CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0652 PHYSICAL SCIENCE

0652/61 Paper 6 (Alternative to Practical), maximum raw mark 60

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CAMBRIDGE
International Examinations

1 **(a)** **(i)** evaporation / evaporates / vaporisation ; [1]

(ii) condensation / condenses / liquefies ; [1]

(b) 130 (cm^3) ; [1]

(c) **(i)** rust / rusting / rusted / rusty [1]

(ii) For **A**: 85 ; 45 ; (ecf)
For **B**: 103 to 104.5 ; 26 ; (ecf) [4]

(d) **(i)** there is more oxygen in boiled-out air (than in normal air) ; (ecf) [1]

(ii) $\frac{45 \times 100}{130}$ = 34.6% ; [1]

[Total: 10]

2 **(a)** image shows filter paper and collecting vessel ;
filtrate and residue labelled in correct places ; [2]

(b) white precipitate / solid / deposit ;
which dissolves / (colourless) solution formed (when more ammonia is added) ; [2]

(c) **(i)** (pass gas into) limewater ;
(to give) white precipitate / milky / cloudy ; [2]

(ii) (light) blue **AND** precipitate / solid ;
(re-dissolves to give) dark blue solution ; [2]

(d) brown / yellow solution ;
brown / red-brown precipitate ; [2]
OR
brown / red-brown precipitate ;
insoluble in excess ; [max 2]

[Total: 10]

3 **(a)** 0.5 ;
0.8 ; [2]

(b) (0.5 / 0.32 =) 1.6 ; (ecf)
(0.8 / 0.32 =) 2.5 ; (ecf) [2]

(c) **(i)** linear scales, vertical 0 to 6 AND horizontal 0 to 120, **AND both** axes correctly labelled with variable AND at least one with a unit ;
4 out of 5 points plotted correctly ± ½ square ;
straight line drawn must pass through 0,0 ± ½ square ; [3]

(ii) resistance is proportional / directly proportional to length ; [1]

(d) the wire heats up (and so change the resistance) ; [1]

(e) resistance will be lower / current will be greater ; [1]

[Total: 10]

4 **(a)** **B** 13.5 (g) ;
C 16.5 (g) ; [2]

(b) **B** 29 (s) ;
C 38 (s) ; [2]

(c) **(i)** vertical lines drawn joining the plot at –13.5, –16.5 ;

two correct temperatures correctly recorded ; [2]

(ii) fuel decreases in mass (when it is burned) ; [1]

(d) molecules / particles gain energy / move faster / collide more frequently or energetically ;
forces between particles get weaker ;
molecules / particles move away from each other / occupy a larger space ; [max 2]

(e) **C** / paper and wood are biodegradable ;
OR
C / not **A** and **B** because plastic and nylon are non-biodegradable ; [max 1]

[Total: 10]

5 (a) (i) temperature is constant / stops increasing ; [1]

(ii) (all) intermolecular forces broken/change from liquid to gas ;

caused by thermal energy / as thermal energy absorbed ; [2]

(iii) 118 °C ; [1]

(iv) the molecules lose energy ;
AND *any 1 from:*
intermolecular forces form ;
get stronger ;
molecules get closer together ;
turn to a liquid ; [max 2]

b (i) solid / crystals appear ; [1]

(ii) 16.5 ; [1]

(iii) (thermal) energy is given out ;
AND *any 1 from:*
stops the temperature falling ;
strengthens / more intermolecular forces ; [max 2]

[Total: 10]

6 (a) (i) 9.9 AND 13.2; [1]

(ii) 6.5 AND 9.9 ; (ecf) [1]

(iii) 3.4 ;
3.3 ; (ecf) [2]

(b) (i) $9.8 \times \frac{(3.3)^2}{2}$;
= 53.4 ; [1]

(ii) errors ;
EITHER:
errors evened out/decreased effect of errors ;
or
increases reliability ; [max 2]

(c) hear at same time / sound arrives at same time ;
drop and timer happen together ;
OR
sound takes time to travel (from **A** to **B**) ;
timer started late / time too small / drop before timer started ; [max 2]

[Total: 10]