Edexcel AS Chemistry Exam practice answers

9: Kinetics

1 (a) (i) Amount of Mg = = 0.00461¦mol (✓)

 Amount of HCl used up = 2 × 0.00461 = 0.00922¦mol

 Amount of acid at start = 0.100¦mol; (✓) so % used up = 10.0% (✓)

 (ii) Moles of H2 = moles of Mg (or 2 × moles HCl used up) = 0.00461¦mol (✓)

 Volume of H2 = 0.00461 × 24 = 0.111¦dm3 = 111¦cm3 (✓)

 Rate = 3.26 (✓) cm3¦s−1

 (iii) It is a reasonable measure because only 10% of the acid has been used up (✓)

 (b) D (✓)

 (c) (i) Labelled axes and points plotted; (✓) smooth curve drawn; (✓) tangent drawn at origin (✓)

 Rate = 3.64 (allow ÷ 0.1 of this value) (✓) cm3¦s−1

 (ii) Part (a)(ii) is an average rate; (✓) and the concentration of the acid would have decreased slightly during the reaction (✓)

2 (a) C (✓)

 (b) (i) *y*-axis labelled number/fraction, *x*-axis labelled energy; (✓) two lines with peak of *T*h to the right and lower than that of *T*c; (✓) *E*a marked well to the right of the peaks (✓)

 More molecules have energy ≥ *E*a at *T*h; (✓) so a higher *proportion* of collisions (not more result in reaction; (✓) so the rate is increased

 (ii) The number of molecules per unit volume is increased; (✓) so a there is a higher frequency of collisions; (✓) and a faster rate (✓)