SCOTTISH
QUALIFICATIONS
AUTHORITY

2006 Science

Standard Grade – Credit

Finalised Marking Instructions

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2006 Science - Standard Grade

Credit Level

Marking Scheme

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

				Space for Notes
1.	**(a)**	A **and** C both required	**KU1**	
	(b)	right ventricle	**KU1**	
	(c)	D has to pump blood around the body/B only has to pump blood to the lungs **OR** D has to pump blood a further distance (than B)/or vice versa **OR** blood in D is under a higher pressure (than blood in B)	**KU1**	
2.	**(a)**	Oxygen	**KU1**	
	(b)	nitrogen dioxide sulphur dioxide 1 mark each	**KU2**	

				Space for Notes
3.		more metals/different metals/examples of metals higher voltage/lower voltage/different voltage longer wire/shorter wire/different number of coils longer time repeat and/or average more accurate thermometer/digital thermometer/two thermometers different volumes of water lid on beaker insulate the beaker different thickness of wire Any two, 1 mark each	**PS2**	accept "power" for voltage
4.		when the temperature is too high/hot, it switches (the radiator) off **and** when the temperature is too low/cold, it switches (the radiator) on	**KU1**	when (the radiator) reaches set temperature the thermostat switches it off <u>and</u> switches it back on when (the radiator) drops below the set temperature
5.	**(a)**	Strength	**KU1**	
	(b)	thermal conductivity	**KU1**	
	(c)	Flexibility	**KU1**	
	(d)	flammability	**KU1**	

			Space for Notes
6.	label, scale and units on y-axis – axis must begin at zero 1 mark labels and legend on x-axis and key 1 mark bars drawn correctly 1 mark tolerance ± ½ small square (tolerance is lost if only half of graph paper is used)	**PS3**	• Accept bars superimposed but not stocked • Bars may be grouped as (3 x 2) or (2 x 3) • 2 separate bars – maximum 1 mark for y-axis
7. **(a)**	cardiac smooth skeletal all correct	**PS1**	
(b)	fast (twitch) – (pale) pink (colour) slow (twitch) – (dark) red slow twitch is darker red (than slow-twitch)(and vice versa)	**PS1**	**not** different colours
(c)	contains <u>myoglobin</u> which stores <u>oxygen</u>	**PS1**	Must mention “myoglobin” and “oxygen”
(d)	effort over a longer time/distance	**PS1**	“effort = run/exersise

				Space for Notes
8.	**(a)**	B more both required	**KU1**	
	(b)	**(i)** decrease/less/they would all die out/become extinct	**KU1**	**NOT** – affects them badly/they have nothing to eat
		(ii) other food sources/a named food source/more links	**KU1**	
	(c)	heat/keeping warm/respiration movement **OR** example, eg chasing prey waste not all of the prey is eaten eg bones are not eaten growth reproduction	**KU1**	**NOT** – eating/digestion/organism is wiped out
	(d)	D otters	**KU1**	
9.	**(a)**	convection radiation any order, 1 mark each	**KU2**	
	(b)	Idea of trapped air	**KU1**	

				Space for Notes
10.	**(a)**	(vaccine) to help the body produce antibodies/combat disease or/small dose of disease to help the body fight the disease	**KU1**	
	(b)	2050 correct answer, 2 marks $\frac{82}{100} \times 2500$ = wrong answer 1 mark	**PS2**	• 0·82 × 2500 = wrong answer 1 mark • $\frac{\text{wrong number}}{100} \times 2500$ (calculated correctly with working shown) 1 mark • 450 (with or without working 1 mark
11.	**(a)**	non-metals have higher specific (heat) capacity (than metals) (or vice versa)	**PS1**	NOT copper, iron, steel have lower specific heat capacity Accept any description of specific heat capacity except "heat"
	(b)	the higher the specific heat capacity, the lower the temperature rise (or vice versa) **OR** metals give a higher temperature (rise) (than non-metals) (or vice versa) **OR** metals need less energy to heat up	**PS1**	Apply cancelling errors NOT "copper, iron, steel" for "metals"

