



2013 Science

Standard Grade Credit

Finalised Marking Instructions

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Part One: General Marking Principles for Science Standard Grade Credit

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the specific Marking Instructions for each question.

- (a) Marks for each candidate response must always be assigned in line with these general marking principles and the specific Marking Instructions for the relevant question. If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader/Principal Assessor.
- (b) Marking should always be positive ie, marks should be awarded for what is correct and not deducted for errors or omissions.

GENERAL MARKING ADVICE: Science Standard Grade Credit

The marking schemes are written to assist in determining the “minimal acceptable answer” rather than listing every possible correct and incorrect answer. The following notes are offered to support Markers in making judgements on candidates’ evidence, and apply to marking both end of unit assessments and course assessments.

Marking

The utmost care must be taken when entering and totalling marks. Where appropriate, all summations for totals must be carefully checked and confirmed.

Where a candidate has scored zero marks for any question attempted, “0” should be entered against the answer.

Recording of Marks

Where papers assess more than one element, care must be taken to ensure that marks are entered in the correct column.

The **Total** mark for each paper or element should be entered (in red ink) in the box provided in the top-right corner of the front cover of the answer book (or question/answer book).

Always enter the **Total** mark as a **whole number**, where necessary by the process of rounding up.

The transcription of marks, within booklets and to the Mark Sheet, should always be checked

Markers are reminded that they must not write comments on scripts – comments include words or acronyms.

Ticks, crosses, lines and numbers are acceptable.

Part Two: Marking Instructions for each Question

Please note that **FRACTIONAL** marks should **NOT** be awarded for responses to questions on this paper.

			Space for Notes
1	a	B and D Both required	KU1
1	b	Right atrium (auricle)	KU1
1	c	Idea that D has to pump blood to the (whole) body/further/at higher pressure/with more force (B has only to pump blood to the lungs/not so far/less pressure/less force)	KU1 Ignore any error in naming part D
2		Any two from <ul style="list-style-type: none"> • Repeat and/or average • More (numbers of) coils/wire • Higher voltage/current/power/more electricity • Thicker/thinner wire • Change material of wire • Length/size of nail/more nails • Nail replaced by different metals/materials • Use idea of smaller/lighter paperclips 1 mark each	PS2 <u>Not</u> <ul style="list-style-type: none"> • Replace any piece of equipment • More paper clips • Different objects to lift • Change the gap <u>Accept</u> <ul style="list-style-type: none"> • Change the voltage/power/current

			Space for Notes
3	a	3 and 4 1 mark each	KU2
3	b	5	KU1
3	c	1	KU1
4		<p>aluminium gate tin plating leather walking boots oiling wooden garden seat pesticide treatment bicycle chain waterproofing wax food cans anodising steel roof sheet galvanising</p> <p>5 correct, 3 marks 3,4 correct, 2 marks 1,2 correct, 1 mark</p>	KU3

		Space for Notes
<p>5 Full label(distance from the Sun), unit (millions of km) and linear scale (0 – 160) on y-axis 1 mark</p> <p>Legend (planet) and labels/key (Mercury, Venus, Earth) on x-axis</p> <p>or</p> <p>Legend (planet) and labels/key (minimum, maximum) on x-axis 1 mark</p> <p>Bars drawn correctly no tolerance and label/key (minimum, maximum) or (Mercury, Venus, Earth) 1 mark</p>		<p>Accept</p> <ul style="list-style-type: none"> • Min for minimum • Max for maximum • superimposed bars <p>Not</p> <ul style="list-style-type: none"> • Stacked bars <p>Line graph</p> <ul style="list-style-type: none"> • maximum 1 mark for y-axis label, unit, linear scale
<p>6 Any two from</p> <ul style="list-style-type: none"> • Scrubbing/treating waste gases/using filters • Complete combustion/more efficient boilers • Removing impurities from coal/fuel - or one example • Use alternative/renewable fuels – or one named example • Eco-friendly transport/less cars/car share/ use public transport – or one example <p>1 mark each</p>	<p>KU2</p>	<p>Not</p> <ul style="list-style-type: none"> • Recycling • Use less/different fossil fuels (without an alternative) • Higher chimneys • Less factories • Plant trees

			Space for Notes
7	<p>Idea of:</p> <p>When the temperature is too low, the thermostat switches freezer off</p> <p>and</p> <p>When the temperature is too high, the thermostat switches freezer on</p> <p style="text-align: right;">Both required</p>	KU1	<p>Accept</p> <p>Answers relating to other appliances e.g.</p> <p>When the temperature is too high, the thermostat switches appliance off</p> <p>and</p> <p>When the temperature is too low, the thermostat switches appliance on</p>
8	a Vibrios	PS1	Correct answer only
8	b Binary fission	PS1	Correct answer only
8	c Most bacteria are killed	PS1	
8	<p>d Antibiotics</p> <p>Bacteriophages</p> <p style="text-align: right;">Any order, both required</p>	PS1	<p>Correct answers only</p> <p>Not</p> <ul style="list-style-type: none"> • 'Drugs' only • 'Viruses' only

