

**Physics B**

General Certificate of Secondary Education

Unit **B751/01**: Unit 1: Modules P1, P2, P3 (Foundation Tier)

**Mark Scheme for June 2012**

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All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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OCR Publications  
PO Box 5050  
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NG15 0DL

Telephone: 0870 770 6622  
Facsimile: 01223 552610  
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For answers marked by levels of response:

- a. **Read through the whole answer from start to finish**
- b. **Decide the level that best fits** the answer – match the quality of the answer to the closest level descriptor
- c. **To determine the mark within the level**, consider the following:

Descriptor	Award mark
A good match to the level descriptor	The higher mark in the level
Just matches the level descriptor	The lower mark in the level

- d. Use the **L1, L2, L3** annotations in Scoris to show your decision; do not use ticks.  
Quality of Written Communication skills assessed in 6-mark extended writing questions include:
  - appropriate use of correct scientific terms
  - spelling, punctuation and grammar
  - developing a structured, persuasive argument
  - selecting and using evidence to support an argument
  - considering different sides of a debate in a balanced way
  - logical sequencing.

## Annotations

Annotation	Meaning
	correct response
	incorrect response
	benefit of the doubt
	benefit of the doubt <u>not</u> given
	error carried forward
	information omitted
	ignore
	reject
	contradiction
	Level 1
	Level 2
	Level 3

Abbreviations, annotations and conventions used in the detailed Mark Scheme.

/	=	alternative and acceptable answers for the same marking point
(1)	=	separates marking points
<b>allow</b>	=	answers that can be accepted
<b>not</b>	=	answers which are not worthy of credit
<b>reject</b>	=	answers which are not worthy of credit
<b>ignore</b>	=	statements which are irrelevant
( )	=	words which are not essential to gain credit
<u>    </u>	=	underlined words must be present in answer to score a mark (although not correctly spelt unless otherwise stated)
ecf	=	error carried forward
AW	=	alternative wording
ora	=	or reverse argument

Question		Answer	Marks	Guidance								
1	(a)	started at a / had / is at higher temperature (1)	1	<b>allow</b> higher level answers eg <b>A</b> has a lower SHC eg rate of cooling is higher if starting temperature is higher <b>allow A</b> was in colder surroundings <b>ignore</b> density / different liquid								
	(b) (i)	freezing (1)	1	mark answer line but if answer line is blank <b>allow</b> correct answer ticked circled or underlined								
	(ii)	(J) ✓ in 3 <sup>rd</sup> box (1) <table border="1" style="margin-left: 20px;"> <tr> <td>°C</td> <td></td> </tr> <tr> <td>Hz</td> <td></td> </tr> <tr> <td>J</td> <td>✓</td> </tr> <tr> <td>kg</td> <td></td> </tr> </table>	°C		Hz		J	✓	kg		1	if no box ticked allow J written in space at side / below table  more than one tick scores zero
°C												
Hz												
J	✓											
kg												
<b>Total</b>			<b>3</b>									

Question		Answer	Marks	Guidance
2	(a)	infrared (1)	1	
	(b)	(i) 80 % <b>or</b> 0.8 (2)  <b>but if answer is incorrect</b>  16 000 ÷ 20 000 (x 100) (1)	2	<b>allow</b> 80 or 0.8% <b>or</b> incorrect unit eg 0.8 J eg 80N (1)
		(ii) <b>any three from:</b>  air is <b>trapped</b> (in double glazed top) (1)  air <b>or</b> gap <b>or</b> vacuum <b>or</b> glass reduces / prevents conduction (1)  air <b>or</b> gap <b>or</b> vacuum reduces / prevents convection (1)  infrared <b>or</b> IR <b>or</b> radiation reflected back or little radiated out (1)	3	<b>allow</b> vacuum / inert gas or named inert gas (eg argon) <b>trapped or between</b> the glass <b>ignore</b> gas  <b>allow</b> air or vacuum / inert gas or named inert gas is an insulator  <b>ignore</b> heat / light <b>but not</b> UV / ultraviolet <b>ignore</b> bounces
		(iii) black or dull surface is used <b>because</b> it is a (good) absorber of infrared / energy / radiation (from the Sun) (1)  shiny surfaces are used <b>because</b> they reflect infrared / energy / radiation (to the cylinder) (1)	2	<b>allow</b> light <b>or</b> waves <b>or</b> heat for radiation <b>allow</b> soaks up for absorbs but <b>not</b> attracts  <b>allow</b> light <b>or</b> waves <b>or</b> heat for radiation <b>allow</b> bounces for reflects  <b>additional marking points</b> <b>allow</b> cylinder is made of metal so energy is transferred to water efficiently / AW <b>allow</b> outlet at top of cylinder, where water is warmest
<b>Total</b>			<b>8</b>	

