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Mark Scheme (Results)

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GCSE

360Science

GCSE Additional Science P2 (5020F/1F)
GCSE Physics P2 (5048F/1F)

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USING THE MARK SCHEME

1. This mark scheme gives you;
   * an idea of the type of response expected
   * how individual marks are to be awarded
   * the total mark for each question
   * examples of responses that should not receive credit.

2. ; separates points for the award of each mark.

3. / means that the responses are **alternatives** and either answer should receive full credit.

4. ( ) means that a phrase/word is not essential for the award of the mark but helps the examiner to get the sense of the expected answer.

5. Phrases/words in **bold** indicate that the meaning of the phrase/word is **essential** to the answer.

6. OWTTE (or words to that effect) and eq (equivalent) indicate that valid alternative answers (which have not been specified) are acceptable.

7. 'Ignore' means that this answer is not worth a mark but does not negate an additional correct response.

8. 'Reject' means that the answer is wrong and negates any additional correct response for that specific mark.

9. ORA (or reverse argument) indicates that the complete reverse is also valid for the award of marks.

10. ecf (error carried forward) means that a wrong answer given in an earlier part of a question is used correctly in answer to a later part of the same question.

MARKING

1. Suggestion/explanation questions should be marked correct even when the suggestion is contained within the explanation.

2. **Do not** award marks for repetition of the stem of the question.

3. Make sure that the answer makes sense. Do not give credit for correct words/phrases which are put together in a meaningless manner. Answers must be in the correct scientific context.

AMPLIFICATION

1. In calculations, full credit must be given for a bald, correct answer. If a numerical answer is incorrect, look at the working and award marks according to the mark scheme.

2. Consequential marking should be used in calculations. This is where a candidate's working is correct but is based upon a previous error. When consequential marks have been awarded write "ecf" next to the ticks.

3. If candidates use the mole in calculations they must be awarded full marks for a correct answer even though the term may not be on the syllabus at their level.

4. If candidates use chemical formulae instead of chemical names, credit can only be given if the formulae are correct.

Unit 5020F / 5048F / 1F (P2) Mark Scheme

Question Number	Answer	Allow/comments	Ignore	Reject	Mark
1 (a) (i)	4. atomic mass/mass number/ (number of) protons and neutrons; 2. (number of) protons/ atomic number;	4. (number of) nucleons/ particles in nucleus/ nuclear mass; 2. (number of) electrons;			**(2)**
1 (a) (ii)	0/zero/neutral/none;	no charge/nothing;			**(1)**
1 (b) (i)	alpha has no electrons/ helium (atom) has electrons/ helium (atom) neutral/ alpha (particle) has charge;	(2) electrons;			**(1)**
1 (b) (ii)	+ / positive / plus / +ve / +2;		2		**(1)**
1 (c)	ioniser;				**(1)**
2 (a) (i)	any valid reason in terms of: storage of waste/ accidents/ health concerns/ terrorist (activity);	bad for health/ difficult to store waste/ radioactive pollution/ dangerous to work in or live nearer/ explosions/leaks/meltdown/ (nuclear) power is radioactive;	can lead to pollution (must be qualified by reference to radioactivity)	acid rain/ global warming/ CO_2 / ozone layer	**(1)**
2 (a) (ii)	any valid reason; (eg no carbon dioxide/CO_2/ finite fossil fuels/ does not contribute to global warming/diversity of supply)	cheaper/ greener than coal burning stations/ fossil fuel burning etc/pollution without qualification/it won't run out as quickly as fossil fuels or for a long time;	supplying power in our homes/ greener without qualification/it won't run out without qualification		**(1)**

2 (b)	thermal energy produce warming 2 electrical energy is produced 8 turbines turned; 6 water is heated 4 1 correct = 1 mark, 2 correct = 2 marks, 3 or 4 correct = 3 marks				**(3)**
3 (a)	any **two** sensible suggestions: less driving force needed/ prevent overheating the engine/ to make less steep/ safer;;	ORA allowed for all harder for tyres to grip on steep slope/ easier to choose a safe route /avoiding obstacles/ less likely to skid or slip/ gravity argument IF correct/lowers the speed (of descent)	reference to energy		**(2)**
3 (b)	(gpe) = 1300 x 10 x 1500; 19 500 000/19.5M (J)	units if seen must be correct			**(2)**
4 (a) (i)	Stewart; (same force but) less (total) mass/ (Stewart's bike is) light(er)/Charlie's (bike) is heavier;	(bike) weighs less/less weight	Do not award any marks if the answer to the first part is Charlie		**(2)**
4 (a) (ii)	Any two from: 1. less air resistance; 2. less road resistance; 3. better gearing/design; 4. skills/fitness/stamina;	1. Stewart's profile more streamlined; 2. thinner tyres; 3. larger wheels;	reference to mass of bike/ acceleration		**(2)**
4 (b)(i)	2;				**(1)**
4 (b) (ii)	8;				**(1)**

4 (b) (iii)	selection of two suitable numbers from Charlie's graph – range ± 0.1 on both axes; making the correct substitution; bald answer 0.4 scores two marks bald answer of 0.5 scores 1 mark (Stewart's graph)	ecf only for making an error in reading off the scale of the graph or choosing data for Stewart; Accept answers in the range 0.39 – 0.42 for 2 marks if working is shown			**(2)**
5 (a)	(work done = force X distance…no mark - given) • (work =) 500 x 6; • 3000; • J;	• for 1 mark, 500 X 10 or 5000 • independent unit mark • Nm or in words • j • multiples, kJ,etc *check for correct physics—do not allow confusion between force and mass*		500kg (instead of 500N)	**1** **1** **1** **(3)**

5 (b)	(E=I.t.V.....no mark--- given) • (Energy=)220 x 4.5 x 5; • 4950 (J);	**IF** equation is seen allow ecf from incorrect substitution *units if seen must be correct*			**1** **1** **(2)**
5 (c)	• any sensible/relevant reason; • second named reason **and** place; *allow for 2 marks 'heat lost in suitable named place due to friction'*	allow • correct efficiency statement • friction • named energy • energy needed to move the conveyor belt. • examples are • heat in wires • friction at bearings • heat in motor *if the same energy is named twice, two places must be seen in order to award 2 marks*			**1** **1** **(2)**

TOTAL MARK 30