Singapore Sports School
Sc5105, Sc5107 Science(Chemistry)
Mark Scheme

Answers to Paper 3

|				
1	B		11	B
2	C		12	A
3	D		13	D
4	A		14	C
5	D		15	D
6	B		16	D
7	C		17	A
8	C		~~18~~	~~B~~
9	A		~~19~~	~~A~~
10	B		~~20~~	~~C~~

Answers to Paper 4

1[k] (a)   A substance that cannot be broken down into simpler substances /

A substance that consists of only 1 type of atoms;   [1]

(b)   (i)[a]   444°C   [1]

(ii)[u]   A and B   [1]

(iii)[u]   Closely-packed sulfur particles absorb heat energy;

Particles move faster until the attractive forces of attraction

between them break; Particles move out of fixed position and

move about randomly within the liquid;   [2]

[Total: 5]

2[a] (a) A   [1]

      (b) B   [1]

      (c) D   [1]

      (d) E   [1]

      (e) C   [1]

                                                                              [Total: 5]

3   (a)[a] Covalent structure / Sharing of electrons [1m];   [2]
             Correct number of electrons [1m];
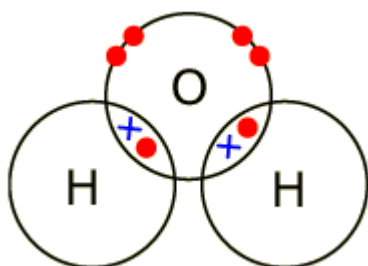
      (b)[u] Substance X has strong electrostatic force of attraction / ionic bonds

              between ions;

              Require large amount of energy to break;

              Much less energy needed to break weak intermolecular forces of

              attraction between molecules of Y;
                                                                                   [2]

                                                                              [Total: 4]

Section B

4 (a) (i)[k] 1. Limestone / calcium carbonate

2. Haematite / iron ore

3. Coke / carbon

[2]

(ii)[a] 1. Carbon dioxide present

2. An acidic gas present

[2]

(b) (i)[a] L, G, H, K (every 2 correct answers 1m)

[2]

(ii)[u] Copper / silver

[1]

(iii)[u] hydrogen

[1]

[Total: 8]

5 (a)[u] No more bubbles were seen / there was solid $MgCO_3$ left;

[1]

(b)[a] Magnesium carbonate;

[1]

(c)[a] Filtration;

[1]

(d)[k] Rinse the crystals collected with some cold distilled water

before drying them;

[1]

(e)[a] $MgCO_3(s) + H_2SO_4(aq) \rightarrow MgSO_4(aq) + H_2O(l) + CO_2(g)$

[2]

(f)[a] Mr of $MgSO_4$ = 24 + 32 + (4 x 16) = 120 [1]
Number of moles of $MgSO_4$ formed = 2.4 / 120 = 0.02 mol [1]

[2]

[Total: 8]

6   (a)k   The molecule contains more than one ;
        carbon-carbon double bond;   [2]

    (b)a   Chemical test: Add aqueous bromine / bromine water;
           Result: Reddish brown aqueous bromine decolourised
                            immediately;   [2]

    (c)   (i),   [2]
          (ii)a
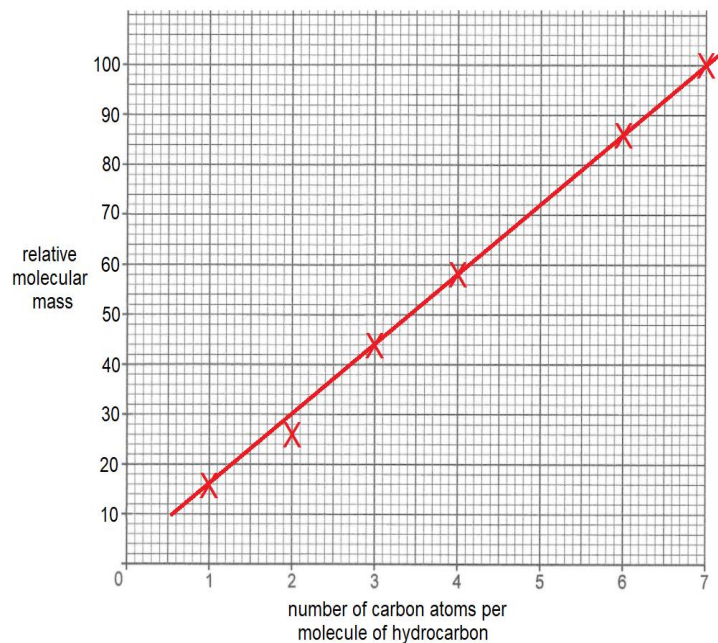
          (iii)   72 (no marks if not indicated on graph)   [1]
          (iv)   Circle point for 2C molecule   [1]

                                                                    [Total: 8]

                        ------- End of Paper ------