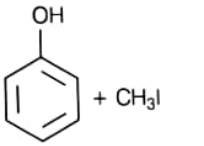
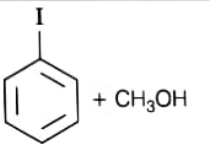
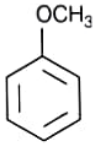
8 Match the starting material given in Column I with the products formed by these (Column II) in the reaction with HI.

Column I	Column II
A. $CH_3—O—CH_3$	1. 
B. $(CH_3)_2CH—O—CH_3$	2. $CH_3—C(CH_3)_2—I + CH_3OH$
C. $H_3C—C(CH_3)_2—O—CH_3$	3. 
D. 	4. $CH_3—OH + CH_3I$
	5. $(CH_3)_2CH—OH + CH_3I$
	6. $(CH_3)_2CH—I + CH_3OH$
	7. $CH_3—C(CH_3)_2—OH + CH_3I$

A. → (4) **B.** → (5) **C.** → (2) **D.** → (1)

A. $CH_3—O—CH_3$ is a symmetrical ether so the products are CH_3I and CH_3OH

B. In $(CH_3)_2CH—O—CH_3$ unsymmetrical ether, one alkyl group is primary while another is secondary. So, it follows S_N2 mechanism. Thus, the halide ion attacks the smaller alkyl group and the products are

$$(H_3C)_2CHOH + CH_3I$$

C. In this case, one of the alkyl group is tertiary and the other is primary. It follows S_N1 mechanism and halide ion attacks the tertiary alkyl group and the products are $(CH_3)_3C—I$ and CH_3OH.

D. Here, the unsymmetrical ether is alkyl aryl ether. In this ether $O—CH_3$ bond is weaker than $O—C_6H_5$ bond which has partial double bond character due to resonance. So, the halide ion attacks on alkyl group and the products are $C_6H_5—OH$ and CH_3I.