



RECOGNISING ACHIEVEMENT

GCSE

Biology B

General Certificate of Secondary Education

Unit **B632/01**: Modules B4, B5, B6 (Foundation Tier)

Mark Scheme for January 2011

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1 Abbreviations, annotations and conventions used in the detailed Mark Scheme.

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

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Mark Scheme

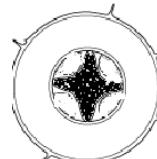
January 2011

Question		Expected Answers	Marks	Additional Guidance
1	(a)	C (1)	1	more than one letter score (0)
	(b)	support (1)	1	ignore protection / gives shape allow stops bursting
	(c)	photosynthesis (1) chloroplasts (1) pores (1)	3	
	(d) (i)	roots / root hairs (1)	1	
	(ii)	potassium (1)	1	ignore K
		Total	7	

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Question		Expected Answers	Marks	Additional Guidance
2	(a)	<p>B (no mark)</p> <p>any two from:</p> <p>no / less water lost (1)</p> <p>water trapped inside bag / bag is waterproof (1)</p> <p>less evaporation / transpiration (1)</p> <p>higher humidity (1)</p>	2	<p>If A then no marks for question</p> <p>ignore needs more water / uses more water</p>
	(b)	centre of X in cross at centre (1)	1	<p>anywhere in shaded area</p> <p>allow correct label line</p> 
	(c) (i)	<p>(+)0.2</p> <p>4.0</p> <p>-0.1</p> <p>3.9</p>	2	<p>4 correct including +/- = 2 marks</p> <p>2 or 3 correct = 1 mark</p>
	(ii)	<p>any two from:</p> <p>water moves out / lost from the potato (1)</p> <p>through a partially permeable membrane (1)</p> <p>water moves from a solution that has a low(er) (sugar) concentration / ora (1)</p> <p>or</p> <p>water moves from a solution that has high(er) water concentration / ora (1)</p>	2	<p>allow semi permeable membrane (1)</p> <p>ignore semi permeable wall</p> <p>assume concentration refers to sugar concentration unless qualified</p> <p>allow water moves from dilute to concentrated solution (1)</p> <p>but water in the potato moves from dilute to concentrated solution (2)</p> <p>allow higher level answers e.g. correct idea of water potential (1)</p>
		Total	7	

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Question		Expected Answers	Marks	Additional Guidance
3	(a)	herbicide (1)	1	more than one answer ringed = (0)
	(b)	might not eat the knotweed fast enough / might eat his other plants / might compete with other organisms / might disrupt the food chain (1)	1	<p>allow might not eat all the parts of the plant / might not completely remove knotweed</p> <p>allow might eat useful insects</p> <p>allow might fly away / may be eaten</p> <p>allow insects may become a problem if they have no natural predators / may become a pest</p> <p>allow go out of control</p> <p>allow takes longer (than herbicide)</p> <p>but ignore takes time</p> <p>ignore bad for / pollutes the environment</p> <p>ignore just might not work</p> <p>not bioaccumulation</p>
	(c)	oxygen (1) moisture / water (1)	2	<p>allow air (1)</p> <p>ignore food</p>
	(d)	any two from: canning (1) freezing / cooling (1) drying (1)	2	<p>allow cooking / turning into wine (1)</p> <p>allow description e.g. put in fridge (1)</p> <p>allow gamma radiation (1)</p> <p>ignore jam / add sugar</p> <p>ignore salt / vinegar / pickling</p> <p>but allow turn into chutney (1)</p> <p>allow (chemical) preservatives (1)</p> <p>ignore put into a container</p>
		Total	6	

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Question		Expected Answers	Marks	Additional Guidance
4	(a)	amoeba closed human open insect none	2	3 correct (2) 1 or 2 correct (1) remove one mark for every extra line above three
	(b) (i)	sweat (1)	1	allow perspiration
	(ii)	plasma (1)	1	allow serum
	(iii)	A+ (1) B - (1)	2	each additional tick loses a mark to max of 2
		Total	6	

