



# GCSE

## Science B

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

Unit 1 Modules B1, C1, P1

## Mark Scheme for June 2010

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B621/01

Mark Scheme

June 2010

Question			Expected Answers	Marks	Additional Guidance
1	(a)		Canada and Germany (1)	1	need both either order
	(b)		carbohydrate (1)	1	<b>allow</b> 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	<b>allow</b> infertility in females / joint problems  <b>ignore</b> cancer <b>allow</b> local terms such as clogged up artery
			<b>Total</b>	<b>3</b>	

B621/01

Mark Scheme

June 2010

Question			Expected Answers	Marks	Additional Guidance
2	(a)		simple reflex (1)	1	<b>allow</b> correct answer ringed, underlined or ticked if no answer on the line <b>allow</b> reflex on its own as it is clear which answer is given
	(b)		pressure / temperature / touch (1)	1	<b>allow</b> 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
			<b>Total</b>	<b>5</b>	

B621/01

Mark Scheme

June 2010

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

B621/01

Mark Scheme

June 2010

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	<b>ignore</b> vector/sex of mosquito <b>not</b> 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	<b>not</b> just white blood cells without qualification <b>allow</b> eaten by white cells (1) <b>allow</b> higher level answers phagocytosis <b>ignore</b> absorbed <b>ignore</b> white cells kill bacteria
	(d)	(i)	37	1	<b>allow</b> 36.5 to 37.5 (specification states <i>about</i> 37 ) <b>not</b> temperature in Fahrenheit
		(ii)	<b>any two from</b> heat stroke (1)  dehydration (1)  reduces enzyme action AW (1)  death of cells / individual (1)	2	<b>not</b> just stroke <b>allow</b> symptoms of heat stroke eg fainting / being sick / dizziness  <b>allow</b> loss of fluid <b>ignore</b> sweating
			<b>Total</b>	<b>6</b>	

B621/01

Mark Scheme

June 2010

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	<b>allow</b> keep them mixed <b>not</b> joined
	(c)		stop the food reacting with oxygen (1)	1	<b>allow</b> stop it going off keep it fresh / AW <b>allow</b> stop it oxidising <b>not</b> stops oxygen getting to the food <b>not</b> rotting <b>ignore</b> preserves
	(d)		different texture / different taste (1)	1	<b>allow</b> to make it edible <b>allow</b> description of different texture eg soft <b>ignore</b> killing microbes <b>ignore</b> colour changes
			<b>Total</b>	<b>5</b>	

B621/01

Mark Scheme

June 2010

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
			<b>Total</b>	<b>6</b>	



B621/01

Mark Scheme

June 2010

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

B621/01

Mark Scheme

June 2010

Question			Expected Answers	Marks	Additional Guidance
8	(a)		<div> <div>✓</div> <div>(X)</div> <div>✓</div> <div>(X)</div> <div>✓</div> <div>✓</div> <div>✓</div> </div>	2	<b>all</b> correct (2) <b>any 3</b> correct (1)
	(b)		<b>any two from ideas that</b> 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	<b>ignore</b> references to anti-social behaviour <b>ignore</b> references to cost <b>ignore</b> just get to or penetrate the brain <b>ignore</b> microwaves heat the phone / phone gets hot <b>ignore</b> dangerous to brain
			<b>Total</b>	<b>4</b>	

B621/01

Mark Scheme

June 2010

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

B621/01

Mark Scheme

June 2010

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

B621/01

Mark Scheme

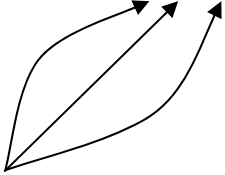
June 2010

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><b>not</b> shiny metal stops conduction <b>ignore</b> stopper prevents conduction</p> <p><b>not</b> shiny metal stops convection</p> <p><b>not</b> foam stops radiation <b>not</b> stopper prevents radiation</p> <p><b>not</b> 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
			<b>Total</b>	<b>4</b>	

B621/01

Mark Scheme

June 2010

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

B621/01

Mark Scheme

June 2010

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	<b>allow</b> IR (radiation) <b>not</b> just heat radiation
		(iii)	increase the temperature (1)	1	<b>allow</b> increase surface area
			<b>Total</b>	<b>4</b>	

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