

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0654 CO-ORDINATED SCIENCES

0654/63

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

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1 (a) yeast dead / (enzyme) no longer active / denatured ; [1]

(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 ; [2]
- (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 ; [1]
- (ii) correct symbol for cell (or battery) ; [1]
- (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]