



GCSE

Science B

General Certificate of Secondary Education

Unit **B622/01**: Unit 2: Modules B2, C2, P2 (Foundation Tier)

Mark Scheme for June 2012

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Mark Scheme

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Annotations

| Annotation | Meaning |
|---|---------------------------------------|
|  | Correct Response |
|  | Incorrect Response |
| BOD | Benefit of the doubt |
| NBOD | benefit of the doubt not given |
| ECF | error carried forward |
|  | Information omitted |
| I | Ignore |
| R | Reject |
| CON | Contradiction |

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Mark Scheme

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Abbreviations, annotations and conventions used in the detailed Mark Scheme

| Annotation | Meaning |
|-------------------|---|
| / | alternate and acceptable answers for the same marking point |
| (1) | separates marking points |
| allow | answers that can be accepted |
| not | answers which are not worthy of credit |
| reject | answers which are not worthy of credit |
| ignore | statements which are irrelevant |
| () | words which are not essential to gain credit |
| — | underlined words which are not essential to gain credit |
| ecf | error carried forward |
| AW | alternative wording |
| ora | or reverse argument |

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Mark Scheme

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| Question | | | Answer | Marks | Guidance |
|----------|-----|-------|--|----------|---|
| 1 | (a) | (i) | a vertebrate and a mammal (1) | 1 | More than 1 tick scores 0 |
| | | (ii) | helps it judge size / distance / binocular vision (1) | 1 | ignore reference to seeing further |
| | | (iii) | sharp teeth / sharp claws / camouflaged / run fast (1) | 1 | allow large ears / sensitive ears / better hearing (1) |
| | (b) | | in danger of becoming extinct (1) | 1 | allow not many of them left alive (1) |
| | (c) | (i) | Miguel and Rosa (1) | 1 | allow either order |
| | | (ii) | have the smallest population in 2000 / 2006 (1) | 1 | Answers must be comparative and be clear that the smallest population refers to later time so: allow decreased (rapidly) and so have the smallest population (1) ignore unqualified they have the smallest population |
| | | (iii) | captive breeding of foxes <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> capturing golden eagles and releasing them a long distance away <input checked="" type="checkbox"/> | 1 | |
| | (d) | | fossils (1) | 1 | allow casts / mummies / impressions / bodies in tar or amber or ice / bones / check DNA (1) |
| | | | Total | 8 | |

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| Question | | | Answer | Marks | Guidance |
|----------|-----|--|--|----------|---|
| 2 | (a) | | community (1) | 1 | |
| | (b) | | carbon dioxide and water on LHS (1) glucose and oxygen on RHS (1) | 2 | ignore references to chlorophyll and energy allow sugar (1) allow correct chemical symbols e.g. not CO ² |
| | (c) | | light / sunlight / water / minerals / carbon dioxide (1) | 1 | allow sugar / glucose / space / nutrients (1) ignore Sun ignore food |
| | (d) | | host (1) | 1 | |
| | (e) | | growth / respiration / repair / to make starch (1) | 1 | allow to make any named organic molecule e.g. glucose / to make leaves fruit etc / energy (1) ignore reference to making food |
| | | | Total | 6 | |

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| Question | | | Answer | Marks | Guidance |
|----------|-----|--|---|----------|--|
| 3 | (a) | | use of a quadrat (1) count plants (growing inside) (1) | 2 | allow approximate phonetic spelling e.g. quadrant must refer to counting and imply within quadrat |
| | (b) | | 5.0 | 1 | allow 5 (1) allow answer written on line or in the table (1) answer line may contain working and answer shown in table if answer on answer line is incorrect, score 0 |
| | (c) | | more daisies grow further from the road (1) | 1 | allow increases / goes up (1) ignore reference to size of plants |
| | (d) | | sulfur dioxide given off from burning of fossil fuels / burning petrol / from cars (1) more sulfur dioxide closer to the road (1) | 2 | allow implied link between sulfur dioxide and cars (1) ignore reference to acid rain |
| | | | Total | 6 | |

