

Science B

General Certificate of Secondary Education **B621/01**

Unit 1 Modules B1, C1, P1

Mark Scheme for June 2010

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Question		Expected Answers	Marks	Additional Guidance
1	(a)	Canada and Germany (1)	1	need both either order
	(b)	carbohydrate (1)	1	allow correct answer underlined or ticked if no ringed answer
	(c)	arthritis / heart disease / diabetes / thrombosis / blood clots / strokes / breathing problems / shortage of breath / blocked artery / high blood pressure (1)	1	allow infertility in females / joint problems ignore cancer allow local terms such as clogged up artery
		Total	3	

Question		Expected Answers	Marks	Additional Guidance
2	(a)	simple reflex (1)	1	allow correct answer ringed, underlined or ticked if no answer on the line allow reflex on its own as it is clear which answer is given
	(b)	pressure / temperature / touch (1)	1	allow heat / cold / hot for temperature
	(c)	sensory neurone (1)	1	more than one tick, zero marks
	(d) (i)	mutation (1)	1	
	(ii)	nucleus (1)	1	mark answer line, allow correct answer ringed, underlined or ticked if no answer on the line
Total			5	

Question			Expected Answers	Marks	Additional Guidance
3	(a)	(i)	count the number of pulses in a certain time in a named place eg wrist / neck / heart (1)	1	allow descriptions e.g. put fingers on the wrist and count the number of pulses per minute ignore blood pressure sensor / pulse sensor
		(ii)	more salt / more fat / more alcohol / more sugar / more cholesterol (1)	1	not fibre / protein ignore named foods allow a lot of salt / fat etc ignore carbohydrate if list all must be correct
	(b)	(i)	138 - read from graph (1)	1	allow 135 - 140
		(ii)	more energy (is released) / does not produce lactic acid (1)	1	allow no oxygen debt allow less (likely to get) cramp / muscle fatigue ignore can exercise for longer unless qualified allow ORA if anaerobic specified
		(iii)	maximum two from deliver oxygen (to the muscles) (1) But deliver more oxygen / oxygen delivered quicker(2) deliver glucose / sugar (1) But deliver glucose quicker / more sugar delivered (2) remove carbon dioxide (1) But remove carbon dioxide quicker /more carbon dioxide removed (2)	2	
Total				6	

Question		Expected Answers	Marks	Additional Guidance
4	(a)	bacterium (1)	1	if no answer ringed allow correct answer underlined or ticked
	(b)	by mosquito (1)	1	ignore vector/sex of mosquito not if another organism or named vector is given as well as mosquito eg mosquito and water
	(c)	engulfed by white blood cells / by antibodies (1)	1	not just white blood cells without qualification allow eaten by white cells (1) allow higher level answers phagocytosis ignore absorbed ignore white cells kill bacteria
	(d)	(i) 37	1	allow 36.5 to 37.5 (specification states <i>about</i> 37) not temperature in Fahrenheit
	(ii)	any two from heat stroke (1) dehydration (1) reduces enzyme action AW (1) death of cells / individual (1)	2	not just stroke allow symptoms of heat stroke eg fainting / being sick / dizziness allow loss of fluid ignore sweating
		Total	6	

Question			Expected Answers	Marks	Additional Guidance
5	(a)	(i)	emulsifier / stabiliser (1)	1	either answer
		(ii)	sugar (1)	1	
	(b)		stop oil and water from separating (1)	1	allow keep them mixed not joined
	(c)		stop the food reacting with oxygen (1)	1	allow stop it going off keep it fresh / AW allow stop it oxidising not stops oxygen getting to the food not rotting ignore preserves
	(d)		different texture / different taste (1)	1	allow to make it edible allow description of different texture eg soft ignore killing microbes ignore colour changes
			Total	5	

Question		Expected Answers	Marks	Additional Guidance
6	(a)	top label - petrol (1) bottom label - bitumen (1)	2	
	(b)	(i) catalyst / speed up the reaction (1)	1	
		(ii) petrol (1)	1	allow gasoline
	(c)	any two from causes oil slicks (1) idea of damage to wildlife/ or named wildlife (1) spoils beaches / reefs (1)	2	allow difficult / expensive to clear up ignore just damage to the environment / habitats
Total			6	

