

Question 34**(12 marks)**

Fluconazole is an antifungal medication that contains carbon, hydrogen, fluorine, nitrogen and oxygen.

A 3.42 g sample of fluconazole was combusted and produced 6.39 g of carbon dioxide and 1.21 g of water. All of the nitrogen in a second 0.422 g sample of fluconazole was converted into nitric acid, which was neutralised by 16.5 mL of a 0.500 mol L⁻¹ solution of sodium hydroxide. The second sample was also found to contain 0.0525 g of fluorine.

Determine the empirical formula of fluconazole.