Question	Answer	Marks	Guidance
3	<p><b>Level 3: (5 – 6 marks)</b> Candidates must conclude that <b>UV</b> presents the hazard <b>then</b> apply their knowledge and understanding to explain the risks <b>and</b> the significance of Jane’s dark skin. Risk reduction should be explained in some detail. If only one point addressed in each area award the lower mark in the level. A good cover of all aspects of the scenario in the question is needed for 5-6 marks. Quality of written communication does not impede communication of the science at this level.</p> <p><b>Level 2: (3 – 4 marks)</b> Answer will apply knowledge and understanding to most aspects of the scenario and must include some reference to risks <b>from</b> UV <b>or</b> the Sun’s rays <b>or</b> sunlight and either risk reduction <b>or</b> the significance of dark skin. If there is only one risk or a preventative measure, award the lower mark in the level. Quality of written communication partly impedes communication of the science at this level.</p> <p><b>Level 1: (1 – 2 marks)</b> Answers should include a risk and some awareness of protection <b>or</b> some detail of risk or protection. If only risk <b>or</b> protection is mentioned award the lower mark in the level. The significance of dark skin will <b>not</b> be appreciated. Quality of written communication impedes communication of the science at this level.</p> <p><b>Level 0: (0 marks)</b> Insufficient or irrelevant science. Answer not worthy of credit.</p>	6	<p><b>This question is targeted up to grade C</b> <b>Indicative scientific points may include:</b></p> <p><b>risks</b></p> <ul style="list-style-type: none"> <li>• from UV</li> <li>• sunburn / (sun) tan / skin browns / skin damage</li> <li>• <b>skin</b> cancer</li> <li>• cataracts</li> <li>• premature <b>skin</b> aging</li> <li>• can still get sunburn etc wearing sun cream etc</li> </ul> <p><b>allow higher level answers</b> eg damage to human cells / tissue / DNA</p> <p><b>Jane’s dark skin</b></p> <ul style="list-style-type: none"> <li>• absorbs more UV</li> <li>• less UV reaches underlying tissue</li> <li>• dark skin lowers risk</li> <li>• <b>allow</b> higher level ref. to melanin</li> </ul> <p><b>methods that reduce risk</b></p> <ul style="list-style-type: none"> <li>• use of sun screen / cream / lotion</li> <li>• high factors give more protection</li> <li>• sun creams etc absorb UV</li> </ul> <p><b>allow reduction of risk by</b></p> <ul style="list-style-type: none"> <li>• reduce time spent in the sun(light)</li> <li>• don’t sunbathe during hottest part of the day</li> <li>• stay in the shade</li> <li>• wear protective clothing</li> </ul>
	<b>Total</b>	<b>6</b>	



