

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge Ordinary Level

## **MARK SCHEME for the October/November 2014 series**

### **5129 COMBINED SCIENCE**

**5129/21**

Paper 2 (Theory), maximum raw mark 100

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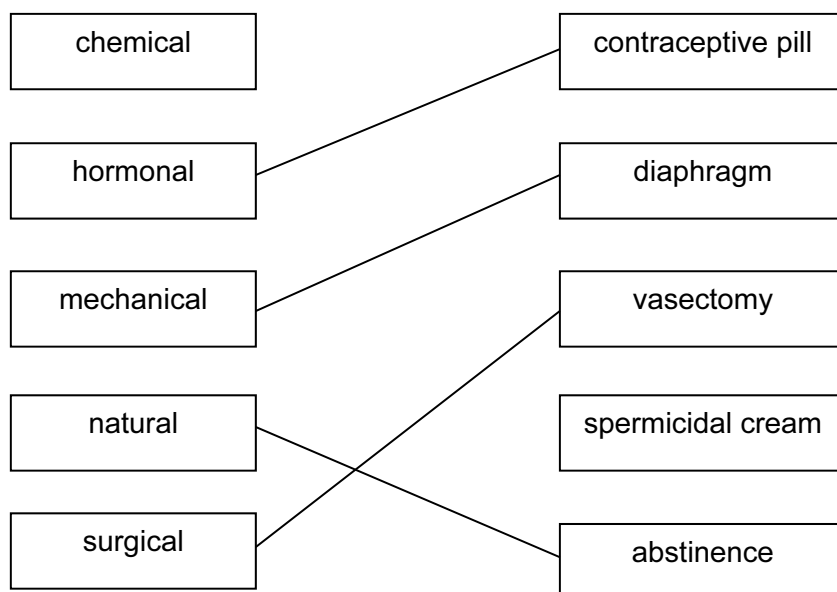
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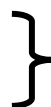
- 1 Salivary ;  
Starch ;  
Oesophagus ;  
Acid ;  
Peristalsis ; [5]
- 2 (a) (i) 102 ; [1]  
(ii) 104 ;  
26 (ecf divide by 4) ; [2]
- (b) Oxidation ; [1]
- (c) Protective coating / layer ;  
Of aluminium oxide ; [2]
- 3 (a) (i)  $I = V/R$  or 1.2/0.2 ;  
6 ; [2]  
(ii) 4 or (a(i) – 2) ; [1]
- (b)  $t = Q/I$  or 10/0.2 ;  
50 ; [2]
- (c) Correct symbol ; [1]

4 (a)



[4]

- (b) Condom/femidom ;  
 Impermeable material ;  
 Catches semen/sperm ;  
 Body fluids cannot be spread to partner ;



any 2

[1]

[2]

5 (a) E ;

[1]

(b) C ;

[1]

(c) A and D ; (both in any order)

[1]

(d) E ;

[1]

6 (a) 320 ;  
N ;

[2]

(b) Equal to/same ;

[1]

(c)  $a = F/m$  or  $550/200$  ;  
2.75 ;  
 $m/s^2$  ;

[3]

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- 7 (a) (i) 32 ; [1]
- (ii)  $d = m/V$  or  $35.2/32$  ; (accept  $35.2/a(i)$ )  
1.1 ;  
 $g/cm^3$  ; [3]
- (b) 14 ; (accept  $46 - a(i)$ ) [1]
- 8 (a) Pump/circulates blood ; [1]
- (b) **A** = aorta/wall of aorta ;  
**B** = semi-lunar valve/aortic valve ;  
**C** = right atrium ; [3]
- (c) (i) Less oxygen reaching cells/tissue ;  
Less glucose reaching cells/tissue ; } any 2  
Cells respire less ; [2]
- (ii) Inherited disposition ;  
High blood pressure ;  
High level of stress ;  
Lack of exercise ;  
Smoking ;  
High level of blood cholesterol ;  
High level of animal/saturated fat in the diet ;  
Obesity/overweight ; } any 3 [3]
- 9 (a) **A** = hydrogen ;  
**B** = water ;  
**C** = copper(II) carbonate ; [3]
- (b) (i) Red ;  
(ii) Hydrogen/ $H^+$  ; [2]
- (c) Limewater ;  
Goes milky/cloudy/white precipitate ; [2]
- 10 (a) (i)  $F \times d$  or  $1.8 \times 0.2$  ;  
0.36 ; [2]
- (ii) 0.8 ; [1]
- (iii) 0.6 or  $0.24 + (a)(i)$  ; (ecf) [1]
- (b) Lead not magnetic/attracted to magnets ; [1]

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- 11 (a) **A** = epidermal (cell)/epidermis ;  
**B** = palisade mesophyll (cell) ;  
**C** = spongy mesophyll (cell) ; [3]
- (b) (i) carbon dioxide + water ;  $\rightarrow$  glucose + oxygen ; [2]  
(Each side of the equation = 1 mark)
- (ii) Converts light energy / traps / absorbs light ; [2]  
To chemical energy ;
- 12 (a) **A** = petrol/gasoline ;  
**B** = diesel ;  
**C** = bitumen ; [3]
- (b) Same general formula ;  
Similar chemical properties ;  
Gradation in physical properties ;  
Each member differs by  $\text{CH}_2 / M_r 14$  ; } any 1 [2]
- (c) (i) 5 3 4 ; [1]
- (ii) Limited oxygen supply / incomplete combustion ; [1]
- 13 (a) (i) Increases ; [1]
- (ii) No change ; [1]
- (b) 0 and 100 (either order) ; [1]
- (c) Stop liquid flowing back to bulb / retain reading ; [1]
- 14 (a) Electrons are shared (by the atoms) ; [1]
- (b) Low melting point / boiling point ;  
Insoluble in water / soluble in organic solvents ;  
Solid does not conduct electricity ; } any 2 [2]
- (c) Metal oxides react with acids / are basic ; [1]

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- 15 (a) (i) Bacteria/microbes ; [1]  
(ii) Grass ; [1]  
(iii) Lion ; [1]
- (b) Lost as heat from the body of the okapi ;  
Respiration releases energy for metabolic processes ;  
Used in movement of okapi ;  
Lost in urine/feces ;  
Undigested food/indigestible food ; } any 2 [2]
- 16 (a) (i) No. of complete oscillations/waves per second ; [1]  
(ii)  $\lambda = v/f$  or  $3 \times 10^8 / 2.5 \times 10^9$  ;  
0.12 ; [2]
- (b) (i) Higher ; [1]  
(ii) Same ; [1]
- 17 (a) Iron ; [1]  
(b) Aluminium ; [1]  
(c) Iron ; [1]  
(d) Zinc ; [1]  
(e) Potassium ; [1]
- 18 (a) Same number of protons/same element ;  
Different number of neutrons ; [2]  
(b) 2p and 1n (both) ; [1]