

**Marks**  
**4**

- Triethylamine,  $\text{N}(\text{CH}_2\text{CH}_3)_3$ , is a weak base with  $K_b = 5.2 \times 10^{-4}$  M. A 20.00 mL solution of 0.100 M triethylamine was titrated with 0.100 M HCl. Calculate the pH of the titration solution after the addition of:

a) 5.00 mL HCl solution

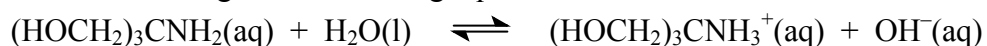
pH =

b) 20.10 mL HCl solution

pH =

**2**

- Tris(hydroxymethyl)aminomethane, commonly called TRIS, is a weak base with  $K_b = 1.19 \times 10^{-6}$  M. It is often used in buffers for biochemical research. It reacts with water according to the following equation.



At what pH does TRIS show its maximum buffering ability?

pH =

What is the TRIS/TRIS- $\text{H}^+$  ratio in a buffer of pH 7.40?

Answer: