

### Exercise 1.54 – Titrations

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**Q154-01** Calculate the molarity of the base, if  $40 \text{ cm}^3$  of sodium hydroxide completely neutralises  $21.0 \text{ cm}^3$  of  $0.2 \text{ mol dm}^{-3}$  hydrobromic acid HBr?

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**Q154-02** Calculate the molarity of the base, if  $15 \text{ cm}^3$  of sodium hydroxide completely neutralises  $17.0 \text{ cm}^3$  of  $0.1 \text{ mol dm}^{-3}$  sulphuric acid,  $\text{H}_2\text{SO}_4$ .

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**Q154-03** Calculate the molarity of the acid, if  $40 \text{ cm}^3$  of hydrochloric acid completely neutralises  $53.6 \text{ cm}^3$  of  $0.1 \text{ mol dm}^{-3}$  sodium hydroxide, NaOH.

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**Q154-04** Calculate the molarity of the acid, if  $20 \text{ cm}^3$  of hydrochloric acid completely neutralises  $10.0 \text{ cm}^3$  of a solution of sodium hydroxide, NaOH, containing  $40 \text{ g dm}^{-3}$  of sodium hydroxide, NaOH.

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**Q154-05** Calculate the molarity of an ammonia solution, if  $40 \text{ cm}^3$  of nitric acid completely neutralises  $30 \text{ cm}^3$  of a solution of  $0.2 \text{ mol dm}^{-3}$  ammonia solution (aq).

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**Q154-06** Calculate the molarity of the barium chloride(aq), if  $15 \text{ cm}^3$  of a solution of barium chloride completely reacts with  $10 \text{ cm}^3$  of a solution of  $0.05 \text{ mol dm}^{-3}$  sulphuric acid.

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**Q154-07** Calculate the molarity of the sodium chloride, if  $25 \text{ cm}^3$  of a solution of NaCl completely reacts with  $20 \text{ cm}^3$  of a  $0.01 \text{ mol dm}^{-3}$  silver nitrate solution.

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**Q154-08** Calculate the molarity of the aluminium chloride, if  $20 \text{ cm}^3$  of a solution of  $\text{AlCl}_3$  reacts completely with  $30 \text{ cm}^3$  of  $0.02 \text{ mol dm}^{-3}$  silver nitrate solution.

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**Q154-09** Calculate the molarity of the acid,  $\text{H}_2\text{A}$ , if  $25 \text{ cm}^3$  of HA completely neutralises  $25 \text{ cm}^3$  of  $0.1 \text{ mol dm}^{-3}$  NaOH to give  $\text{Na}_2\text{A}$ .

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**Q154-10** Calculate the molarity of the phosphoric acid, if  $25 \text{ cm}^3$  of  $\text{H}_3\text{PO}_4$  completely neutralises  $100 \text{ cm}^3$  of  $0.1 \text{ mol dm}^{-3}$  sodium hydroxide solution, NaOH(aq), to give monosodium dihydrogen phosphate,  $\text{NaH}_2\text{PO}_4$ .

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