2009 Science

Standard Grade – General

Finalised Marking Instructions

2009 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.

				Space for Notes
1	**(a)**	(Both have a) white face	**PS1**	Same colour of face
	(b)	(goose/geese) black feet black face white throat all 3 correct, 2 marks 2 correct, 1 mark	**PS2**	goose, geese, Canada – irrelevant information so ignore But apply cancelling errors eg it's a white goose -1 mark
2	**(a)**	Stamina or endurance	**KU1**	
	(b)	Strength or power	**KU1**	Accept 'strong'
3	**(a)**	C and E 1 mark each (increasing the carbon content and heating the steel and cooling it quickly)	**KU2**	E and C
	(b)	A (adding chromium and nickel to steel)	**KU1**	

								Space for Notes
4	**(a)**	Paraffin					**KU1**	
	(b)	Naphtha					**KU1**	
	(c)	Bitumen					**KU1**	
5	**(a)**	A (metals)					**KU1**	
	(b)	**(i)**	4 and 6	(silk and cotton)	both required		**KU1**	or 6 and 4 or names
		(ii)	1 and 5	(stone and wood)	both required		**KU1**	or 5 and 1 or names
6	**(a)**	**(i)**	D				**KU1**	Not ‘permeable (rock)’
		(ii)	Oil (natural) gas			1 mark each	**KU2**	
	(b)	B (the demand for fossil fuels outstrips supply)					**KU1**	

				Space for Notes
7	**(a)**	Wood	**PS1**	
	(b)	Heating wood <u>in the absence of air</u> Or Destructive distillation	**PS1**	Not 'heating wood' or 'burning wood'
	(c)	<u>Sugar</u> is converted to <u>ethanol</u>	**PS1**	
	(d)	<u>Wood</u> alcohol and ethanol both required	**PS1**	Any order
8	**(a)**	B and F both required	**PS1**	Or F and B
	(b)	<u>The effect of</u> (increasing) <u>the mass</u> (on the stretch of the spring)	**PS1**	Not answers referring to breaking of spring Accept: weight, grams, numbers (50g, 100g, 150g) Need more than 1
9		(Type/s of) lemur must be first heading, other headings interchangeable. (Type/s of) lemur — Colour (of fur) — (main) diet/food/feeds on/what it eats Bushbaby (lemur) — grey — insects Red-ruffed (lemur) — red, black, white — fruit Ring-tailed (lemur) — grey, black, white — fruit (and) leaves Blue-eyed (lemur) — black — fruit (and) leaves Headings, 1 mark 12 correct entries, 2 marks 8, 9, 10, 11 correct entries, 1 mark	**PS3**	If 'type' written in first heading, lemur has to be entered after all names If no heading in a column then data does <u>not</u> count

				Space for Notes
10		Saves money Saves energy Idea of: Reduces pollution/litter/saves the environment/reduces landfill Any two, 1 mark each	**KU2**	Not can be used again or can be used for something else Not saves resources
11		water warmth/heat food (**not** energy/fuel) all 3 correct, 2 marks 1, 2 correct, 1 mark	**KU2**	
12	**(a)**	**(i)** B	**KU1**	
		(ii) E	**KU1**	
	(b)	Out 1 mark Up 1 mark	**KU2**	
	(c)	Idea of: in the bloodstream	**KU1**	Accept: blood, in the blood, by red (blood) cells, haemoglobin

					Space for Notes
13	**(a)**	Four chains with arrows Four chains with links Three chains with arrows Three chains with links Two chains with arrows	3 marks 2 marks 2 marks 1 mark 1 mark	**PS3**	If only arrow (upwards) missing between woodmouse and owl, lose 1 mark for chain 2 and 3 (not 2 marks). Not extra arrow to create a "new" food chain – deduct 1 mark
	(b)	Squirrel		**KU1**	
	(c)	Idea that: food chain 4 is longer/has more links/has more organisms or vice versa		**KU1**	More animals, more prey
	(d)	Increases		**KU1**	
	(e)	Predators, competition for space, competition for food, build up of waste, climate change, loss of habitat, food (supply), hunger, starvation, weather, shelter, warmth, number of prey, pollution		**KU1**	Not disease, infection, hunting/being shot, birth or death, age
14		Labels on x-axis including legend scale on y-axis Bars (+/- ½ small square)	1 mark 1 mark 1 mark	**PS3**	Legend, accept 'tissue' alone If very small scale used, would lose tolerance. Y-scale must start at zero and be linear (if not, 1 mark max for x-axis + legend/labels) Line graph –1 mark only for correct y-scale. No bar labels –1 mark max for correct y-scale even if bars are correct height. 'Thin bars' – labels must be clearly drawn, if not deduct 1 mark for x-axis. Shading – accurate, apply tolerance.

