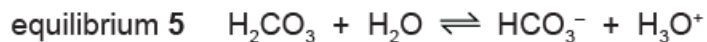


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(c) The buffer system in seawater contains a mixture of HCO_3^- and H_2CO_3 .



(i) Define a buffer solution.

.....
.....
..... [2]

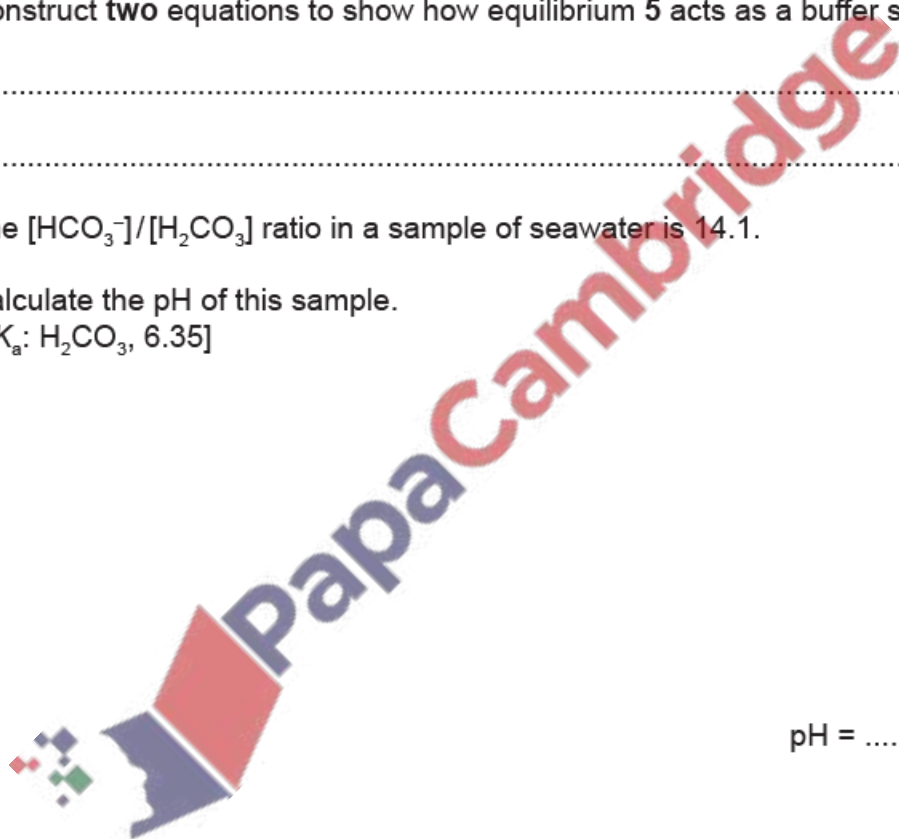
(ii) Construct two equations to show how equilibrium 5 acts as a buffer solution.

.....
..... [2]

(iii) The $[\text{HCO}_3^-]/[\text{H}_2\text{CO}_3]$ ratio in a sample of seawater is 14.1.

Calculate the pH of this sample.

$[\text{p}K_a: \text{H}_2\text{CO}_3, 6.35]$



pH = [3]