AQA AS/A-level Year 1 Chemistry exam practice answers

**12 Alkenes**

**1 (a) (i)** Bromine water turns from orange to colourless [1]

 **(ii)** No reaction — bromine water stays orange [1]

 **(b)** Electrophilic addition [1]

 **(c)**

 **** [1]

**2 (a)** 2-methylpropene [1]; but-1-ene [1]; E-but-2-ene [1] respectively

 **(b)** C4H8 [1]

 **(c)** Structural isomers [1]

 **(d)** But-2-ene [1]; two different groups on different carbon atoms of the double bond/no free rotation allowed around the carbon double bond and so two different molecules exist [1]

 **(e)**

 **** [1]

There are two possible carbocations:

 **** [1]

The secondary carbocation (the left-hand structure) is more stable than the primary one [1]

 **(f) (i)**

 **** [1]

 **(ii)**

  [1]

**3 (a)** Measured volume would be greater [1]

 Level in burette falls as tap is filled before any liquid is delivered [1]

 **(b)** Drop sizes vary [1]

 **(c)** Use a larger single volume of oil [1]

 Dissolve this oil in the organic solvent [1]

 Transfer to a conical flask and make up to 250 cm3 with more solvent [1]

 Titrate (25 cm3) samples from the flask [1]

 **(d)** Stage 1:

 mass of oil = 0.92 × (5.0 × 10−2 × 5) = 0.23 (g) [1]

 moles of oil = 0.23/885 = 2.6 × 10–4 [1]

 Stage 2:

 moles of bromine = (2.0 × 10−2 × 39.4)/1000 = 7.9 × 10−4 [1]

 Stage 3:

 ratio oil:bromine = 2.6 × 10−4:7.9 × 10−4

 simplest ratio = (2.6 × 10−4/2.6 × 10−4):(7.9 × 10−4/2.6 × 10−4) = 1:3 [1]

 Hence, three C=C bonds [1]