

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**GCE Ordinary Level**

## **MARK SCHEME for the October/November 2012 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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

Page 2	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2012	5129	21

- 1     plasma  
red  
white  
antibodies  
fibrinogen  
fibrin     [6]
- 2     (a) pencil does not mix with the dyes (or converse)  
pencil insoluble in water     [1]
- (b) blue  
yellow  
**do not accept** : other colours     [2]
- (c) X  
contains only one colour     [2]
- 3     (a) (i) 1.79     [1]
- (ii) as length increases, period increases.  
**do not accept** directly proportional     [1]
- (b) (i) B     [1]
- (ii) potential to kinetic     [1]
- 4     (a) (i) obese student D  
correct weight student B     [2]
- (b) (i) cheese  
beef     [2]
- (ii) take more exercise  
reduce total food intake / eat less     [1]
- (c) (i) fibre is the part of the food that cannot be digested     [1]
- (ii) muscles of alimentary canal can grip on it  
peristalsis more efficient / rapid  
prevents constipation     } any 2     [2]

Page 3	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2012	5129	21

5 (a) (i) 14 [1]

(ii) 6 [1]

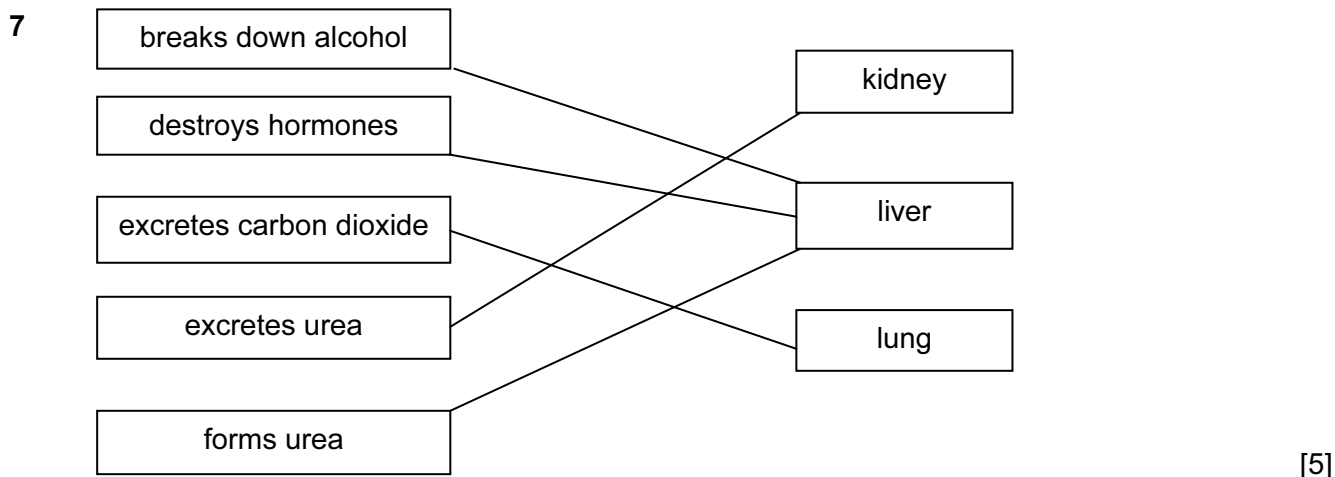
(b) 2, 4 [1]

(c) covalent (must have for first mark)  
electrons shared  
to make full outer shell/inert gas structure [3]

6 (a) A and C (both) [1]

(b) (i) 0.3 [1]

(ii)  $V = IR$  or  $R = V/I$  or  $1.5/0.2$   
 $= 7.5$   
 $\Omega$  (unit independent) [3]



8 (a) (i) hydrogen/ $H^+$  [1]

(ii) hydroxide/ $OH^-$  [1]

(b) (i) 7 [1]

(ii) green [1]

(iii) 22 [1]

(iv)  $H^+ + OH^- \longrightarrow H_2O$  [1]

Page 4	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2012	5129	21

- 9 (a) (i) approximately correct direction [1]  
(ii) 48 [1]
- (b) (i) ray bends towards normal (ignore lines below block) [1]
- 10 (a) (i) prostate gland C  
testis E  
urethra D [3]
- (ii) prostate gland secretes fluid / semen / seminal fluid [1]  
testis produces sperm [1]  
produces / secretes hormone / testosterone / androgen [1]  
urethra transports sperm / semen / seminal fluid [1]  
(**do not accept** : channel for / transports urine)
- (iii) holds testis outside body cavity  
to keep sperm cool  
sperm develop most effectively below normal body temperature  
if testis becomes too cool scrotum contracts  
testis pulled close to body to keep it warmer } any 2 [2]
- (b) an x drawn on one of the sperm ducts [1]
- 11 (a) (i) cracking [1]  
(ii) B = hydrogen / H<sub>2</sub>  
C = ethanol / C<sub>2</sub>H<sub>5</sub>OH [**do not accept** : alcohol]  
D = poly(ethene) [3]
- (b) (i) contains a carbon to carbon double bond [1]  
(ii) orange to colourless / goes colourless [1]
- 12 (a) positive and negative, roughly equal  
correct shape [2]
- (b) number of turns in the coil  
strength of magnetic field  
rate of rotation  
area of coil } any 2 [2]
- (c) E = Pt or 200 × 300  
= 60 000 [1000 = 1 mark] [2]

Page 5	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2012	5129	21

- 13 (a) by osmosis / description of osmosis  
water in soil taken in through root hair cells  
large surface area (per volume) } any 1 [2]
- (b) (i) wilting/wilted [1]
- (ii) greater loss of water from plant than water uptake  
by transpiration  
cells lose turgidity  
loss of support / cell walls limp / floppy / bendy } any 2 [2]
- 14 (a) mass of one molecule of substance  
relative to one atom of carbon-12 [2]
- (b) 106 44 [2]  
10.6 4.4 (divide by 10) [1]  
2.65 (divide by 4) [1]
- 15 (a)  $46 - 32 = 14$  [1]
- (b) mass = volume  $\times$  density or  $14 \times 3$  or (a)  $\times 3$   
= 42 or answer to (a)  $\times 3$  [2]
- 16 (a) (i) wood is an insulator / poor conductor [1]
- (ii) (shiny) white is a poor emitter / matt black is a good emitter [1]
- (b) air expands / becomes less dense [1]
- (c) clinical has smaller range  
constriction  
retains reading  
triangular cross-section  
more sensitive } any 2 [2]
- 17 (a) B [1]
- (b) E [1]
- (c) D [1]  
m.p. above room temperature  
in Group 6 of the Periodic Table [2]

Page 6	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2012	5129	21

- 18 (a) positive [1]
- (b) opposite charges attract [1]
- (c)  $3 \times 10^8$  [1]
- 19 (a) X = neutral  
 Y = Earth  
 Z = live  
 3 correct = 2 marks    2 correct = 1 [2]
- (b) if current exceeds 10 A / rating / can carry up to 10A  
 Fuse melts / blows [1]