

**MARK SCHEME for the May/June 2011 question paper**  
**for the guidance of teachers**

**0653 COMBINED SCIENCE**

**0653/52**

Paper 5 (Practical), maximum raw mark 30

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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- 1 (a) *table*  
start and maximum temperature recorded (maximum higher than start and not greater than 100) ;  
consistent recording of temperatures ;  
mass of bread recorded to 0.1 g ; [3]
- (i) correct calculation of maximum – start ; [1]
- (ii) correct substitution ;  
calculation of energy with correct rounding and maximum of 3 decimal places ; [2]
- (iii) (no)  
loss to atmosphere ;  
loss to boiling tube ;  
incomplete combustion ;  
water not evenly heated ;  
draughts affecting flame ; [max 1]
- (iv) insulation ;  
stirring ;  
shield flame ;  
distance between flame and tube minimised ; [max 1]
- (b) (i) *iodine*:– (from) orange / red / brown  
(to) black / blue ; [1]
- (ii) *result*: positive / yes **and** *substance*: starch ; [1]
- [Total: 10]**

- 2 (a) and (b)  
5 values of **d** and N ; [1]  
rest of values of **d** spaced at 50mm ; [1]  
suitable numbers for force increasing with increasing distance ; [1]
- (c) (i) *graph*  
suitable scale ;  
plotting correct for at least 4 points ;  
suitable straight line ; [3]
- (ii) line extended to cut vertical axis ; [1]
- (d) (i) read correctly ; [1]
- (ii) converted correctly into a mass ; [1]
- (iii) mass of rule 2 **m** ; (within 10 % of Supervisor's Results) [1]
- [Total: 10]**

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- 3 (a) green ; (ignore reference to white) [1]
- (b) residue is white ; (ignore reference to green)  
filtrate blue / blue-green ; [2]
- (c) (i) blue ppt. ; [1]  
insoluble in excess ; [1]
- (ii) blue ppt. ; [2]  
dark blue solution ;
- (iii) white ppt. ; [1]
- (iv) cation is copper /  $\text{Cu}^{2+}$  ; [1]  
anion is sulfate /  $\text{SO}_4^{2-}$  ; [1]

**[Total: 10]**