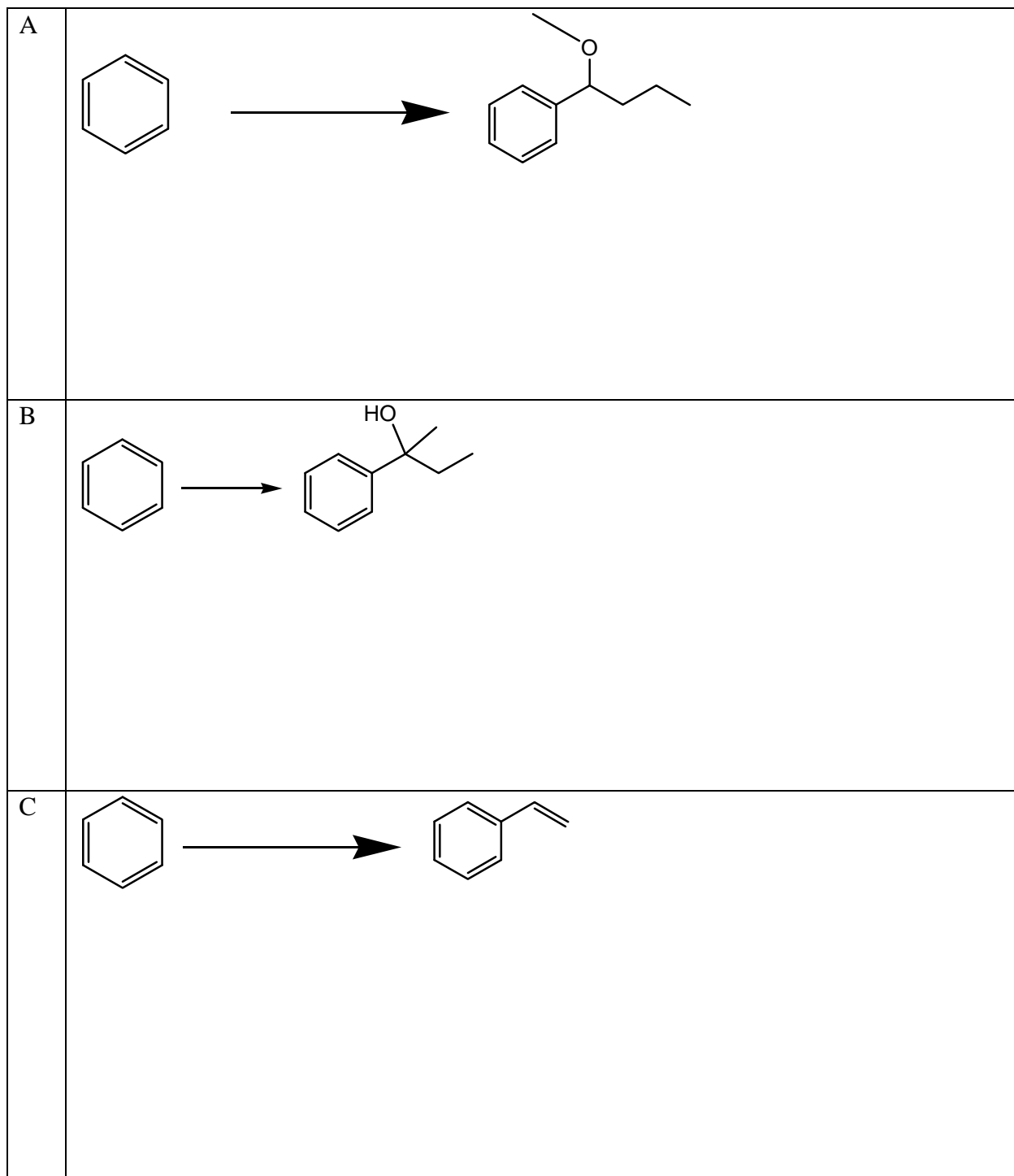
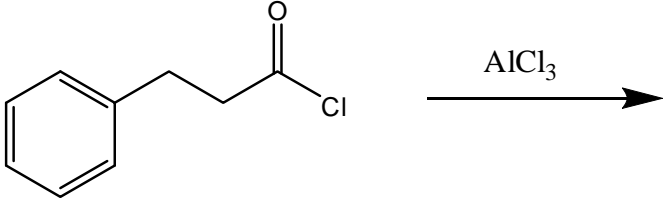
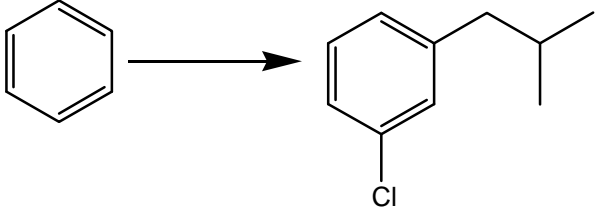
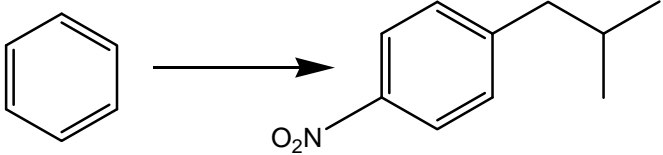
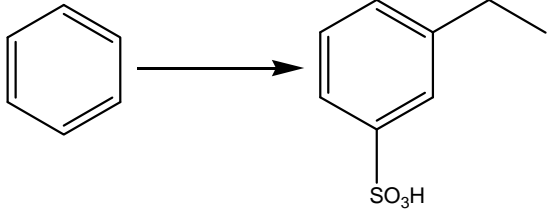
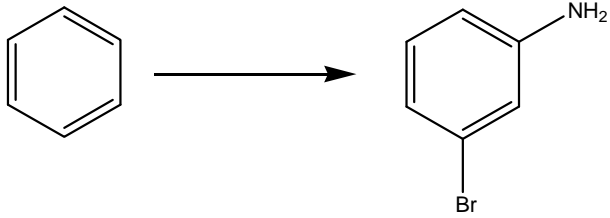
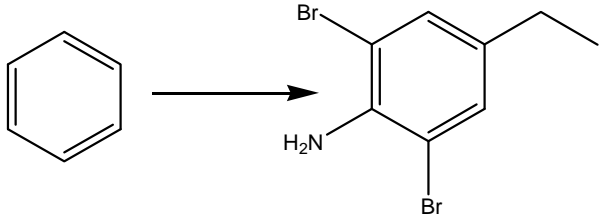


