

Question 32**(6 marks)**

- (a) A buffer of carbonic acid (H_2CO_3)/hydrogencarbonate (HCO_3^-) is present in blood plasma to maintain a pH between 7.35 and 7.45. Write an equation to show the relevant species present in a carbonic acid/hydrogencarbonate buffer solution. (2 marks)

- (b) Explain why 300.0 mL of 1.00 mol L⁻¹ carbonic acid/hydrogencarbonate buffer does **not** change in pH significantly when 3 drops of 1.00 mol L⁻¹ HCl are added to it, yet when 3 drops of 1.00 mol L⁻¹ HCl are added to 300.0 mL of distilled water there is a significant change in pH? (4 marks)