

**MARK SCHEME for the October/November 2011 question paper
for the guidance of teachers**

5129 COMBINED SCIENCE

5129/22

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 must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

| | | |
|--------|-------------------------------------|----------|
| Page 2 | Mark Scheme: Teachers' version | Syllabus |
| | GCE O LEVEL – October/November 2011 | 5129 |

- 1 (a) **A** = hydrogen ;
B = sulfuric acid ;
C = ammonia ;
- (b) carbon dioxide ;
goes cloudy / milky / forms white precipitate **[independent marks]** ; [2]
- 2 (a) 12 ; [1]
- (b) (i) increased breathing rate / faster ;
increased depth of breathing / heavy breathing ; [2]
- (ii) exercise / stress / any valid alternative ; [1]
- 3 (a) for equilibrium / balance ;
(total) clockwise moment = (total) anticlockwise moment ; [2]
- (b) (i) force x distance (from pivot) **or** 8.0×0.2 ; [1]
= 1.6 ; [1]
Nm ; [1]
(unit independent of numerical answer)
- (ii) 4.0 **ecf** (b)(i)/0.4 ; [1]
- (c) $(2 \times 3)/1.5$;
4.0 ; [2]
- 4 (a) uv / ultra violet }
ir / infra red } any 2 ;;
gamma / γ }
x-rays } [2]
- (b) $f = c/\lambda$ **or** $3 \times 10^8/1.5 \times 10^3$; [1]
= 200 000 or 2×10^5 ; [1]
Hz / s^{-1} **do not accept hz** ; [1]
(unit independent of numerical answer)
- 5 (a) 78–80% ; [1]
- (b) corrosion of buildings / crops die / kills aquatic life / acid rain ; [1]
[incorrect statement = 0 mark, ignore air pollution]
- (c) 6 2 ; [1]

| | | |
|--------|-------------------------------------|----------|
| Page 3 | Mark Scheme: Teachers' version | Syllabus |
| | GCE O LEVEL – October/November 2011 | 5129 |

- (d) (i) N^{3-} ;
- (ii) high melting point boiling point
soluble in water
conducts electricity when molten / when in solution } any 2 ;; [2]

- 6 (a) **A** = oesophagus / gullet ;
B = gall bladder ;
C = pancreas ;
D = ileum / small intestine ;
E = colon / large intestine ; [5]

- (b) (i) mouth ; [1]
(ii) anus ; [1]
(iii) ileum / **D** ; [1]

- (c) pancreas / salivary gland ; [1]

- 7 (a) force \times distance or 5×1.2 ; [1]
= 6 ; [1]
(correct answer gains 2 marks)

- (b) power = energy/time or (a) / 0.5 ; [1]
= 12 ; [1]
(correct or correct ecf answer gains 2 marks)

- (c) gravity less
weighs less } any 1 ; [1]
less force needed to lift
[do not accept no / different gravity]

- 8 (a) removal of oxygen / addition of hydrogen ; [1]

- (b) 36 44 ;; [2]
11 (divide by 4) ; [1]
0.55 (divide by 20) ; [1]

- (c) basic ;
metal oxide [independent] ; [2]

| | | |
|--------|-------------------------------------|----------|
| Page 4 | Mark Scheme: Teachers' version | Syllabus |
| | GCE O LEVEL – October/November 2011 | 5129 |

- 9 (a) (more) germination / grow in dish **P** / with wet cotton wool ;
no germination / grow in dish **Q** / dry cotton wool ;
water needed for germination / cotton wool is wet ;
[mark candidate's response as a whole]
- (b) improve reliability / validity / make sure results are typical / fair test ; [1]
[ignore refs to accuracy]
- (c) temperature [do not accept heat] }
light (intensity) / sunlight } any 2 ;;
oxygen concentration }
type of cotton wool } [2]
- 10 (a) $I = P/V$ or 600/240 ; [1]
= 2.5 ; [1]
A ; [1]
(unit independent of numerical answer)
- (b) large current through earth / live ; [1]
fuse melts / blows ; [1]
live disconnected / breaks circuit ; [1]
- 11 (a) (i) fractional distillation ; [1]
(ii) aircraft fuel / jet fuel / fuel for oil stoves / lamps ;
making roads ; [2]
- (b) (i) alkanes ; [1]
(ii) 18 ; [1]
(iii) covalent ; [1]
- 12 (a) pain / burning sensation on urination / frequent urination }
abnormal discharge (from urethra) } any 2 ;;
inflammation / irritation of vagina / cervix / testes / prostate }
swollen / painful joints } [2]
- (b) syphilis ; [1]
- (c) antibiotics/ penicillin ; [1]
- (d) AIDS / (non-specific) urethritis / herpes / hepatitis ;
allow HIV [1]

| | | |
|--------|-------------------------------------|----------|
| Page 6 | Mark Scheme: Teachers' version | Syllabus |
| | GCE O LEVEL – October/November 2011 | 5129 |

(c) repels / pushes away ;

17 (a) oxygen / O₂ not O ;

(b) helium / He ;

[1]

(c) ethene / C₂H₄ ;

[1]

(d) oxygen / O₂ allow O if used in (a) and (d) ;

[1]

18 (a) an externally administered / swallowed / consumed / taken in / injected substance ;
[ignore food / medicine / pill / eat]
which modifies / affects / changes chemical reactions / metabolism in the body ;

[2]

(b) reduced self-control / poor judgement
blurred / double vision
depression
addiction / withdrawal symptoms / DT's
liver disease / cirrhosis / hepatitis / liver cancer
cancer / inflammation of mouth / stomach / gut
brain damage
alcoholic poisoning
high blood pressure
impotence / infertility
dizzy / can't walk / difficulty standing / slurred speech
slow reactions

} any 3 ;;;

[3]

ignore kill them / shorten lifespan / drink driving / divorce / crime / blindness / can't see