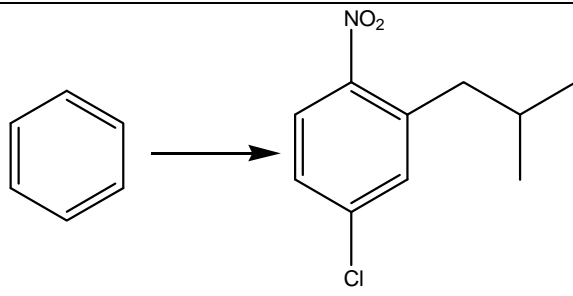
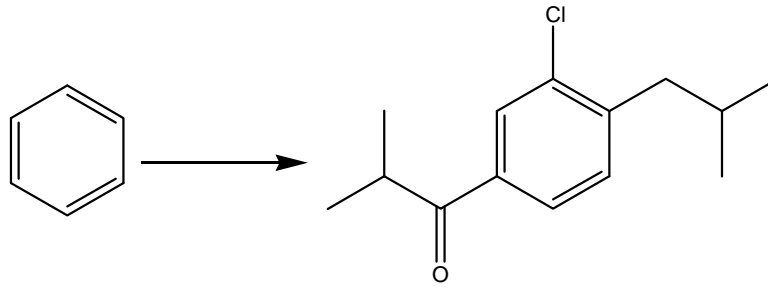
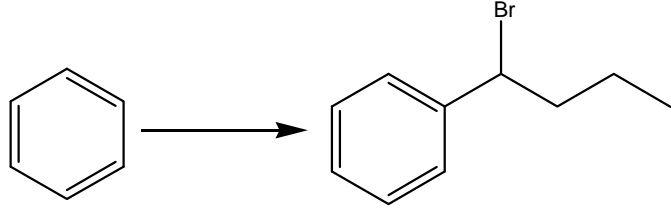
Chapter 17-II Worksheet

