the product of the reaction below?



1) 1

2) 2

3) 3

4) 4