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Mark Scheme (Results)
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GCSE

360Science

GCSE Additional Science P2 (5020H/1H)

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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. You must give a tick (in red) for every mark awarded. The tick must be placed on the script close to the answer. The total mark awarded for a question should be written in the box at the end of the question.

2. The total marks for a question should then transferred to the front of the script.

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

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

5. 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.

Question Number	Answer	Allow	Reject	Mark
1 (a)(i)	100 – 87; 13%/ 13;	allow addition of non-natural sources		**(2)**
1 (a) (ii)	idea of tracers / gamma camera/PET;			**(1)**
1 (a) (iii)	any one sensible answer; • radiotherapy/brachytherapy / cancer treatment • specific example of treatment	clear indication of sterilisation of instruments for surgery/medical uses thyroid, prostate, breast	chemotherapy	**(1)**
1 (b)	use made of nuclear data; use made of other data; valid comparison/conclusion;	ignore yes/no		**(3)**
2 (a)	(air) resistance/drag/upthrust; weight/(force of) gravity/pull of earth;		reaction force/up force down force	**(2)**
2 (b)	weight/ down(wards) force/ gravity;	allow an ecf from (a) if seen		**(1)**
2 (c) (i)	zero/0N ;	nothing		**(1)**
2 (c) (ii)	smaller terminal velocity/constant speed; less upward force required/ resistive forces are lower;	'reach TV quicker' for first mark 'forces are balanced at a lower TV' for 2 marks	gravity is less	**(2)**
3 (a)	zero; not accelerating/ constant speed /balanced forces;			**(2)**
3 (b)	200 x 15; subst. 3000; ans.			**(2)**
3 (c)	idea of forward momentum/inertia; idea of insufficient force acting to stop it from moving forward;	allow KE for 1 mark		**(2)**

3 (d) (i)	direction of movement of lorry **and** consequence; • e.g. *when braking* could smash into the back of the cabin / driver; • *in accelerating* could fall off back off lorry, • *in cornering* crate may fall of the side.			**(1)**
3 (d) (ii)	any sensible improvement; • e.g. crate in contact with cabin • restraining ropes • stronger driver cage		ignore references to seat belts or air bags	**(1)**
4 (a)	arrow pointing from capsule A towards centre of wheel;	arrow pointing to capsule A towards centre of wheel;		**(1)**
4 (b)	cables under tension/stretched/pull (inwards);		push force	**(1)**
4 (c)	at top weight produces some of the force needed to go in a circle; at the bottom weight is added to the tension in the cable;	correct comment about forces at top; correct comment about forces at botto**m;**		**(2)**
4 (d)	= 16 x 12.5 x 1000 x 750; subst = 1.5 x 10^8/150 000 000; ans J; unit	joules/Joules/j	9375 000 =1 9375J =1 9375kNm =2 9375kJ =2	**(3)**
4 (e)	power = $\frac{\text{work done}}{\text{time}}$ = $\frac{1.5 \times 10^8}{30 \times 60}$; subst $\frac{150\,000\,000}{1800}$ = 8.3(3) x 10^4 ; ans 83333 **allow ecf from 4d**		312.5 =1 312500 =1	**(2)**
			TOTAL FOR PAPER: 30 MARKS	