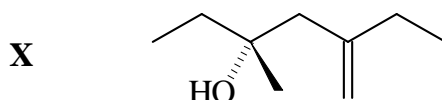
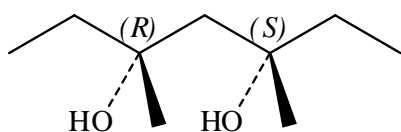
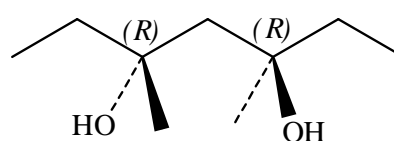
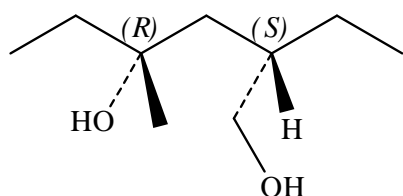
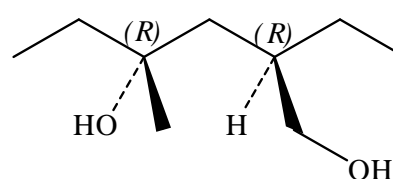


Marks
7

- Compound **X** undergoes an addition reaction on treatment with dilute aqueous sulfuric acid to form a mixture of diol compounds.



Draw all possible products (major and minor) that can form from this reaction. Take care to represent clearly the stereochemistry of all the products.

Major (from Markovnikov's rule)
achiral

(3*R*,5*S*)-3,5-dimethylheptane-3,5-diol
chiral

(3*R*,5*R*)-3,5-dimethylheptane-3,5-diol
Minor (anti-Markovnikov)
chiral

(2*S*,4*R*)-2-ethyl-4-methylhexane-1,4-diol
chiral

(2*R*,4*R*)-2-ethyl-4-methylhexane-1,4-diol

Clearly label each isomer drawn above as either chiral or achiral (not chiral).

Circle one of the isomers that you expect to be a major product of the reaction and provide a full systematic name for this compound below. Make sure you include all relevant stereochemical descriptors.

See above