

Chemistry 116 General Chemistry
Practice Problems for Titrations

Acid	pK _a	Base	pK _b
phosphoric	2.12	triethylamine	2.99
pyruvic	2.49	ethylamine	3.19
lactic	3.86	dimethylamine	3.27
benzoic	4.19	methylamine	3.44
acetic	4.75	trimethylamine	4.19
carbonic	6.37	ammonia	4.75
dihydrogen phosphate	7.21	TRIS	5.92
hydrogen carbonate	10.3	pyridine	8.75
hydrogen phosphate	12.7	aniline	9.37

Calculate the following for each of the titrations below. (initial volumes of analyte given)

- Moles of analyte
- Volume of titrant to reach end point
- Determine the pH at the start, halfway and at the end point for each of the following titrations.
 - 25.00 mL 0.200 M HCl with 0.150 M NaOH
 - 25.00 mL 0.105 M KOH with 0.365 M HCl
 - 10.00 mL of a weak acid (pK_a = 4.65) 0.0900 M with 0.110 M NaOH
 - 50.00 mL of a weak base (pK_b = 5.18) 0.0720 M with 0.150 M HCl

Answers

- 5.00×10^{-3} mol
 - 33.33 mL
 - 0.699; 1.22; 7.0
- 2.62×10^{-3} mol
 - 7.19 mL
 - 13.0; 12.66; 7.0
- 9.00×10^{-4} mol
 - 8.18 mL
 - 2.85; 4.65; 8.68
- 3.60×10^{-3} mol
 - 24.00 mL
 - 10.84; 8.82; 5.06