



2012 Science

Standard Grade General

Finalised Marking Instructions

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2012 Science – Standard Grade

General Level

Marking Scheme

Please note that **FRACTIONAL** marks should **NOT** be awarded for responses to questions on this paper.
 Please note that where a question specifies circling or underlining, other forms of clearly indicating a response are acceptable.
 Numerical answers should be accepted from answer space or space for working box.

			Space for Notes
1	<p>(a) Any one from</p> <p>Candu uses heavy water <u>coolant</u> and/or Magnox uses carbon dioxide <u>coolant</u></p> <p>They have different coolants</p>	PS1	
	<p>(b) (Nuclear power station) Uranium dioxide fuel Fuel not enriched Water coolant</p> <p style="text-align: right;">All correct, 2 marks 2 correct, 1 mark</p>	PS2	
2	<p>Out</p> <p>Out</p> <p style="text-align: right;">1 mark each</p>	KU2	

			Space for Notes
3	<p>(a) Any two from idea of</p> <p>Saves money or example Saves resources or example (eg less trees cut down) Reduces pollution or example (eg less litter)</p> <p style="text-align: right;">1 mark each</p>	KU2	<p>Not</p> <p>Saves energy (given in question) Definition of recycling Vague answers e.g. save the environment/greener/eco-friendly/stops global warming/cleaner/etc.</p>
	<p>(b) 700 2 marks</p> <p>5/100 x 14 000 shown as part of working 1 mark</p> <p>1% = 140 1 mark</p> <p>Correct answer followed by additional step e.g. 14000 – 700 = 13300 1 mark</p>	PS2	<p>Not</p> <p>14 000 / 5 = 2800</p>
4	(a) Powder	KU1	
	(b) Water	KU1	

			Space for notes
5	<p>(a) Any one from</p> <p>Metal and non-metal</p> <p>Conductor and insulator/non-conductor</p>	KU1	
	<p>(b) Metal Glass Plastic Wood Cardboard Stone etc</p>	KU1	<p>Not named plastics named woods named metals paper foam</p>
6	<p>(a) Heat</p>	KU1	
	<p>(b) B (steam)</p>	KU1	

			Space for Notes
7	(a) Seventeen or 17	PS1	
	(b) Minimise stress on (the driver's) neck	PS1	Accept No stress/reduces stress on (the driver's) neck
	(c) Polyethylene	PS1	Not Any mention of Kevlar Ignore Any reference to fireproof
	(d) Oil, carbon and brake dust (particles) all required	PS1	
	(e) Idea of Adjusts to changing light level or So that the driver is unaffected by the glare of the sun/ by glare/by the sun	PS1	
8	Thin-walled Away from Valves 1 mark each	KU3	

			Space for Notes
9	<p>Water</p> <p>Power stations Mining Oil drilling Wind farms/tidal barrage/solar furnace Cutting down trees (for firewood)</p> <p>Plough land Grow/harvest crops/plants or named crop Farming Hunting animals to extinction Overfishing</p>	KU3	<p>Not Wearing clothes Making fires Burning coal Solar panels</p> <p>Not Grow food/get food Supermarkets/buy food Killing animals Fishing</p>
10	<p>Carbon</p> <p>Chromium and nickel</p> <p>Tungsten</p> <p>1 mark each</p>	KU3	
11	(a) 2000	PS1	
	(b) 20 Follow through correct % of answer (a)	PS1	

			Space for Notes
12	<p>Anodising — a chemical reaction at the surface of a metal</p> <p>Corrosion — using electricity to thicken the oxide layer on the surface of aluminium</p> <p>Galvanising — using electricity to coat one metal onto the surface of another metal</p> <p>Electroplating — dipping steel into hot molten zinc</p> <p style="text-align: right;">All correct, 3 marks 2 or 3 correct, 2 marks 1 correct, 1 mark</p>	KU3	
13	(a) Suppleness or flexibility	KU1	
	(b) Stamina or endurance	KU1	
14	(a) 2 (kWh)	KU1	
	(b) 3 (W)	KU1	

				Space for Notes	
15	(a)	Four chains with arrows	3 marks	PS3	
		Four chains with links	2 marks		
		Three chains with arrows	2 marks		
		Three chains with links	1 mark		
		Two chains with arrows	1 mark		
		Additional incorrect arrow	-1 mark per arrow (up to maximum of 3 marks deduction)		
		e.g	earthworm to stoat earthworm to fox snail to stoat snail to fox		
	(b)	Hedgehog or stoat		KU1	
	(c)	Idea of	Increases	KU1	
	(d)	Idea of	Decreases	KU1	Not It dies (off)
16	(a)	Russell's viper		PS1	
	(b)	75 to 95		PS1	
	(c)	80 Any working including 800 and 10	2 marks 1 mark	PS2	

