CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2015 series

5129 COMBINED SCIENCE

5129/21 Paper 2 (Theory), maximum raw mark 100

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CAMBRIDGE
International Examinations

1 **(a)** haematite [1]

(b) limestone decomposes to calcium oxide
calcium oxide reacts with the sand
forming slag [3]

(c) $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$ [1]

(d) potassium is more reactive than <u>carbon</u> [1]

2 **(a)** 7 [1]

(b) distance = speed × time **or** 4 × 12
= 48 [2]

(c) straight line / constant gradient [1]

(d) kinetic [1]
gravitational / potential / gravitational potential [1]

3 **(a)** removal from the body / organism
waste products of metabolism
toxic materials
} any 2 [2]

(b)

name	produced	excreted by
carbon dioxide	(any) cell / tissue / organ	lung
water	(any) cell / tissue / organ	kidney / skin
urea	liver	kidney

[6]

4 **(a)** **(i)** 53.5
40 [2]

(ii) 80
2 ecf [(a)(ii) / 40] [2]

(b) making fertilisers / nitric acid [1]

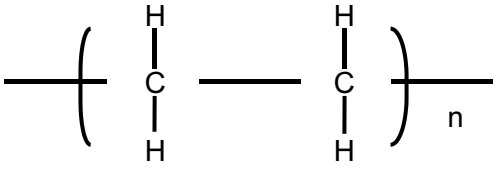
(c) 3 bonding pairs with the hydrogen atoms
1 lone pair on the nitrogen [2]

5 F = ma **or** 1.5 × 1.8
= 2.7 [2]

6 **(a)** **(i)** contains a carbon to carbon double bond [1]

(ii) small molecules / monomers
(chemically) joining / bonding } any 2
to form long chains [2]

(b)



[2]

7 **(a)** A = 18
B : 27 (**both required**) [1]

(b) **(i)** water moves into the cells
water more concentrated outside the cell } any 2
by osmosis / definition of [2]

(ii) B had larger surface area than A
more osmosis could occur / more water absorbed [2]

(c) **(i)** haemoglobin [1]

(ii) cells burst / cell membrane ruptures
water moved into the cells by osmosis } any 1
haemoglobin released into water [2]

8 distillation
fractional distillation
filtrate
crystallisation
chromatography [5]

9 ammeter
amperes / amps / A
charge [3]

10 **(a)** neutral blue (**both required**)
live brown (**both required**) [2]

(b) earth [1]

(c) P = E / t **or** 180 000 / 120
= 1500
W (**unit independent**) [3]
(accept 180 000 / 2 = 90 000 for 1 mark)

11 **(a)** **(i)** cervix = E

(ii) ovary = B

(iii) vagina = F [3]

(b) **(i)** transfers ovum to uterus
place where fertilisation occurs } any 1 [1]

(ii) place where implantation occurs / fetus develops [1]

(c) **(i)** chemical substance
produced by a gland
alters activity of a target organ } any 2 [2]

(ii) diet / malnutrition
emotional state / stress
concentrated exercise
pregnancy
menopause } any 1 [1]

12 copper never attracted
iron attracted to both poles of magnet
permanent magnet attraction and repulsion [3]

13 (a) (i) B

(ii) A [2]

(b) hydrogen [1]

(c) (i) Universal Indicator / litmus
goes red [2]

(ii) hydrogen and sulphate / H^+ and SO_4^{2-} [1]

14 (a) (i) move more slowly / move at angle / move sideways [1]

(ii) move upwards [1]

(b) needs changing current
changing magnetic field
a.c. provides changing current
(allow d.c. is constant current) } any 2 [2]

15 anther / stamen
carpel
cotyledon
plumule
testa [5]

16 (a) same element / number of protons
different number of neutrons / mass (nucleon) number [2]

(b) 2, 8, 5 [1]

(c) covalent
combination of two non-metals [2]

17 (a) f= speed /wavelength **or** $3 \times 10^8 / 6 \times 10^{-11}$
$= 5 \times 10^{18}$ [2]

(b) (i) gamma [1]

(ii) p-waves / sound [1]

18 digestion
respiration
diffusion
sexual reproduction [4]

19 **(a)** **(i)** 14 [1]

(b) **(i)** electron [1]

(ii) increases by 1/+1 [1]

(c) 3 half-lives **or** 3 × 5700
17 100 [2]