

**Biology B**

General Certificate of Secondary Education

Unit **B631/01**: Modules B1, B2, B3 (Foundation Tier)

**Mark Scheme for January 2013**

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.










All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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## Annotations

Annotation	Meaning
	correct response
	incorrect response
	benefit of the doubt
	benefit of the doubt <b>not</b> given
	error carried forward
	information omitted
	ignore
	reject
	contradiction

## Subject-specific Marking Instructions

- / = alternative and acceptable answers for the same marking point  
 (1) = separates marking points  
**allow** = answers that can be accepted  
**not** = answers which are not worthy of credit  
**reject** = answers which are not worthy of credit  
**ignore** = statements which are irrelevant  
 ( ) = words which are not essential to gain credit  
 — = underlined words must be present in answer to score a mark (although not correctly spelt unless otherwise stated)  
 ecf = error carried forward  
 AW = alternative wording  
 ora = or reverse argument

Question		Answer	Marks	Guidance
1	(a)	shaved head = environment (1) pierced ear = environment (1) large body mass = both (1)	3	if more than one box ticked score 0 for that row
	(b)	idea that genes / eye colour also inherited from mother /  idea that not all genes come from father /  idea that genes / eye colour inherited from both parents (1)	1	<b>allow</b> green might be recessive / not dominant or another colour is dominant / gets his eye colour from his mother <b>ignore</b> just mother does not have green eyes / has his mother's eyes  <b>ignore</b> just has different genes than his father / has not inherited the genes from his father  <b>allow</b> reference to a mutation occurring <b>ignore</b> reference to contact lenses
<b>Total</b>			<b>4</b>	

Question		Answer	Marks	Guidance
2	(a)	thermometer / digital probe (1)  mouth / under arm / anus / ear (1)	2	<b>allow</b> sensitive strip (1) on skin (1)  thermometer on the skin = 1
	(b)	oxygen (1) glucose / sugar (1)	2	<b>allow</b> fat sugar and fat = 2, but sugar and glucose = 1
	(c) (i)	37 (°C) (1)	1	<b>allow</b> any answer in range 36 - 38 (°C) <b>allow</b> any answer in range 98-99 °F
	(ii)	to stay healthy / stop him being ill / might die / might be sick (1)	1	<b>allow</b> so the body can work properly <b>allow</b> higher level answer: avoid hypothermia or hyperthermia / avoid heat stroke / avoid dehydration / affect enzymes / damage protein
<b>Total</b>			<b>6</b>	

Question		Answer	Marks	Guidance
3	(a)	protein (1)	1	
	(b)	needs <b>more</b> energy / is <b>more</b> active / plays <b>more</b> sport (1)	1	<b>need</b> comparison <b>ignore</b> simply 'carbohydrates give energy' <b>ignore</b> growth <b>ignore</b> he's bigger / older / fitter / stronger
	(c) (i)	stop entry of pathogens / micro-organisms / bacteria / viruses (1)	1	<b>allow</b> fungi/germs / stop infection / stop going septic / stop getting disease / keep sterile
	(ii)	clots (1)	1	<b>allow</b> forms a scab / coagulates / platelets (form a barrier) <b>allow</b> higher level answers eg reference to fibrin <b>ignore</b> cut heals <b>ignore</b> reference to blood cells
<b>Total</b>			<b>4</b>	

Question		Answer	Marks	Guidance
4	(a) (i)	glass (falling) / light (1)	1	<b>allow</b> cup
	(ii)	eye / retina (1)	1	<b>allow</b> rods / cones / fovea <b>not</b> neurone / optic nerve <b>ignore</b> light receptor <b>ignore</b> Marco
	(iii)	hand / arm / fingers / <b>muscles</b> (1)	1	<b>ignore</b> Hanns
	(b) (i)	5 (1)	1	
	(ii)	drinks contain different concentrations / percentages / strengths (of alcohol) / AW (1)	1	<b>ignore</b> whisky has more alcohol than cider / reference to amounts of alcohol / they had different types of drinks <b>allow</b> Hann's drinks are more concentrated ORA <b>allow</b> more alcoholic ORA
	(c)	temazepam (1)	1	<b>allow</b> correct answer ticked or underlined
<b>Total</b>			<b>6</b>	

Question		Answer	Marks	Guidance
5	(a)	any two from (different) sizes (1) (different) ages (1) different sex (1) presence of mane (1)	2	<b>allow</b> different size ears / paws / teeth etc but only once (1) <b>allow</b> there are cubs / some are adults (1) <b>allow</b> there is a male / some are female (1) <b>ignore</b> just fur but allow fur around the head or neck
	(b)	mammal (1) vertebrate (1)	2	either way round
<b>Total</b>			<b>4</b>	

Question		Answer	Marks	Guidance
6		carbon dioxide (1) water (1) glucose / starch / sugar / carbohydrate (1)  oxygen/(1)	4	<b>allow</b> correct formulae eg CO <sub>2</sub>  <b>not</b> O
<b>Total</b>			<b>4</b>	

