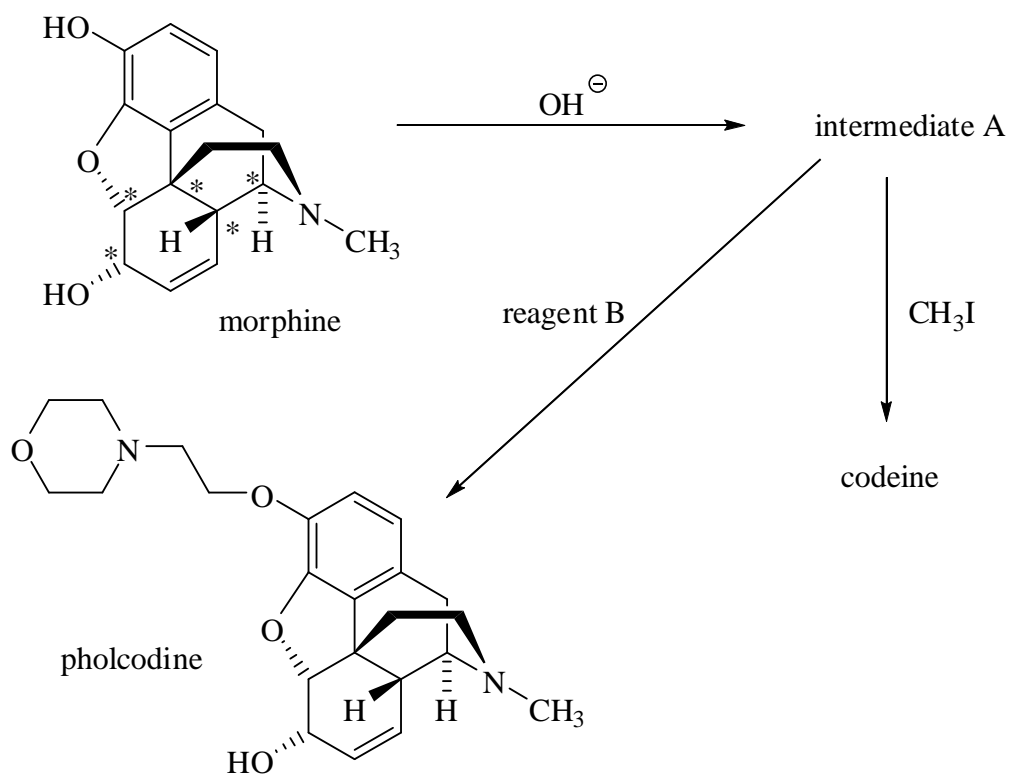


- Morphine is the principal active agent in opium and is a highly potent analgesic drug. Its structure and conversion into codeine (a moderate analgesic) and pholcodine (a cough suppressant) are shown below.



Give the molecular formula of morphine.

**C<sub>17</sub>H<sub>19</sub>O<sub>3</sub>N**

How many stereogenic (chiral) centres are there in morphine?

**5 (\* on picture)**

Identify the functional groups present in morphine.

**phenol, amine, alcohol, ether, alkene**

Draw the structures of codeine and reagent B.