Question			Answer	Marks	Guidance
4	(a)	(i)	<b>E</b> (1)	1	
		(ii)	(crest) <b>A</b> (trough) <b>D</b> (1)	1	both required in the correct order for mark
	(b)	(i)	4 (cm/s) (2)  <b>but if answer is incorrect</b>  $\frac{8}{10} \times 5(1)$ or $0.8 \times 5(1)$	2	<b>allow</b> just (f =) $8 \div 10$ or $0.8$ (1) <b>ignore</b> $5 \times 8$ or $40$
		(ii)	(very) <b>much</b> less than speed of em waves / AW / ora (1)	1	<b>allow</b> examples of much slower eg really slow or tiny compared to <b>allow</b> electromagnetic waves are the fastest
			<b>Total</b>	<b>5</b>	

Question		Answer	Marks	Guidance
5	(a)	<p>not correct since <b>A</b> or 'it' is analogue or <b>A</b> or 'it' is continuously variable / AW (1)</p> <p>digital signal is <b>D</b> as it is a series of 0 / 1 or on / off / AW (1)</p> <p>if no mark scored <b>allow A</b> is analogue <b>and D</b> is digital (1)</p>	2	<p><b>allow A</b> is analogue as it has values between 0 and 1 / has any value or many values</p> <p><b>allow D</b> as it has only two values</p> <p><b>ignore</b> up / down</p> <p><b>ignore</b> idea of <b>turned</b> on / off</p> <p><b>ignore</b> not continuous</p>
	(b)	<p>large volume or amount of data transfer / more signals (carried) / more information (carried) (1)</p>	1	<p><b>allow</b> higher level answers eg multiplexing</p> <p><b>allow</b> less interference (than cables)</p> <p><b>allow</b> better quality of <b>output</b> (signal)</p> <p><b>allow</b> less heating/lower energy consumption / AW</p> <p><b>ignore</b> faster</p>
<b>Total</b>			<b>3</b>	

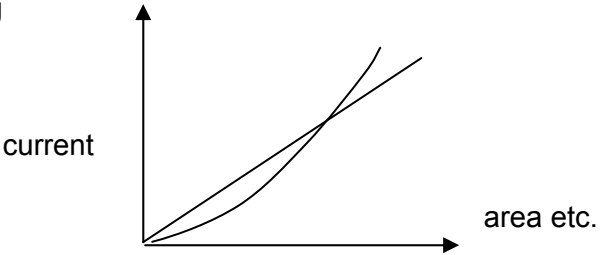
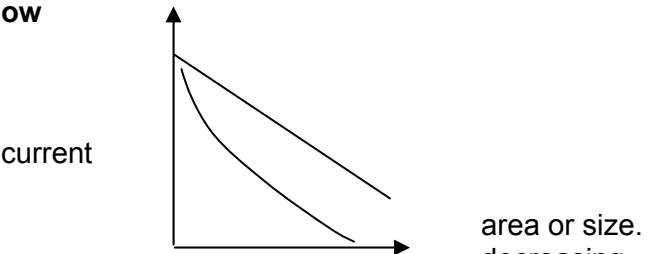
Question			Answer	Marks	Guidance							
6	(a)	(i)	<table border="1"> <tr><td>planet</td></tr> <tr><td>Venus</td></tr> <tr><td>(Jupiter)</td></tr> <tr><td>(Mars)</td></tr> <tr><td>(Mercury)</td></tr> <tr><td>Uranus</td></tr> <tr><td>Saturn</td></tr> </table>	planet	Venus	(Jupiter)	(Mars)	(Mercury)	Uranus	Saturn	2	all correct 2 marks 1 or 2 correct 1 mark
		planet										
Venus												
(Jupiter)												
(Mars)												
(Mercury)												
Uranus												
Saturn												
(ii)	1.52 (AU)	1										
	(b)	(i)	<table border="1"> <tr><td>large star</td></tr> <tr><td>red supergiant</td></tr> <tr><td>supernova</td></tr> <tr><td>black hole</td></tr> </table>	large star	red supergiant	supernova	black hole	1	all three in correct order needed			
large star												
red supergiant												
supernova												
black hole												
		(ii)	idea of strong gravity (1)	1	allow very heavy / big mass / massive / idea of light bent back ignore density							
<b>Total</b>				<b>5</b>								

