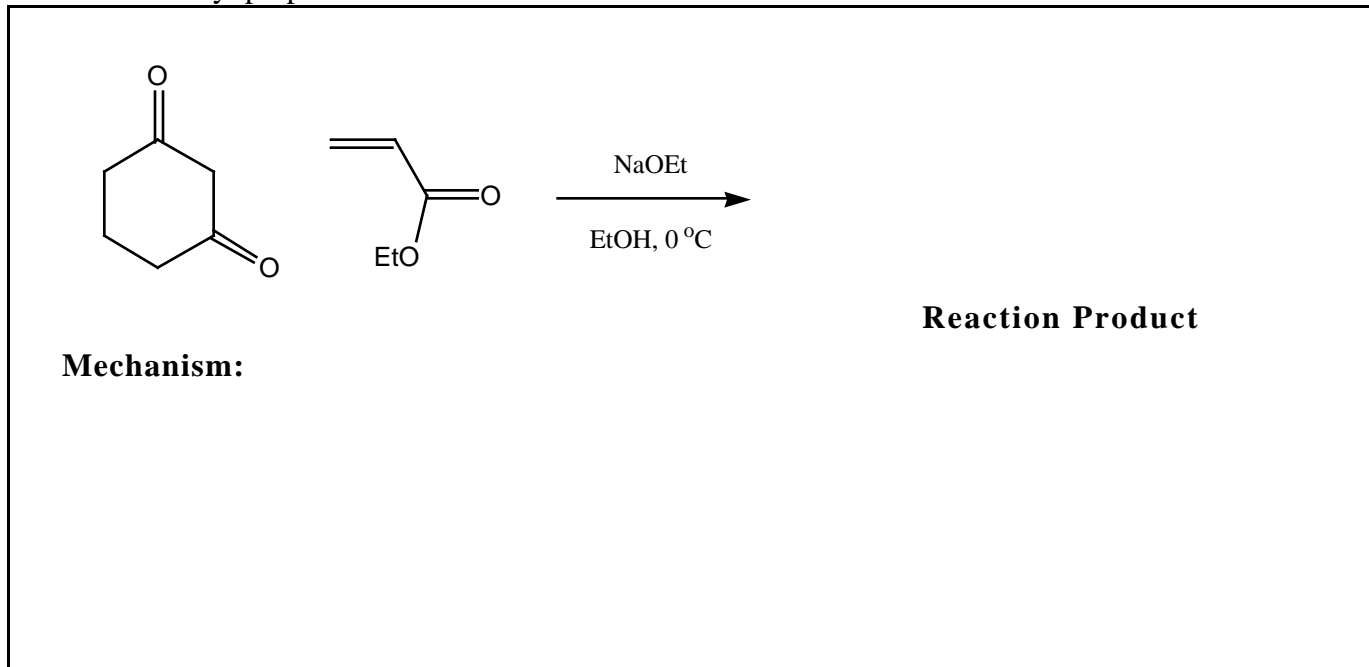


GTQ on Michael Reactions. (20 points, synthesis, mechanism)

(a) Show the overall reaction and also provide the mechanism for the Michael addition of 1,3-dioxocyclohexane and ethyl propenoate. Use NaOEt at the base in ethanol solvent.



(b) The Michael addition is a useful method for the **synthesis of 1,5-dicarbonyl systems**. When **acetoacetic ester** is used as the adding group, the product can be hydrolyzed and decarboxylated to obtain the alkylated acid. Show such a sequence using **ethyl propenoate**.

