

Solutions

2.1 C_nH_{2n} .

2.2 Ethanol.

2.3 It is only partially ionised in water; so few H^+ ions form relative to a strong acid of equal concentration.

3.1 + hydrogen (nickel catalyst) $\rightarrow$ ethane; + water/steam (phosphoric acid catalyst) $\rightarrow$ ethanol; + bromine $\rightarrow$ dibromoethane, decolourising bromine water.

3.2 Mix sugar solution with yeast; keep warm – around body temperature; exclude oxygen – anaerobic conditions; the yeast's enzymes convert the sugar to ethanol and carbon dioxide, giving a dilute ethanol solution.

3.3 Ester – ethyl ethanoate + water; condensation/esterification reaction; ethanol carries $-OH$ and ethanoic acid carries $-COOH$.