Question		Answer	Marks	Guidance
7	(a)	<p><b>any three from:</b></p> <p>protective clothing (1) so stop beta passing through <b>or</b> beta can cause cancer / harm (human) cells / causes ionisation (1)</p> <p>tongs / keep her distance (1) as beta can travel through air) <b>or</b> beta can cause cancer / harm (human) cells / causes ionisation (1)</p> <p>short exposure time (as beta is dangerous) (1) <b>or</b> beta can cause cancer / harm (human) cells / causes ionisation (1)</p> <p>use a suitable shield / aluminium (1) to stop beta penetrating / beta cannot penetrate aluminium (1)</p> <p>labelled storage (so know it emits beta radiation) <b>or</b> idea of a suitable storage container for a liquid so none of the liquid can spill out (when being moved) (1)</p>	3	<p><b>maximum of 2 marks for measures</b> eg wear gloves handle with tongs and use for a short time (2) but wear gloves to stop beta, handle with tongs and use for a short time (3) <b>ignore</b> lab coat / goggles <b>allow</b> mask or gloves eg mask so she cannot breath beta particles in (2)</p> <p><b>allow</b> avoid contact as radiation / rays can cause cancer (1)</p> <p><b>allow</b> steel <b>or</b> lead or lead glass</p>
	(b)	<p>idea that these are her opinions / ideas / views (1)</p> <p>idea that there is no (scientific) evidence <b>or</b> data (in her notes) (1)</p> <p><b>but</b></p> <p>idea that she needs to base her decision on scientific evidence not just opinions (2)</p>	2	<p><b>allow</b> not proven to be true <b>or</b> not enough information</p> <p><b>allow</b> more data or testing needed but not <b>she</b> needs to do more tests</p> <p>as an <b>extra</b> marking point: <b>allow</b> exposure dose / time low for treatment <b>or</b> no indication which radiation is harmful / what radiation does <b>or</b> no indication of how radiation is harmful <b>or</b> how radiation causes cancer</p> <p><b>ignore</b> gamma radiation can cause and cure cancer</p>
<b>Total</b>			<b>5</b>	

Question			Answer	Marks	Guidance
8	(a)	(i)	2.07 (kilowatts) (2)  <b>if answer incorrect then</b>  2070 or $9 \times 230$ (1) or $\frac{9 \times 230}{1000}$ (1)	2	<b>allow</b> 2.1 or 2 (kilowatts) (2)
		(ii)	24.84 (Kilowatt hours) (2)  <b>if answer incorrect then</b>  2.07 x 12 or 2.1 x 2 or 12 x 2 (1)	2	<b>allow</b> 25 or 24.8 <b>allow</b> 24 or 25.2 <b>allow ecf from 3ai</b> eg 24840 (2) 2484 (2) 2070 x 12 (1) 207 x 12 (1)
	(b)		heater uses most energy / electricity and is only used at night <b>or</b> uses most energy / electricity at night (1)  <b>then one from:</b>  (so) cheaper to pay just 6p then <b>or</b> new cost / 10p cost more expensive / AW (1)  increase in price $10 - 6 = 4p$ too much (if using large 9 amp heaters or for 12 hours at night) (1)  saving of 2p on appliances used during day does not off set increased cost of those used at night (1)	2	<b>allow</b> clear calculation and comparison of <b>all</b> appliances  eg 425p @ 10p rate (allow +/- 5p) (1 mark) 331p @ 12p / 6p rate (allow +/- 5p) (1 mark)  <b>but</b> 2 marks for both calculations correct  difference = 93 – 95p higher @ 10p rate (2 marks)  if no marks awarded <b>max one</b> mark: <b>allow</b> comparison of 2.40 (10p rate) to 2.16 (12p / 6p rate) (1) <b>allow</b> comparison of 72p to £1.20 (1)  <b>ignore</b> comparison of 18p to 20p
			<b>Total</b>	<b>6</b>	