				Space for Notes
17	(a)	37	KU1	
	(b)	Hypothermia	KU1	
18		Full legend 'Use of water' on <i>x</i> -axis Label 'Volume of water' and unit (litres or l) and linear scale from zero on <i>y</i> -axis All bars correct height with full labels	1 mark 1 mark 1 mark	PS3 Allow transposed axes Bar for bathing must be between 54 and 56 Bar for laundry must be between 22 and 24 If <i>y</i> -axis scale is not linear and from zero, maximum is 1 mark for legend
19	(a)	(i) Oxygen	KU1	Not Air
		(ii) Any one from Carbon dioxide/CO ₂ Carbon monoxide/CO Sulphur dioxide/SO ₂ Water (vapour)/steam/H ₂ O Soot/carbon/C	KU1	
	(b)	Anticline	KU1	
	(c)	(i) Paraffin	KU1	Accept Kerosene
		(ii) Naphtha	KU1	

			Space for Notes																	
20	(a)	Headings as shown 12 data 8-11 data -1 mark if country not first heading -1 mark if no % signs used in headings or data No mark for data listed under a blank heading, but accept correctly ordered data under an incorrect heading	1 mark 2 marks 1 mark	PS3	<table border="1"> <thead> <tr> <th>Country</th> <th>Never smoked</th> <th>Ex-smokers</th> </tr> </thead> <tbody> <tr> <td>Wales</td> <td>45%</td> <td>28%</td> </tr> <tr> <td>Northern Ireland</td> <td>35%</td> <td>37%</td> </tr> <tr> <td>Scotland</td> <td>41%</td> <td>26%</td> </tr> <tr> <td>England</td> <td>41%</td> <td>31%</td> </tr> </tbody> </table> <p>Accept 'percentage' for % sign</p>	Country	Never smoked	Ex-smokers	Wales	45%	28%	Northern Ireland	35%	37%	Scotland	41%	26%	England	41%	31%
Country	Never smoked	Ex-smokers																		
Wales	45%	28%																		
Northern Ireland	35%	37%																		
Scotland	41%	26%																		
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	(b)	Answer must refer to blood or bloodstream		KU1	Accept (red) blood cells, haemoglobin, plasma															
21		Any one from idea of Violence/aggression/fighting Drink driving/accidents caused by drink driving Accidents in the workplace/at home Absence from work Problems at home/in the family Cost of care and treatment Effect on unborn child etc.		KU1																
22	(a)	1500		PS1																
	(b)	30 or correct follow through from part (a)		PS1																

				Space for Notes
23	9825	2 marks	PS2	
	Correct total 49125	1 mark		
	Incorrect total, but correctly divided by 5	1 mark		
24	(a) B		KU1	
	(b) Any one from More (invertebrates/insects) More types (of invertebrates/insects) (Key) indicator species		KU1	Not Answers referring to oxygen levels only
25	(a) A and F		PS1	
	(b) Idea of if the type/material of beaker (makes a difference/affects the time taken to heat water) e.g. If glass or aluminium makes a difference		PS1	Not If the beaker makes a difference Ignore References to heating petrol

				Space for Notes
26	(a) 35.0 / 35		PS1	
	<p>(b) As depth (of water) increases, the concentration (of salt)/grams per litre/salt increases [or vice versa]</p> <p>As latitude/degrees increases, the concentration (of salt)/grams per litre/salt decreases [or vice versa]</p> <p>or</p> <p>The concentration (of salt)/grams per litre/salt is greater at (latitude) 20°/less at (latitude) 60°</p> <p>or</p> <p>The further North, the less the concentration (of salt)/grams per litre/salt [or vice versa]</p> <p style="text-align: right;">1 mark each</p>		PS2	<p>Not</p> <p>'metres' or 'm' for depth</p>
27	<p>(a) Correct label and unit on both axes 1 mark</p> <p>Linear scales from zero on both axes 1 mark</p> <p>All points plotted correctly, including (0,0), and joined 1 mark</p>		PS3	<p>Allow transposed axes</p> <p>Allow one missing zero from one scale</p> <p>Bar graph - maximum 1 mark for correct label and unit on both axes</p> <p>If scale(s) are not linear, maximum is 1 mark for labels/units on both axes.</p>
	(b) Any value between 5 and 10		PS1	

		Space for Notes
28	<p>As age (of car) increases, the (percentage of cars with) rust increases.</p> <p>There is a higher percentage of cars with rust on the door sills/doors/sills (than on the (wheel) arches). [or vice versa]</p> <p>or</p> <p>More (cars have) rust on the door sills/doors/sills (than on the wheel arches). [or vice versa]</p>	<p>PS2</p> <p>Not 'wheels' for wheel arches</p>
Total		<p>KU40 PS40</p>

[END OF MARKING INSTRUCTIONS]