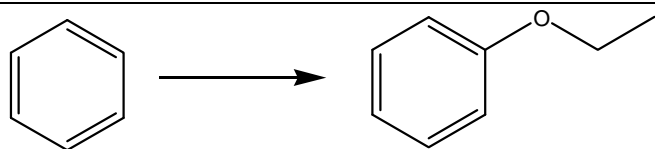
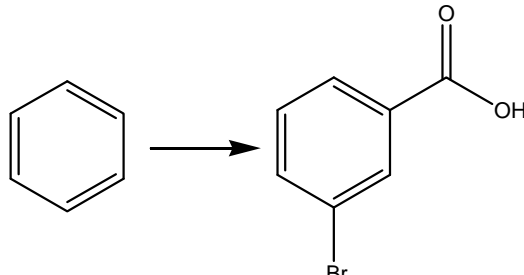
1. Complete the following reactions. In most cases, more than one step will be required.



D	 <p>Reaction of propionyl chloride (<chem>CCC(=O)Cl</chem>) with benzene (<chem>c1ccccc1</chem>) in the presence of aluminum chloride (AlCl_3) as a catalyst. The reaction arrow points to the right, indicating the reaction proceeds.</p>
E	 <p>Reaction of benzene (<chem>c1ccccc1</chem>) with isobutyl chloride (<chem>CC(C)CCl</chem>) to form 1-(4-chlorophenyl)propane (<chem>CC(C)Cc1ccc(Cl)cc1</chem>).</p>
F	 <p>Reaction of benzene (<chem>c1ccccc1</chem>) with isobutyl chloride (<chem>CC(C)CCl</chem>) to form 1-(4-nitrophenyl)propane (<chem>CC(C)Cc1ccc([N+](=O)[O-])cc1</chem>).</p>

G	 <p>A chemical reaction showing the conversion of benzene to 4-ethylbenzenesulfonic acid. On the left is a benzene ring. An arrow points to the right, where the product is shown: a benzene ring with an ethyl group (-CH₂CH₃) at the top position and a sulfonic acid group (-SO₃H) at the para position (bottom).</p>
H	 <p>A chemical reaction showing the conversion of benzene to 3-bromoaniline. On the left is a benzene ring. An arrow points to the right, where the product is shown: a benzene ring with an amino group (-NH₂) at the top position and a bromine atom (-Br) at the meta position (bottom).</p>
I	 <p>A chemical reaction showing the conversion of benzene to 2,4-dibromo-N-ethylaniline. On the left is a benzene ring. An arrow points to the right, where the product is shown: a benzene ring with an ethyl group (-CH₂CH₃) at the top position, an amino group (-NH₂) at the ortho position (bottom-left), and bromine atoms (-Br) at the meta (top-left) and para (bottom) positions.</p>

J	 <p>Reaction of benzene to 1-(4-chloro-3-nitrophenyl)propane. The product is a benzene ring with a chlorine atom at the para position and a nitro group at the meta position relative to a propyl chain.</p> <chem>CC(C)CC1=CC=C(C=C1)Cl[N+](=O)[O-]</chem>
K	 <p>Reaction of benzene to 1-(4-chloro-3-isobutylphenyl)propan-1-one. The product is a benzene ring with a chlorine atom at the para position and an isobutyl group at the meta position relative to a propanoyl chain.</p> <chem>CC(C)CC1=CC=C(C=C1)ClC(=O)CC</chem>
L	 <p>Reaction of benzene to 1-bromo-2-phenylpropane. The product is a benzene ring with a propyl chain attached to the ring, and a bromine atom on the secondary carbon of the propyl chain.</p> <chem>CCC(Br)C1=CC=C(C=C1)</chem>

M	 <p>A chemical reaction diagram showing the conversion of benzene to ethoxybenzene. On the left is a benzene ring. An arrow points to the right, where the product is shown: a benzene ring with an ethoxy group (-OCH₂CH₃) attached to one of the carbons.</p>
N	 <p>A chemical reaction diagram showing the conversion of benzene to 3-bromobenzoic acid. On the left is a benzene ring. An arrow points to the right, where the product is shown: a benzene ring with a carboxylic acid group (-COOH) at the top position and a bromine atom (-Br) at the meta position (3-position).</p>

2. Complete the following mechanisms using curved arrows to show the movement of electrons. Be sure to show each step clearly.