Question	Answer	Marks	Guidance
9	<p><b>Level 3: (3 – 6 marks)</b> Applies understanding of the cost considerations, compares the total time required (for 8kg wash), <b>and</b> is aware of importance of wash load. Makes reference to reduced electricity <b>or</b> energy use if more efficient and makes valid conclusions <b>using the data</b>. Quality of written communication does not impede communication of the science at this level.</p> <p><b>Level 2: (3 – 4 marks)</b> Applies understanding to the wash load <b>and</b> number of washes <b>and</b> the cost considerations <b>or</b> time of wash <b>or</b> power rating <b>or</b> efficiency. Correctly interprets some of the data and may make a valid conclusion. Quality of written communication partly impedes communication of the science at this level.</p> <p><b>Level 1: (1 – 2 marks)</b> Simple explanation of different efficiency <b>or</b> wash loads <b>or</b> machines having different powers <b>or</b> the idea that power rating and / <b>or</b> time to do the washing increase the cost. Some attempt at using the data. If a conclusion is made it will be simple. Quality of written communication impedes communication of the science at this level.</p> <p><b>Level 0: (0 marks)</b> Insufficient or irrelevant science. Answer not worthy of credit.</p>	6	<p><b>This question is targeted up to grade E</b></p> <p><b>Indicative scientific points may include:</b></p> <p><b>cost considerations including implied costs</b></p> <ul style="list-style-type: none"> <li>• greater the power rating the greater the cost /ora</li> <li>• so lowest power would be cheapest to run</li> <li>• the longer it is switched on the greater the cost /ora</li> <li>• so shortest time switched on would be cheapest to run</li> <li>• idea that novel has greatest power / classic least / other two in between</li> <li>• idea that novel has longest wash time / feature least / other two in between</li> </ul> <p><b>number of times 8 kg washing done so total time taken</b></p> <ul style="list-style-type: none"> <li>• classic needs 4 washes so <math>4 \times 60 = 240</math> minutes</li> <li>• feature needs 2 washes so <math>2 \times 50 = 100</math> minutes</li> <li>• novel needs 2 washes so <math>2 \times 90 = 180</math> minutes</li> <li>• supreme needs 2 washes so <math>2 \times 60 = 120</math> minutes</li> <li>• idea that feature is quickest or novel takes long(est)</li> <li>• idea that novel washes most or classic washes least</li> <li>• idea that wash load of feature and supreme are close to novel / good</li> </ul> <p><b>efficiency and environment</b></p> <ul style="list-style-type: none"> <li>• the most efficient are rated A / ora</li> <li>• classic <b>or</b> feature are rated A / most or highly efficient</li> <li>• novel only rated C / supreme rated B / least efficient</li> <li>• less electricity generated so less pollution / greenhouse gases / global warming</li> </ul>

Question			Answer	Marks	Guidance
					<p><b>conclusions</b></p> <ul style="list-style-type: none"> <li>• washing machine with quickest time to wash 8 kg of clothes is feature</li> <li>• washing machine with lowest power rating is classic</li> <li>• most efficient are classic and feature</li> <li>• so choose one of these two washing machines</li> <li>• classic 240 minutes x 700 watts = 168000</li> <li>• feature 100 minutes x 800 watts = 8000</li> <li>• so overall <b>feature</b> best to choose</li> </ul>
			<b>Total</b>	<b>6</b>	

Question	Answer	Marks	Guidance
10 (a)	no (no mark)  different surface area (1)	1	<b>not</b> merely size but if qualified <b>allow</b> eg some are bigger (0) different size means some collect more photons <b>or</b> light (1) <b>allow</b> surface size
(b)	x axis labelled with / area / surface area / size <b>and</b> y axis labelled current (1)  graph showing an increase in current as surface area <b>or</b> size increases (1)  eg 	2	<b>allow</b> bar chart <b>or</b> indicated A B C D E F  <b>allow</b> axes are reversed and graph is correct (1)  <b>allow</b> 
	<b>Total</b>	<b>3</b>	(2)



