Question 24 (4 marks)

In the margarine industry, alkenes are often hydrogenated to convert unsaturated oils into solid fats that have a greater proportion of saturated molecules.

(a) Using ethene as an example, write an equation for this reaction and state the type of reaction this represents.

\[ \text{C}_2\text{H}_4(g) + \text{H}_2(g) \rightarrow \text{C}_2\text{H}_6(g) \]

hydrogenation addition reaction

(b) Describe a test that could be used to confirm that all the ethene has been converted.

 Blow Br_2 gas into the reaction vessel. If there take a sample of the unsaturated oils and solid fats and place into a test tube. Add 2 drops of brown water and see if any discoloration occurs. If there is still a brown colour of the Bromine then all of the ethene has been converted or if it is present the Bromine will undergo an addition reaction to form 1,2 dibromoethane.