LEVEL 3 Certificate/Extended Certificate in Applied Science

KEY CONCEPTS IN SCIENCE

Mark scheme

Unit Number: ASC1-P Physics (J/507/6497)
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Version: 1.0 Final

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

Marking methods

In fairness to candidates, all examiners must use the same marking methods. The following advice may seem obvious, but all examiners must follow it as closely as possible.
1. If you have any doubt about how to allocate marks to an answer, consult your Team Leader.
2. Refer constantly to the mark scheme and standardising scripts throughout the marking period.
3. Use the full range of marks. Don't hesitate to give full marks when the answer merits them.
4. The key to good and fair marking is consistency.

INTRODUCTION
The information provided for each question is intended to be a guide to the kind of answers anticipated and is neither exhaustive nor prescriptive. All appropriate responses should be given credit.

Where literary or linguistic terms appear in the Mark Scheme, they do so generally for the sake of brevity. Knowledge of such terms, other than those given in the specification, is not required. However, when determining the level of response for a particular answer, examiners should take into account any instances where the candidate uses these terms effectively to aid the clarity and precision of the argument.

DESCRIPTIONS OF LEVELS OF RESPONSE

The following procedure must be adopted in marking by levels of response:

• read the answer as a whole

• work up through the descriptors to find the one which best fits

• where there is more than one mark available in a level, determine the mark from the mark range judging whether the answer is nearer to the level above or to the one below.

Since answers will rarely match a descriptor in all respects, examiners must allow good performance in some aspects to compensate for shortcomings in other respects. Consequently, the level is determined by the 'best fit' rather than requiring every element of the descriptor to be matched. Examiners should aim to use the full range of levels and marks, taking into account the standard that can reasonably be expected of candidates.

SECTION C– ASC1/P-PHYSICS

Question	Answers	Additional comments	Mark	Assessment Objectives
1.1	Correct labels **and** scales All points correct Correct line of best fit drawn	Scale should take up more than half grid space 0,0 must be included in plotting	1 1 1	AO2
1.2	B		1	AO1
1.3	2.7(0…) Ω **or** Ohms	allow 2.$\dot{7}0\dot{2}$ allow 2.703 2.702 is a rounding error Unit is a standalone mark.	1 1	AO2 AO1
1.4	 (as voltage (or current) increases) the temperature increases **or** more heat produced (so) ions vibrate more (so) there are more collisions (between electrons and (metal) ions)	allow ‘atoms’ instead of ions ignore particles ignore electrons vibrate	 1 1 1	AO1
Total			9	

Question	Answers	Additional comments	Mark	Assessment Objectives
2.1	(total) momentum before (collision) = (total) momentum after (collision)		1	AO1
	provided there are no external forces	allow ref an isolated or closed system	1	
2.2	There is a change in <u>momentum</u> (when the car crashes because the speed changes)	Allow momentum of car reduces	1	AO1
	Force is the rate of change of momentum **or** the correct equation stated, e.g. $F = \frac{\Delta p}{t}$		1	
	(Crumple zone means) the car takes longer to stop		1	
	(Because time is greater) the force is smaller (so injuries will be less severe)		1	
	OR accept alternative answers that refer to acceleration/Newton's 2nd law:		**OR**	
	the car decelerates / accelerates (due to a change in velocity)		1	
	(crumple zone means) the car takes longer to stop		1	
	so acceleration is less		1	
	(because F = ma,) the force is smaller		1	
2.3	kinetic (energy)	ignore ref to other energies	1	AO1
	(transferred to) thermal energy	allow heat	1	
	and sound		1	

2.4	increase in mass increase velocity	allow 'speed' for velocity allow answers which describe an increase in mass or speed (eg more passengers, driving faster, more kinetic energy) do **not** accept answers which refer to a different car.	1 1	AO1
Total			11	