Question		Answer	Marks	Guidance
11	(a)	<p>photographs are a certain time apart / idea of measured time (1)</p> <p>vehicle moves over a measured distance (1)</p>	2	<p><b>allow</b> named time. eg 0.5 seconds apart <b>or</b> set time <b>or</b> time taken</p> <p><b>allow</b> moves over marked lines <b>allow</b> measures how far it goes</p> <p>as an additional marking point <b>allow</b> speed = <math>\frac{\text{distance}}{\text{time}}</math> (correct equation) (1)</p>
	(b)	<p>20 (m/s) scores (3)</p> <p><b>but</b> if calculation incorrect then 10 / 0.5 scores (2)</p> <p><b>or</b> if no or incorrect calculation silver car named or identified on table (1)</p>	3	<p><b>allow</b> maximum of 2 for correct calculation of speed for the incorrect vehicle.</p> <p><b>allow</b> correct listing of units eg 10m and 0.5s (1)</p> <p><b>allow</b> any other speed calculation eg (bicycle) 5.5 / (scooter) 6.2 or 6.3 / (blue car) 2.5 (1)</p>
	(c)	<p>yes (no mark)</p> <p>idea of 11 m/s = 24-26 mph <b>or</b> 20mph is 9 m/s which is less than her speed (of 11 m/s) (1)</p>	1	<p><b>allow</b> '5mph over speed limit'</p>
<b>Total</b>			<b>6</b>	

Question	Answer	Marks	Guidance
12	<p><b>Level 3: (5 – 6 marks)</b>            Answer gives a clear and detailed explanation in terms of the affect of the factors of; more speed, road conditions and alcohol on thinking <b>and</b> braking distances <b>and</b> the application to stopping distance <b>and</b> road safety. If road safety is not addressed award the lower mark. Quality of written communication does not impede communication of the science at this level.</p> <p><b>Level 2: (3 – 4 marks)</b>            Answer gives a correct explanation how two factors affect stopping distance <b>or</b> braking distance <b>or</b> thinking distance and how any increase can lead to a greater chance of a crash or accident. If there is no mention of crashes or accidents award the lower mark. Quality of written communication partly impedes communication of the science at this level.</p> <p><b>Level 1: (1 – 2 marks)</b>            Simple explanation of how one of the factors affects thinking <b>or</b> braking distance. Answers may refer to reaction time without mention of thinking distance. Quality of written communication impedes communication of the science at this level.</p> <p><b>Level 0: (0 marks)</b>            Insufficient or irrelevant science. Answer not worthy of credit.</p>	6	<p><b>This question is targeted up to grade C</b></p> <p><b>Indicative scientific points may include:</b></p> <p><b>more / higher speed</b></p> <ul style="list-style-type: none"> <li>• will increase thinking distance</li> <li>• greater distance travelled at higher speed for the same thinking time</li> <li>• speed will increase braking distance as more KE will need to be absorbed by the brakes</li> <li>• <b>allow</b> longer to stop</li> </ul> <p>if answers refer to speed assume it means more speed unless there is a later contradiction</p> <p><b>road conditions</b></p> <ul style="list-style-type: none"> <li>• rain / snow / ice / wet leaves / gravel will increase braking distance</li> <li>• reduced friction due to less grip / friction / slippery road</li> <li>• no affect on thinking distance</li> <li>• going downhill increases braking distance</li> </ul> <p><b>ignore</b> references to visibility eg fog</p> <p><b>alcohol</b></p> <ul style="list-style-type: none"> <li>• will increase thinking distance as slower</li> <li>• reactions give a longer thinking distance</li> <li>• braking distance is unaffected</li> <li>• stopping distance increased</li> <li>• <b>allow</b> increase reaction time / don't react as quick / reduces concentration (levels)</li> </ul> <p><b>ignore</b> references to other distractions eg mobile phones</p>