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| Question | | | Answer | Marks | Guidance |
|----------|-----|------|---|----------|--|
| 4 | (a) | (i) | B (1) | 1 | allow correct answer underlined, ringed or ticked if answer line is blank (1) |
| | | (ii) | C (1) | 1 | allow correct answer underlined, ringed or ticked if answer line is blank (1) |
| | (b) | | binding medium (1) sticks the pigment / paint to the surface (1) solvent (1) thins the paint / allows the paint to be spread (1) | 4 | job must be correctly linked to correctly named ingredient allow binder / binding substance / AW (1) |
| | | | Total | 6 | |

| Question | | | Answer | Marks | Guidance |
|----------|-----|--|--|----------|--|
| 5 | (a) | | volcanoes (1) earthquakes / tsunami (1) | 2 | allow mountains form (1) ignore landslide / cracks in surface |
| | (b) | | iron (1) | 1 | allow Fe / nickel / Ni / alloy of iron and nickel (1) |
| | (c) | | lithosphere (1) | 1 | |
| | | | Total | 4 | |

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| Question | | | Answer | Marks | Guidance |
|----------|-----|-------|--|----------|---|
| 6 | (a) | (i) | 17.75 (minutes) (1) | 1 | allow 17.5 to 18.0 (1) allow use of : to indicate minutes:seconds e.g. 17:45 |
| | | (ii) | 13.75 (°C) (1) | 1 | allow answer in range 13.5 – 14.0 |
| | | (iii) | increases / AW (1) | 1 | allow curing / hardening / reaction time decreases / AW (1) ignore drying |
| | (b) | | any time less than 17.75 (minutes) (1) | 1 | allow a range of times if range lies below 17.75 minutes (1) |
| | (c) | | H – 18 N – 4 (1) | 1 | both required |
| | | | Total | 5 | |

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| Question | | | Answer | Marks | Guidance |
|----------|-----|--|---|----------|--|
| 7 | (a) | | iron (1) | 1 | allow Fe |
| | (b) | | brass (1) | 1 | |
| | (c) | | <p>Either:</p> <p>copper (1)</p> <p>any two from:</p> <p>tarnishes very slowly (1)</p> <p>shiny (1)</p> <p>strong (1)</p> <p>good thermal conductivity (1)</p> <p>high melting point (1)</p> <p>or</p> <p>aluminium (1)</p> <p>protective oxide layer (1)</p> <p>good thermal conductivity (1)</p> | 3 | <p>copper / aluminium must be stated to score marks for properties.</p> <p>ignore does not tarnish / it tarnishes</p> <p>allow second strongest ignore relative strength of 4.8</p> <p>allow third highest conductivity ignore conductivity of 5.7</p> <p>allow second highest MP ignore MP = 1083</p> <p>stand alone mark</p> <p>each of the following references to an incorrect property negates a correct property if three or more properties are given:</p> <p>not reference to melting point</p> <p>not reference to dull light grey</p> <p>not references to strength</p> <p>i.e. one correct and one incorrect scores 1</p> <p>two correct and one incorrect scores 1</p> <p>two correct and two or more incorrect scores 0</p> |
| | | | Total | 5 | |

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| Question | | | Answer | Marks | Guidance |
|----------|-----|--|--|----------|----------------|
| 8 | (a) | | renewable (1) convection (1) kinetic (1) | 3 | |
| | (b) | | absorbed (1) | 1 | ignore trapped |
| | | | Total | 4 | |

| Question | | | Answer | Marks | Guidance |
|----------|-----|------|-----------------------|----------|--|
| 9 | (a) | (i) | uranium (1) | 1 | allow plutonium (1) |
| | | (ii) | no global warming (1) | 1 | allow no greenhouse gases / named greenhouse gases (1) allow does not deplete fossil fuels (1) allow nuclear fuel lasts longer (than fossil fuels) (1) ignore unqualified reference to pollution ignore unqualified reference to improving environment |
| | (b) | (i) | power (output) (1) | 1 | allow wattage (1) allow 38 million watts (1) ignore kilowatts ignore unqualified reference to voltage / energy / amount of electricity |
| | | (ii) | fermentation (1) | 1 | allow description of fermentation e.g. mixed with yeast / bacteria (1) placed in a fermenter / digester (1) allow produces methane (1) allow produces gas which can be burned (1) |
| | | | Total | 4 | |