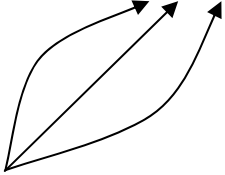
Question		Expected Answers	Marks	Additional Guidance
7	(a)	<p>any two from</p> <p>idea of energy content (1)</p> <p>idea of availability / how long fuel will last (1)</p> <p>storage (1)</p> <p>idea of toxicity (1)</p> <p>idea of pollution / emissions (1)</p> <p>easy to use / ignite / burn (1)</p> <p>how easy / expensive is it to transport (1)</p>	2	<p>eg gives off lots of energy / heat (1)</p> <p>eg easy to get hold of / how fast will it run out / is it renewable (1)</p> <p>allow is the fuel harmful ignore dangerous</p> <p>eg does it cause acid rain or greenhouse effect or global warming / damage to the environment (1)</p> <p>not ozone layer</p> <p>ignore efficiency of fuel</p>
	(b)	oxygen / O ₂ / O (1)	1	
	(c) (i)	(spirit) burner (1)	1	not Bunsen burner
	(ii)	25 (1)	1	
	(iii)	ethanol (1)	2	If incorrect answer no mark can be given for reason as all are rises
		lowest temperature rise / change (1)		allow starts at the highest and ends at the lowest temperature.
	(d)	energy or heat given out / energy released into surroundings (1)	1	allow temperature rise
	(e)	methane (1) mark answer on line first	1	allow correct displayed formula or molecular formula allow correct answer underlined, ticked or ringed if no answer on line
		Total	9	

Question		Expected Answers	Marks	Additional Guidance
8	(a)	✓ (X) ✓ (X) ✓ ✓ ✓	2	all correct (2) any 3 correct (1)
	(b)	any two from ideas that microwaves are absorbed by brain (1) microwaves cause heating (of brain) (1) microwaves can cook protein / flesh / brain (1) microwaves can damage brain / cells (1) microwaves can cause tumours / cancer (1)	2	ignore references to anti-social behaviour ignore references to cost ignore just get to or penetrate the brain ignore microwaves heat the phone / phone gets hot ignore dangerous to brain
		Total	4	

Question			Expected Answers	Marks	Additional Guidance
9	(a)	(i)	amplitude (1)	1	
		(ii)	trough (1)	1	
	(b)		B (1)	1	allow correct answer ringed, ticked or underlined if answer line is blank
	(c)		from the person / AW (1)	1	ignore movement
			Total	4	

Question		Expected Answers	Marks	Additional Guidance
10	(a)	ultraviolet (1)	1	allow correct answer ringed, ticked or underlined if answer line is blank allow uv
	(b)	extra use of fuel / AW (1)	1	allow any examples eg more cars therefore more carbon dioxide allow trees/plants have been cut down / AW allow increased energy use
		Total	2	

Question		Expected Answers	Marks	Additional Guidance
11	(a)	<p>1 mark for each type of energy transfer</p> <p>foam is a poor conductor/reduces conduction or foam is an insulator (1)</p> <p>stopper reduces convection or (air in) foam / trapped air reduces convection (1)</p> <p>shiny metal case reflects radiation / heat / energy or shiny metal stops radiation / IR (1)</p>	3	<p>There must be a link between the heat transfer process and the feature</p> <p>not shiny metal stops conduction ignore stopper prevents conduction</p> <p>not shiny metal stops convection</p> <p>not foam stops radiation not stopper prevents radiation</p> <p>not just reflects it away from mug</p>
	(b)	1000 (KWh) (1)	1	Mark line first. If no answer on line or in space look in box
		Total	4	

Question		Expected Answers	Marks	Additional Guidance
12	(a)	start / initial movement direction not be downwards	1	<p>allow any upward or circular or diagonal movement as long as the direction is above the horizontal with no initial downward movement</p>  <p>allow vertical arrow near to the radiator arrow head not needed</p>
	(b)	<p>any correct example fibre glass insulation / thermalite blocks / carpets / cork / wool / straw / bubble-wrap <u>corrugated</u> cardboard (1)</p>	1	<p>ignore double glazing not foam not just glass not just cardboard</p>
		Total	2	

Question		Expected Answers	Marks	Additional Guidance
13	(a)	20 (°C) (1)	1	correct answer only
	(b)	(i) A / dull black (1)	1	
		(ii) infra red (radiation)	1	allow IR (radiation) not just heat radiation
		(iii) increase the temperature (1)	1	allow increase surface area
		Total	4	

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