				Space for Notes
15	**(a)**	As <u>mass increases</u>, the <u>temperature</u> (rise) <u>decreases</u> 1 mark The higher the specific heat capacity, the lower the temperature (rise) (for the same mass of metal) + vice versa 1 mark	**PS2**	Comparing Al + Fe <u>given</u> Accept: temperature, specific heat, heat capacity but <u>not</u> "heat" alone or answers that confuse heat with temperature. <u>Not</u> "Aluminium has a higher specific heat capacity (than iron)"
	(b)	Any answer **between** 11.0 and 22.0	**PS1**	
16	**(a)**	Corrosion/rusting/oxidation	**KU1**	Not erosion
	(b)	**(i)** Graham	**KU1**	
		(ii) Loren	**KU1**	
17	**(a)**	Any **two** from Platelets Red (blood) cells Plasma any two, 1 mark each	**KU2**	Not white blood cells
	(b)	(<u>Produce</u>) antibodies or (special) <u>chemicals</u>	**KU1**	Not antitoxins

				Space for Notes
18	**(a)**	173 correct answer (with or without working) 2 marks 865 incorrectly divided by 5 1 mark wrong total correctly divided by 5 1 mark	**PS2**	Working must be shown for incorrect figure to gain 1 mark.
	(b)	Any answer **between** 768 and 668 668 and 768	**PS1**	
19	**(a)**	Any **two** from As indoor temperature increases, the energy used increases (or vice versa) As outdoor temperature increases, the energy used decreases (or vice versa) (At 10°C less energy is used) (For the same energy) the indoor temperature increases as the outdoor temperature increases (or vice versa) one mark each	**PS2**	Must be clear about indoor and outdoor. Examples of answers: The more energy used, the higher indoor temperature and vice versa. The colder it is outside, the more energy you use and vice versa. The hotter it is outside, the hotter it is inside and vice versa. It's always hotter inside than outside. Use professional judgement if there is relevant discussion and conclusion. <u>Not</u> The more energy used, the higher the temperature (no indoor/ outdoor).
	(b)	Accept 72 – 75 inclusive	**PS1**	
20	**(a)**	Water	**KU1**	
	(b)	Carbon dioxide	**KU1**	

					Space for Notes
21		122 (with or without working)	2 marks	**PS2**	
		20 x 5 = 100	1 mark		
		= wrong answer + 22 + showing working	1 mark		Working must be shown for incorrect figure to gain 1 mark.
22	**(a)**	Label on y-axis (incl unit) Scales on both axes Points plotted and joined (+/- ½ small square)	1 mark 1 mark 1 mark	**PS3**	y-label accept temp (°C) Scales must be linear: for x-axis from 0 – 25 for y-axis between 10 – 90 Non linear − 1 mark max for y-axis label + unit Ignore extrapolation to origin Points all correct for the scales shown If scale too small, would lose tolerance
	(b)	18		**PS1**	
	(c)	Mug 32 Insulated mug with lid 88 (Insulated mug 77) Mug with lid 55	3 correct, 2 marks 1, 2 correct, 1 mark	**PS2**	Mug 88°C Insulated mug with lid 77°C Insulated mug 55°C Mug with lid 32°C

				Space for Notes
23		As age increases, the percentage of men who are overweight increases As age increases, the percentage of women who are overweight increases (As age increases, the percentage of people who are overweight increases – this conclusion could not be given with either shown above) (at any age) there is a higher percentage of men who are overweight (than women). 1 mark each	**PS2**	Accept: fat, obese If percentage of 'people,' only 1 conclusion therefore 1 mark max. Examples of answers: As you get older, more people are fat/more men/women are fat/ more women are fat (2 answers, 2 marks) As you get older, you get fatter (1 mark) As you get older, men get fatter (2 answers, 2 marks) As you get older, women get fatter (2 answers, 2 marks) More men are overweight/fatter (than women) Not restating of one set of data eg "between 25 – 34, the men are fatter" ie must make a generalisation.
24	**(a)**	Elasticity Strength 1 mark each	**KU2**	
	(b)	Strength Corrosion resistance 1 mark each	**KU2**	

				Space for Notes
25	**(a)**	10	**PS1**	
	(b)	4.8 2 marks	**PS2**	Answer in box or line, ignore transcription errors.
		$\frac{20}{100}$ or 20% × wrong number correctly calculated 1 mark		Working must be shown for incorrect figure to gain 1 mark.
		$\frac{20}{100}$ × 24 = wrong answer 1 mark		
		1% = 24/100 or 0.24 or 10% = 2.4 1 mark		
		24/5 or 24 × $\frac{1}{5}$ or 24 × 0.2 = wrong answer 1 mark		
		Totals	**KU 40** **PS 40**	

[END OF MARKING INSTRUCTIONS]