

MARK SCHEME for the May/June 2015 series

0653 COMBINED SCIENCE

0653/63

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

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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1 (a) yeast dead / (enzyme) no longer active / denatured ;

(b)

time / mins	colour in tube A	colour in tube B	colour in tube C
1	blue	blue	blue
2	colourless	blue	blue
3	colourless	blue	blue
4	colourless	blue	blue
5	colourless	colourless	blue
6	colourless	colourless	blue

time / mins ;

A correct ;

B correct ;

C correct ;

ALLOW decolourised IGNORE transparent [4]

(c) (i) constant volume / concentration ; [1]

(ii) A changes quicker / changes first / respire faster ;
(more) glucose / substrate available in A ; [2]

M2 dependent on times being considered

(d) (colour changes back to) blue ;
methylene blue oxidised / reacts with oxygen / oxygen introduced ;
oxygen from air above solution ; [max2]

[Total: 10]

2 (a) make a solution in water ;
add (aqueous) sodium hydroxide / (aqueous) ammonia ;
green (gelatinous) ppt / solid ; [3]

(b) add sodium hydroxide (solution) and heat ;
damp ;
(red) litmus turns blue ; [3]

(c) make a solution in water ;
add hydrochloric / nitric acid ;
add barium chloride / nitrate (solution) ;
white ppt ; [4]

[Total: 10]

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- 3 (a) correct symbol for voltmeter ;
connected in parallel between X and Y or equivalent ;
- (b) (i) values in table: [2]
1.81 ; ALLOW range 1.80 – 1.82
0.70 ;
- (ii) headings: V, A, Ω (all three required) ; [1]
- (iii) 3.91, 8.00, 2.59 (allow ecf on third value)
all values to 2 d.p ;
all correct values ; [2]
- (c) use of 3.91 and 2.59 ;
statement matches results (expect NO)
AND
justification: e.g. values are too different/not close enough, even allowing
for experimental error/is 1.5 times ; [2]
- (d) the lamps are at different temperatures/lamps have different resistances or currents
than expected/this could explain why teacher statement not supported ; [1]

[Total: 10]

- 4 (a) (i) 61 ; [1]
(ii) 433 ; [1]
(iii) 0.0023 ; [1]
- (b) (i) Correct plotting (allow 1 error) ;
SMOOTH curve ; [2]
(ii) 52 ± 2 ; [1]
(iii) Do not know the rate either side of 52°C /need more results
in range e.g. 40°C to 60°C ; [1]

- (c) repeat experiment with water instead of acid ;
 1 cm^3 ;
solution will remain cloudy ; [3]

[Total: 10]

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- 5 (a) (i) lamp/bulb/ammeter ;
(ii) correct symbol for cell (or battery) ;
(iii) (explanation) does not react ;
(material) e.g. carbon/platinum ; [2]
- (b) (i) gives red-brown ppt ; [1]
(ii) damp litmus ;
(red then) bleached ; [2]
(iii) hydrogen ;
lit splint ;
"pops" ; [3]

[Total: 10]

- 6 (a) (i) 21.5 ; 20.5 ; [2]
(ii) axes correct and labelled ;
vertical axis NOT starting at zero ;
points correct (allow 1 error) ; (e.c.f. from part (i)) [3]
(iii) no, points scattered / no pattern / no straight line ; (e.c.f. from parts (i) and (ii))
(ignore any line drawn) [1]
- (b) (any **three** of)
rods should be same length and width ;
amount of wax should be the same ;
experiment repeated and average taken ;
water should be stirred ; [3]
- (c) (answer depends upon (b))
keep thickness / length (etc.) means only variable is % magnesium ;
repeating identifies anomalous results ; [1]

[Total: 10]