

**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1 (a) yeast dead / (enzyme) no longer active / denatured ; [1]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	<b>colourless</b>	<b>blue</b>	<b>blue</b>
3	<b>colourless</b>	<b>blue</b>	<b>blue</b>
4	<b>colourless</b>	<b>blue</b>	<b>blue</b>
5	<b>colourless</b>	<b>colourless</b>	<b>blue</b>
6	<b>colourless</b>	<b>colourless</b>	<b>blue</b>

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,  $\Omega$  (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)  $52 \pm 2$  ; [1]
- (iii) Do not know the rate either side of  $52^{\circ}\text{C}$ /need more results  
in range e.g.  $40^{\circ}\text{C}$  to  $60^{\circ}\text{C}$  ; [1]
- (c) repeat experiment with water instead of acid ;  
 $1\text{ cm}^3$  ;  
solution will remain cloudy ; [3]

**[Total: 10]**

Page 4	Mark Scheme	Syllabus	Paper
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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]