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If you are using this book, then you have likely begun the second half of your organic chemistry course. You have encountered aromatic rings, such as benzene. In this chapter, we will explore the criteria for aromatic compounds (other than benzene) that are also classified as aromatic.

1.1 INTRODUCTION TO AROMATIC COMPOUNDS

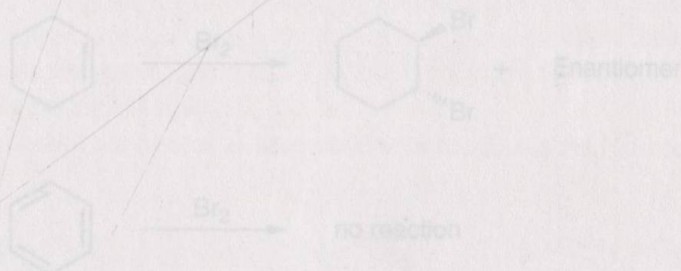
Consider the structure of benzene:



Benzene is resonance-stabilized, as shown above, and is sometimes drawn in the following way:



This type of drawing (a hexagon with a circle in the center) is not suitable when drawing mechanisms or requires that we keep track of electrons meticulously. But, it is helpful to see this type of drawing, even in this book, because it represents all six π electrons of the ring as a single entity, rather than as three separate double bonds. This should be viewed as one functional group, rather than as three separate functional groups. This is perhaps the special stability associated with a benzene ring. To illustrate this stability, we can compare the reactivity of cyclohexene and benzene.



Cyclohexene is an alkene, and it will react with molecular bromine (Br_2) via an addition process, as expected. This reaction occurs when benzene is treated with Br_2 , because the stability associated with the ring (of six π electrons) is not overcome by the stability associated with the addition process. That is, the six π electrons of the ring represent a single functional group that does not react.

Understanding the source of the stability of benzene requires MO (molecular orbital) theory. You may not have MO theory in your course, so you should consult your textbook and/or lecture notes to see whether MO theory is covered.