Question			Answer	Marks	Guidance
					<p><b>road safety</b> link the increased stopping distance to reduction in road safety with an indication of greater chances of accidents or crashes or collisions. <b>ignore</b> increased load or more passengers in answer</p> <p><b>allow</b> higher level answers at level 3 eg wet road has less friction so less force gives less deceleration</p> <p><b>higher level quantitative relationships</b> eg thinking distance changes linearly but braking distance depends on <math>v^2</math></p>
			<b>Total</b>	<b>6</b>	

Question		Answer	Marks	Guidance
13	(a)	<p>mass of dummy (1)</p> <p>speed (of car or dummy) <b>or</b> distance <b>and</b> time (1)</p> <p>momentum = mass x velocity (1)</p>	2	<p><b>allow</b> mass but not mass of car</p> <p><b>ignore</b> weight</p> <p><b>allow</b> how fast it is going</p> <p><b>allow</b> velocity (of car or dummy)</p> <p><b>ignore</b> metres per second</p>
	(b)	(i)	1	<p><b>MARK 13(b)(i) AND (ii) TOGETHER</b></p> <p><b>allow</b> inform / help other tests or experiments or investigations</p> <p><b>allow</b> so they can do more research</p> <p><b>allow</b> to check their own data</p> <p><b>allow</b> idea of improving safety if not gained in (b)(ii)</p>
		(ii)	1	<p><b>ignore</b> to make cars better</p>
	(c)	<p>changes in momentum produces a force / AW (1)</p> <p><b>but</b></p> <p>large or quick <b>changes</b> in momentum produce large forces <b>producing</b> greater injuries or harm or damage / AW (2)</p>	2	<p><b>if no other mark gained</b></p> <p><b>allow</b> idea of high momentum produces more force</p> <p><b>must have the link between momentum change and resulting damage for two marks</b></p>
	(d)	<p><b>A</b> is best as it has a greater depth / AW <b>or</b> can change shape better / ability to change shape is high (1)</p> <p><b>but A</b> is best because it has a greater depth <b>and</b> can change shape better / ability to change shape is high (2)</p> <p>idea that <b>A</b> is better for absorbing energy (1)</p>	3	<p><b>if no other mark gained</b></p> <p><b>A</b> is best as it cushions the impact better (1)</p> <p><b>allow</b> explanations eg <b>A</b> is better at stopping you hitting the wheel / windscreen</p> <p><b>ignore</b> counteract the force / absorb the force</p> <p><b>allow</b> higher level answers: eg <b>allow</b> reduce rate of change of momentum / greater stopping time or distance (2)</p>
			<b>Total</b>	<b>9</b>

Question		Answer	Marks	Guidance
14	(a)	(gravitational) potential energy / GPE / PE (1)	1	
	(b)	kinetic / KE (1)	1	
	(c)	idea that ball <b>A</b> / ball dropped from 12m or the biggest height has most (G)PE (because of height) <b>or</b> <b>A</b> has more KE when falling (1)  <b>then</b> same (G)PE and / or KE after bouncing (1)  <b>or</b> ball <b>A</b> loses more energy when it bounces ora	2	<b>allow</b> higher level answers <b>using</b> $GPE = m \times g \times h$ <b>or</b> explanation of ball <b>B</b> having a greater efficiency in terms of its bounce / ora
		<b>Total</b>	<b>4</b>	

**OCR (Oxford Cambridge and RSA Examinations)**  
**1 Hills Road**  
**Cambridge**  
**CB1 2EU**

**OCR Customer Contact Centre**

**Education and Learning**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

**[www.ocr.org.uk](http://www.ocr.org.uk)**

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