

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--------|--------------------|------------|
| 1(a) | A | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|-----------------------------------|-----------------------|------------|
| 1(b)(i) | both points correctly plotted (1) | allow +/- half square | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--|------------|
| 1(b)(ii) | smooth curve (1) (does not need to go through all points i.e. can miss out top section) | allow slight discontinuities/double lines/ thick lines NOT dot to dot /two straight lines | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|------------------|---|--------------------|------------|
| 1(b)(iii) | temperature from 34 °C to 39 °C inclusive (1) | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|------------|--------------------|------------|
| 1(b)(iv) | 21(°C) (1) | 22(°C) /23(°C) | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--|--|------------|
| 1(c)(i) | it/black is a good absorber of heat /energy/radiation/IR (1) i.e. it absorbs/takes in more infrared/IR | allow it/black absorbs/takes in heat ignore attracts/emitter/conductor NOT (so it) cools down quickly | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--|---|------------|
| 1(c)(ii) | substitution (1) 9000 ÷ 20 evaluation (1) 450 (W) | ignore powers of 10 until evaluation e.g. 90 ÷ 2 gains 1 mark 45 gains 1 mark give full marks for correct answer, no working | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|------------------|--|--|------------|
| 1(c)(iii) | substitution (1) 9000 ÷ 18 000 (x 100%) evaluation (1) 50 (%) | ignore powers of 10 until evaluation e.g. 90 000 ÷ 1800 gains 1 mark 5 gains 1 mark 0.5 or ½ or half gains both marks give full marks for correct answer, no working | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--------|--------------------|------------|
| 2(a) | A | | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|---|--|------------|
| 2(b)(i) | 6% | 100 - 94 | (1) |
| (ii) | comparing reflected amount for water with any one of the others (1) | saying one {named material (on the graph) is/all materials (on the graph) are} solid | (1) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|--|---|------------|
| 2(c)(i) | An explanation to include the following <ul style="list-style-type: none"> • more thermal (heat) energy is absorbed (1) • because water (liquid) absorbs more than ice (solid) (1) | <p>more radiation is absorbed</p> <p>because water (liquid) reflects less than ice (solid)</p> <p>because less ice surface to reflect</p> <p>because more water surface to absorb</p> | (2) |

| Question Number | Answer | Acceptable answers | Mark |
|-----------------|-----------------------|--|------------|
| 2(c)(ii) | its temperature rises | <p>gets hotter</p> <p>water level increases/gets higher</p> <p>Ignore '{water/it} {increases/rises}'</p> <p>Reject toxicity</p> | (1) |

| Question Number | | Indicative content | Mark |
|-----------------|--------------|---|------------|
| QWC | *2(d) | <p>A description including some of the following</p> <ul style="list-style-type: none"> • solar / heat / light • photosynthesis • chemical / fossil fuel • burning • thermal • in steam • kinetic • in turbine • electrical • in generator | (6) |
| Level | 0 | no rewardable material | |
| 1 | 1-2 | <ul style="list-style-type: none"> • a limited description which identifies an energy in an appropriate place e.g. thermal energy in the boiler OR e.g. the (same) energy flows from the boiler to the turbine • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy | |
| 2 | 3-4 | <ul style="list-style-type: none"> • a simple description which includes details of a relevant energy transfer e.g. (steam causing) the turbine to rotate turns the coil in the generator transferring kinetic energy into electrical energy • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy | |
| 3 | 5 - 6 | <ul style="list-style-type: none"> • a detailed description to includes details of a sequence of transfers e.g. chemical energy stored in the coal is transferred in the boiler to thermal energy producing steam. The steam turns the turbine which turns the coil. • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors | |