

2. The cosmetics industry has found that alpha-hydroxy acids (AHAs), from such varied sources as fruit (citric and malic acids), yogurt (lactic acid), wine (tartaric acid) and beets (glycolic acid) help relieve rough, dry skin and surface wrinkles.

In the lab, one of the best ways to prepare AHAs is by HCN addition to a carbonyl followed by hydrolysis, where acidic conditions work best.

Write a detailed, step-by-step mechanism for step B below under acid catalysed conditions. Do not skip or abbreviate any steps. Make sure to use equilibrium arrows when necessary, and specify the other product of the reaction that has not been written below. (12 marks)

