CAMBRIDGE INTERNATIONAL EXAMINATIONS
Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0653 COMBINED SCIENCE

0653/51　　　　Paper 5 (Practical Test), maximum raw mark 30

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1 **(a)** **(i)** (any) blue / no change ;   [1]

      (ii) colourless / like water / clear ;   [1]
            (ignore: stayed the same)

  (b) turns white / pink **AND** indicates water is produced / present ;   [1]

      (i) turns milky / cloudy / white ppt. ;   [1]

      (ii) (indicates) carbon dioxide / CO_2 ;   [1]

  (d) heat produced / temperature increase ;
      light produced / glows / fire / flame / smoke ;   [2]

  (e) a control / show that water not already present / show that carbon dioxide not
      already present ;   [1]

  (f) respiration ;   [1]

  (g) goggles / hair tied back / Bunsen at safe distance / keep maximum distance from
      burning food / accept other sensible suggestions ;   [1]
      (ignore: test-tube holders as in diagram)

                                                                         [Total: 10]

2 **(a)** **(i)** value of time greater than or equal to 10 s ;   [1]
            (allow: answers in minutes and seconds)

      (ii) value within 10% of first value ;
          both values to nearest second ;   [2]

  (b) **(i)** Fe^{2+} value less than both values in **(a)** ;   [1]

      (ii) Fe^{3+} value less than both values in **(a)** **AND** to nearest second ;   [1]

  (c) they are catalysts ;
      time decreased (with addition of metal ion) / rate increased ;   [1]

  (d) reliable as within 10% (or other suitable percentage or comment)
      OR
      not reliable as greater than 10% difference (or other suitable percentage or
      comment) ;   [1]
      (answer must demonstrate an understanding of reliability)
      (ignore: references to accuracy)

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(e) add 1 cm3 water / add 5 drops + 1 cm3 starch ;
(**do NOT** *allow: 0.5 cm^3 more of **A** and 0.5 cm^3 more of **B***)
total volume should be same as in **(b)** / equivalent volume to metal ion / to keep
concentrations the same ; [2]
(mark independently)

[Total: 10]

3 **(a)** *h* **AND** *D* **AND** *d* recorded ;
$h > D > d$;
all values to the nearest 0.1 cm ;
d_A calculation correct ;
V calculation correct ;
V given as whole number ; [6]

(b) **(i)** V_w correctly calculated with working shown, e.g. subtraction of two values ;
V_w is supervisor's value ± 20 cm^3 *(can get this accuracy mark without
calculation)* ; [2]

(ii) cup not completely full / measuring cylinder not read at eye level / measuring
cylinder not read perpendicularly / measuring cylinder not read from bottom of
meniscus / water spilled on transfer / R_2 off scale of measuring cylinder ; [1]

(iii) V_W since difficult to measure *h* / V_W since *d* (or *D*) not inside diameters / V_W
since it is a direct measurement / V_W since *V* is an approximation / V_W is
actual measurement whereas *V* uses a formula ; [1]

[Total: 10]