Question		Answer	Marks	Guidance
7	(a)	any two from sharp teeth (1) built for speed / streamlined / (swims) fast / AW (1) forward facing eyes (1)	2	<b>ignore</b> just teeth  <b>allow</b> powerful jaws / large jaws (1) <b>ignore</b> large mouth <b>allow</b> large (size) / (15 m) long (1)
	(b)	(i)	1	<b>not</b> endangered <b>ignore</b> dead
		(ii)	1	<b>allow</b> bones / skeleton <b>ignore</b> skin
<b>Total</b>			<b>4</b>	

Question			Answer	Marks	Guidance
8	(a)	(i)	18/45 x 100 (1) BUT 40(%) (2)	2	correct answer, no working = 2 <b>allow</b> correct answer in table if answer line is blank
		(ii)	Hughesly (1)	1	<b>allow</b> 40(%) <b>allow</b> ecf if answer to (i) is incorrect ie town with highest percentage <b>only allow</b> Hughesly if it is the highest percentage <b>allow</b> Hughesly if (a)(i) is blank
		(iii)	burning (1) fossil fuels / coal / oil / petrol / natural gas (1)	2	<b>ignore</b> acid rain <b>ignore</b> burn fossils
	(b)		mutualism / mutualistic (1)	1	<b>allow</b> symbiosis / symbiotic <b>ignore</b> mutual relationship / mutual
	(c)		<b>any two from</b>  (too much) competition (from grass / plants) (1)  idea that light is blocked (1)  (less light so) less photosynthesis (1)	2	<b>allow</b> competing for light (2)  <b>ignore</b> references to sulfur dioxide
			<b>Total</b>	<b>8</b>	

Question			Answer	Marks	Guidance
9	(a)	(i)	(towards) light (1)	1	<b>allow</b> get light / for photosynthesis / make food / phototropism / towards the sun / towards sunlight / because of the sun / attracted to the light <b>allow</b> (higher level) reference to auxin(s)
		(ii)	(towards) gravity (1)	1	<b>allow</b> away from light / where there is no light <b>allow</b> get water / get minerals / geotropism / get nutrients <b>allow</b> anchorage / to keep plant stable <b>ignore</b> support / to hold plants upright <b>not</b> to get food / to get energy
	(b)		remove piece of plant / remove shoot / get a root / get a stem (1)  <b>and any two from:</b> put into suitable medium/soil (1)  (dip into) rooting powder/rooting hormone (1)  warm conditions / leave in light / keep moist / water (1)	3	<b>allow</b> get a leaf <b>ignore</b> take a plant cutting / take a flower bud <b>not</b> take a stem with roots  <b>ignore</b> put into ground / put into fertiliser
	(c)		genetically identical / clone / (produced by) asexual reproduction / has one parent (1)	1	award mark for answers that suggest that the plants all come from the same plant but not from the same type of plant  <b>allow</b> all come from a single plant / all come from the same plant
	(d)		change to gene / change to DNA (1)	1	<b>allow</b> change in chromosomes / change in genetic material / change in base sequence (of DNA) / extra genetic material produced / loss of genetic material <b>not</b> genetic modification
<b>Total</b>				<b>7</b>	



Question		Answer	Marks	Guidance
10	(a)	fast growth rate (1) resistance to many diseases (1)	2	if more than two answers given mark incorrect ones first – <b>one</b> incorrect award max of 1 mark <b>two</b> incorrect award 0 marks
	(b) (i)	small(er) (1) streamlined / thin <b>and</b> long / not round (1) tail / can swim (1) pointed head (1)	1	Assume answer refers to sperm unless egg is specified  <b>allow</b> higher level answers such as may contain Y chromosome / contains male genes (1) more mitochondria / lots of mitochondria (1) no food stored / less food stored (1)  contains acrosome / contains enzymes to break through egg cell membrane (1)  <b>ignore</b> simply 'move' <b>ignore</b> head can penetrate the egg cell membrane
	(ii)	fertilisation (1) division (1) differentiation (1)	3	
	(iii)	mother (1)	1	<b>allow</b> higher level answers: placenta / mother's blood <b>allow</b> umbilical / cord <b>ignore</b> womb
		<b>Total</b>	<b>7</b>	

Question			Answer	Marks	Guidance
11	(a)	(i)	at least 4 points correctly plotted (1) <b>but</b> all points correctly plotted (2)  smooth curve through all points (1)	3	<b>allow</b> +/- half square  <b>allow</b> +/- half square <b>not</b> lines with ruler between points
		(ii)	6.5 (1)	1	<b>allow</b> answer in range 6.0 - 7.0 (1) <b>allow</b> a range <b>allow</b> 6 and 7
	(b)	(i)	diffusion (1)	1	<b>allow</b> active transport <b>ignore</b> absorption or a description
		(ii)	plasma (1)	1	<b>allow</b> the liquid part / water
			<b>Total</b>	<b>6</b>	

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