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**Question 21** (3 marks)

A  $0.001 \text{ mol L}^{-1}$  solution of hydrochloric acid and a  $0.056 \text{ mol L}^{-1}$  solution of ethanoic acid both have a pH of 3.0.

**3**

Why do both solutions have the same pH?

They have the same pH because their  $[\text{H}^+]$  is the same. Hydrochloric acid is strong therefore, even though its concentration is lower than the ethanoic acid, it has the same  $[\text{H}^+]$  as the weak ethanoic acid here, as the HCl ionises completely.