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

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.

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CAMBRIDGE
International Examinations

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]**

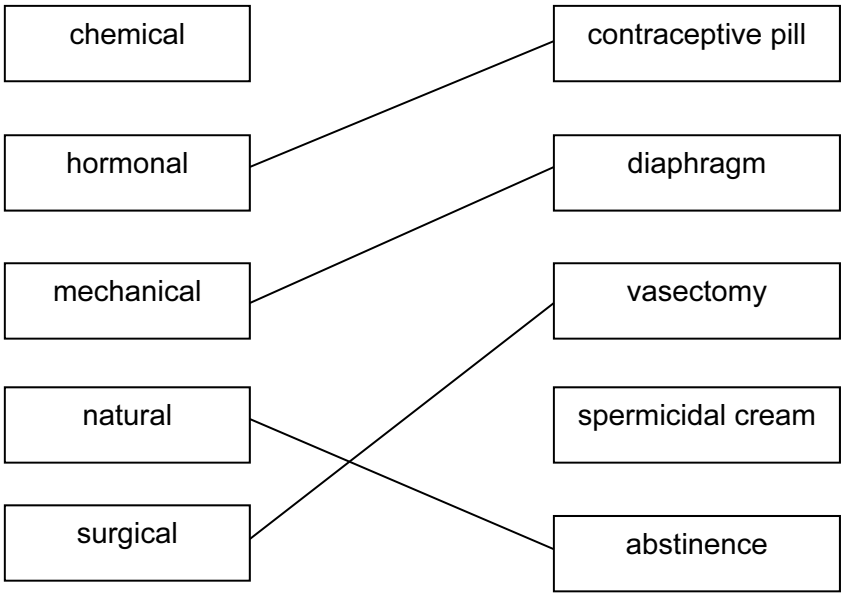
3 **(a)** **(i)** $I = V / R$ **or** 1.2 / 0.2 ;
6 ; **[2]**

(ii) 4 **or** (a(i) – 2) ; **[1]**

(b) $t = Q / \mathrm{I}$ **or** 10 / 0.2 ;
50 ; **[2]**

(c) Correct symbol ; **[1]**

4 (a)



[4]

(b) Condom / femidom ; **[1]**
Impermeable material ;
Catches semen / sperm ; } any 2
Body fluids cannot be spread to partner ; **[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]**

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 ; } any 3
High level of blood cholesterol ;
High level of animal / saturated fat in the diet ;
Obesity / overweight ; **[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 × 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]**

11 (a) **A** = epidermal (cell) / epidermis ;
B = palisade mesophyll (cell) ;
C = spongy mesophyll (cell) ; **[3]**

(b) (i) carbon dioxide + water ; → glucose + oxygen ; **[2]**
(Each side of the equation = 1 mark)

(ii) Converts light energy / traps / absorbs light ;
To chemical energy ; **[2]**

12 (a) **A** = petrol / gasoline ;
B = diesel ;
C = bitumen ; **[3]**

(b) Same general formula ;
Similar chemical properties ;
Gradation in physical properties ; } any 1
Each member differs by CH_2 / M_r 14 ; **[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 ; } any 2
Solid does not conduct electricity ; **[2]**

(c) Metal oxides react with acids / are basic ; **[1]**

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]**