			Space for Notes
9	a	4	
9	b	3 and 6	Any order
9	c	1	
10		A	

				Space for notes
11	a	A More Both required	KU1	
11	b	Any two from Movement, waste, heat, respiration, reproduction, growth, some parts of the organism are not eaten 1 mark each	KU2	<u>Accept</u> One example of each e.g. running for movement <u>Not</u> <ul style="list-style-type: none"> • Eating • Sleeping • Hunting
11	c	D (wedge-tailed eagle)	KU1	Correct answer only
11	d	Population	KU1	Correct answer only

			Space for Notes
12	a	<i>Scleroderma citrinum</i>	PS1 Accept common name and species
12	b	Purple	PS1
12	c	<ul style="list-style-type: none"> • Common name destroying angel • Diameter 5-9 (cm) • Brown cap • Causes death if eaten <p style="text-align: right;">4 correct, 2 marks 2/3 correct, 1 mark</p>	PS2
13	a	<p>Any two from</p> <p>Food supply, water supply, space, shelter, disease, predators, build up of waste, migration, natural disasters, climate <u>change</u></p> <p style="text-align: right;">1 mark each</p>	<p>KU2</p> <p>Not</p> <ul style="list-style-type: none"> • pH • temperature • loss of habitat unless qualified • pollution • hunting/poaching/other human activity • weather unless qualified • loss of trees/forest (given)
13	b	habitat	KU1

				Space for Notes	
14	a	<p><u>Part of the blood</u></p> <p>plasma</p> <p>white blood cells</p> <p>platelets</p> <p>red blood cells</p>	<p><u>Function</u></p> <p>to destroy bacteria</p> <p>to carry oxygen</p> <p>to carry dissolved food</p> <p>to seal cuts by clotting blood</p> <p>4 correct, 3 marks 2,3 correct, 2 marks 1 correct, 1 mark</p>	KU3	
14	b	i Arteries		KU1	
14	b	ii Veins		KU1	

				Space for Notes
15	a	As temperature (of water) increases, the (level of dissolved) oxygen decreases (or vice versa)	PS1	<p><u>Not</u> Answers relating to speed of dissolving</p> <p><u>Accept</u> 'Heat' for temperature 'Temp.' for temperature</p>
15	b	i 3	PS1	<p><u>Accept</u> Three correct names i.e. perch, roach, tench</p>
15	b	ii 1.5	PS1	
15	c	i 6	PS1	<p><u>Not</u> 16</p>
15	c	ii trout	PS1	Correct answer only

		Space for notes
16	<p>y-axis title and scale 'Number of twin births per 1000 pregnancies' and linear scale from 2 to 16 1 mark</p> <p>Identical (twins): all points correctly plotted for and joined and line labelled or key 1 mark</p> <p>Non-identical (twins): all points correctly plotted for and joined and line labelled or key 1 mark</p>	PS3 If there is no y-axis label – maximum 2 marks

				Space for Notes
17	a	Fermentation/fermenting	KU1	<u>Accept</u> <ul style="list-style-type: none"> • anaerobic respiration
17	b	Seismic (survey)	KU1	
17	c	(fractional) distillation	KU1	<u>Accept</u> <ul style="list-style-type: none"> • Distilling <u>Not</u> <ul style="list-style-type: none"> • Fractionating • Refining • Refinery • Separation
18	a	1 (thermal conductivity)	KU1	
18	b	6 (hardness)	KU1	
18	c	4 (flexibility)	KU1	
18	d	2 (strength)	KU1	

				Space for Notes
19	a	moderate	PS1	
19	b	Andrew	PS1	
19	c	Any value from 955 to 980 inclusive	PS1	
20	a	B	KU1	
20	b	13A	KU1	
20	c	<p>Idea of:</p> <p>The earth wire provides a (conducting) path (from toaster) to earth/ground</p> <p>OR</p> <p>A (large) current in the earth wire causes the fuse to melt/blow, (stopping the current)</p>	KU1	

			Space for Notes
21	<p>a As age increases, thickness of skin decreases (or vice versa)</p> <p>Smoker has thinner skin than non-smoker (or vice versa)</p> <p style="text-align: right;">1 mark each</p>	PS2	<p>Not References to better skin</p>
21	<p>b $1.45 - 1.05 = 0.4$</p> <p>correct answer 2 marks correct values from graph 1 mark correct subtraction for wrong values (working shown) 1 mark</p>	PS2	

				Space for Notes
22	a	40	PS1	
22	bi	2.5	PS1	
22	bii	125	PS2	
		<p>correct answer 2 marks</p> <p>correct rearrangement of</p> <p>words: average time taken = <u>distance</u> travelled average water speed</p> <p>or</p> <p>figures: = $\frac{100}{0.8}$</p> <p>1 mark</p>		

				Space for notes
23	Methane 200 unreacted iron liquid ammonia	5 correct 3,4 correct 2 correct	3 marks 2 marks 1 mark	

				Space for notes
24	a	Any two from <ul style="list-style-type: none"> • the higher the temperature, the lower the solubility (or vice versa) • the higher pressure, the higher the solubility (or vice versa) • the effect of temperature on solubility is greatest at 1 atm (or vice versa) <p style="text-align: right;">1 mark each</p>	PS2	<u>Not</u> Answers linking temperature and pressure
24	b	any value between 300 and 365	PS1	
24	c	25 2 marks $80/320 \times 100$ 1 mark $320 - 240 = 80$ 1 mark (working must be shown) $(\text{incorrect value})/320 \times 100$ 1 mark	PS2	
			KU40 PS40	

[END OF MARKING INSTRUCTIONS]