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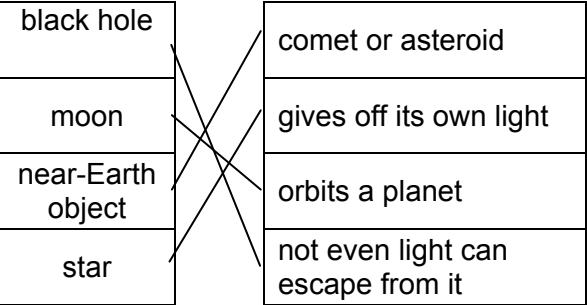
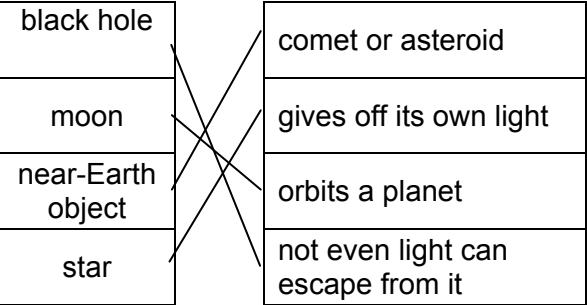
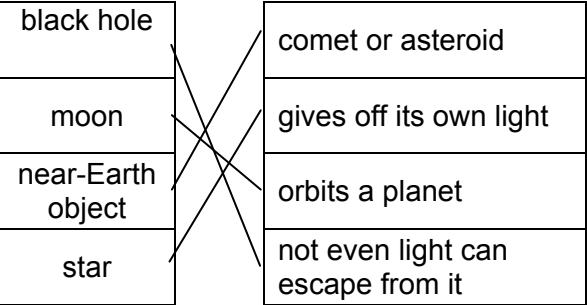
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| Question | | | Answer | Marks | Guidance |
|----------|-----|------|---|-------|---|
| 10 | (a) | | distances (in space) are very large (1) | 1 | allow ideas that it takes a long time (1) allow idea that there may not be intelligent life forms in space (1) |
| | (b) | (i) | any two from: no water needed (1) no food needed (1) no oxygen / air needed (1) | 2 | allow no supplies needed if no other reference to food/ water / oxygen (1) allow can withstand extreme conditions / specific condition (1) allow no need to bring spacecraft back to Earth (1) allow no risk to life / safer (1) ignore unqualified reference to cost / distance travelled / time spent in space |
| | | (ii) | any two from: temperature (1) magnetic field (1) radiation (1) gravity (1) atmosphere (1) surface features (1) photographs / images / video (1) composition of surface (1) information about possible life forms (1) information about moons (1) | 2 | allow weather / heat (1) allow gas levels / reference to named gas (1) ignore take samples |

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| Question | | | Answer | Marks | Guidance | | | | | | | | | | | | | | | | | |
|-------------------|---|-----------------------------------|--|------------|---|------|-------------------|------|--|--|-------------------|--|--|-------------------------|--|--|-----------------|--|--|-----------------------------------|---|---|
| | (c) | | <p>all correct (2) two or three correct (1) none or one correct (0)</p> <table><tr><td>black hole</td><td rowspan="4"></td></tr><tr><td>moon</td></tr><tr><td>near-Earth object</td></tr><tr><td>star</td></tr><tr><td colspan="2"></td><td>comet or asteroid</td></tr><tr><td colspan="2"></td><td>gives off its own light</td></tr><tr><td colspan="2"></td><td>orbits a planet</td></tr><tr><td colspan="2"></td><td>not even light can escape from it</td></tr></table> | black hole |  | moon | near-Earth object | star | | | comet or asteroid | | | gives off its own light | | | orbits a planet | | | not even light can escape from it | 2 | allow correct linking by numbering boxes in table if no lines or lines crossed out |
| black hole |  | | | | | | | | | | | | | | | | | | | | | |
| moon | | | | | | | | | | | | | | | | | | | | | | |
| near-Earth object | | | | | | | | | | | | | | | | | | | | | | |
| star | | | | | | | | | | | | | | | | | | | | | | |
| | | comet or asteroid | | | | | | | | | | | | | | | | | | | | |
| | | gives off its own light | | | | | | | | | | | | | | | | | | | | |
| | | orbits a planet | | | | | | | | | | | | | | | | | | | | |
| | | not even light can escape from it | | | | | | | | | | | | | | | | | | | | |
| | | | Total | 7 | | | | | | | | | | | | | | | | | | |

| Question | | | Answer | Marks | Guidance |
|-----------|-----|--|--|----------|---|
| 11 | (a) | | direct current / constant voltage (implied) (1) | 1 | allow graph line is flat (1) ignore straight line |
| | (b) | | 4V (1) | 1 | allow -4V (1) |
| | (c) | | transformer (1) | 1 | ignore step-up / step down |
| | (d) | | magnet coil / wire (1) | 1 | either order must have both correct |
| | (e) | | heat / hot gases / lost to surroundings / lost to atmosphere (1) | 1 | ignore sound ignore unqualified reference to wasted / lost |
| | | | Total | 5 | |

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