		Space for Notes
(c) 10·8	**PS1**	
(d) accept any value **between** 2·0 and 2·8	**PS1**	

				Space for Notes
12.	**(a)**	Anodising	**KU1**	
	(b)	polystyrene (chips)	**KU1**	NOT "chips" alone
	(c)	spray paint(ing) pesticide (treatment) both correct, 1 mark	**KU1**	
13.	**(a)**	D	**KU1**	
	(b)	C	**KU1**	
14.	**(a)**	labels and unit on y-axis 1 mark suitable scale on both axes 1 mark points plotted and joined and labelled/key 1 mark	**PS3**	Bar graph – maximum 1 mark for y-axis label and units
	(b)	as pressure increases, mass of ammonia increases at a higher temperature (500ºC), mass of ammonia decreases	**PS2**	Accept "tonnes" for "mass of ammonia"

			Space for Notes
15.	mucus – (sticky substance which) traps dirt, germs etc cilia – (hairs) brush (dirty) mucus upwards 1 mark each	**KU2**	Accept combined description of self-cleaning mechanism NOT – cilia trapping dirt etc
16.	hydrogen chloride/HCl damage to nervous system/brain/nerves carbon monoxide/CO 1 mark each	**KU3**	
17. **(a)**	ball bearings, tools both required	**PS1**	Apply cancelling errors
(b)	medium carbon (steel)	**PS1**	
(c)	11/11·0	**PS1**	Accept 10·8 - 11·2 inclusive

				Space for Notes
18.	**(a)**	as age increases, number of men, women, people with high blood pressure increases (for the same age) more females have high blood pressure than males 1 mark each	**PS2**	Maximum of 1 mark may be awarded if conclusions refer to "increased blood pressure/higher blood pressure"
	(b)	141·6 correct answer 2 marks incorrect total divided by 4 1 mark	**PS2**	141/142 1 mark Accept correct and from 'space for working'
	(c)	270 correct answer 2 marks 6000 divided by 1000 = 6 1 mark wrong number x $45 \cdot 0$ = wrong total 1 mark	**PS2**	"wrong number" must not be 6000
19.	**(a)**	1 and 3 (air sacs and capillary) both required	**KU1**	
	(b)	5 (diaphragm)	**KU1**	

				Space for Notes
20.	**(a)**	(cold) water is turned into steam/hot water	**KU1**	NOT Hot rocks give off steam
	(b)	Fermentation	**KU1**	Accept brewing NOT distilling
21.	**(a)**	Nicotine	**KU1**	
	(b)	Tar	**KU1**	

				Space for Notes
22.	**(a)**	thicker layer, less heat lost more layers, less heat lost 1 mark each	**PS2**	Accept both conclusions included in one statement
	(b)	any value **between** 1250 and 1600	**PS1**	
	(c)	20% 2 marks • 1000 – 800 = 200 1 mark **OR** • $\frac{\text{wrong figure}}{1000} \times 100$ 1 mark **OR** • $\frac{200}{800} \times 100$ 1 mark	**PS2**	200 1 mark 100 and 800 1 mark in space for working wrong figure (but not 3) 1 mark select at start
23.	**(a)**	the greater the number of (carbon) atoms, the higher the flash point (temperature) **OR** the greater the number of (carbon) atoms, the higher the boiling point	**PS1**	Accept "longer chain" for "greater number of carbon atoms"
	(b)	any value **between** -42 and +40	**PS1**	

			Space for Notes
24. **(a)** 2, 3 1 mark each	**KU2**		
(b) 1, 4 1 mark each	**KU2**		
25. **(a)** 2000 correct substitution, 1 mark	**PS2**	$\frac{200 \times 120}{12}$ 1 mark	
(b) 10 correct rearrangement, 1 mark correct substitution of figures, 1 mark	**PS2**	$300 = \frac{60 \times 50}{C}$ 1 mark	

[END OF MARKING INSTRUCTIONS]