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Question		Expected Answers	Marks	Additional Guidance
5	(a)	3 (years) (1)	1	allow three
	(b) (i)	$\frac{175 - 142}{4}$ or 33/4 (1) but answer 8.25 (2)	2	allow 8 / 8.3 (2) but 8.2 / 8.30 (1)
	(ii)	puberty / adolescence (1)	1	ignore teenager / youth
	(c) (i)	any one from: strong(er) (1) light(er) (1) can contain bone marrow (1)	1	allow less likely to break (1) ignore less brittle
	(ii)	X-rays (1)	1	each additional tick loses a mark to max of 1
	(d)	any one from: metal / plastic wears away (1) bone deteriorates around mechanical replacement / AW (1)	1	allow plastic / metal might break / get damaged allow body rejects material (1) allow does not grow with you (1) ignore rust / erosion /corrosion / rots /decay
		Total	7	

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Question			Expected Answers	Marks	Additional Guidance
6	(a)	(i)	<u>coronary artery</u> (1)	1	
		(ii)	any two from: less blood flow (1) less oxygen (carried in blood)(1) less food (carried in blood) (1) waste products build up / not removed (1) (less oxygen / less food means) cells respire less (1)	2	ignore no oxygen / blood / food / respiration unless no oxygen / blood / food / respiration to the heart ignore kills heart / heart attack / makes heart work harder
		(b)	prevents clotting (1)	1	allow thins blood ignore prevent clogging
		(c)	any three from: pulse taken at (pressure point) in wrist / neck / groin (1) using (two) fingers / stethoscope / (digital) monitor (1) time measured with stopwatch / timer (1) count pulses over one minute / 15 seconds x 4 (1) record in beats per minute (1)	3	ignore arm / hand not thumb allow pulses per minute
			Total	7	

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Question			Expected Answers	Marks	Additional Guidance
7	(a)	(i)	nitrogen / carbon / sulfur / phosphorus / potassium / magnesium (1)	1	not water / carbon dioxide / nitrates allow oxygen allow correct symbol
		(ii)	anchorage / water (1)	1	allow stability ignore provides minerals
	(b)	(i)	2200 (1)	1	
		(ii)	provides minerals / nutrients (1)	1	allow improves water-handling allow named minerals / elements ignore fertilisers
		(iii)	they drag the compost under the soil / they aerate the soil / improve drainage / they mix up the soil layers / they neutralise acid soil / increase the surface area of compost (1)	1	ignore just make holes ignore they eat it allow breaking down compost
	(c)		(bacterial) gene is inserted into (cells of) tea plant (1)	1	
			Total	6	

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Question		Expected Answers	Marks	Additional Guidance
8	(a)	(i) smaller / simpler (1)	1	allow higher level answers: lack a (true) nucleus / lack mitochondria / have flagella / only have one chromosome
	(ii)	<p><i>Lactobacillus</i> can increase in numbers rapidly.</p> <p><i>Lactobacillus</i> cannot move itself around.</p> <p><i>Lactobacillus</i> does not burst easily.</p>	<p>It has a cell wall.</p> <p>It does not have a flagellum.</p> <p>It can undergo binary fission.</p>	1
	(b)	B (1)	1	
	(c)	cheese / vinegar (1)	1	
		Total	4	

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Question			Expected Answers	Marks	Additional Guidance
9	(a)	(i)	any two from: (through the) skin (1) mouth (1) nose (1) reproductive organs (1)	2	allow injections / insect bites / cuts allow in food / water allow breathed in allow during sex allow ears (1)
		(ii)	antibiotic (1)	1	allow a specific antibiotic
	(b)	(i)	microscopic animals / tick in third box (1)	1	
		(ii)	pollution / acid rain (1)	1	allow named pollutant / sunlight / mineral availability / (number of) predators / (number of) phytoplankton / food / water flow
			Total	5	

Question		Expected Answers	Marks	Additional Guidance
10	(a)	needs to add yeast (1) fermentation / anaerobic respiration occurs (1) alcohol and carbon dioxide are made (1)	3	
	(b)	(i) distillation (1)	1	
		(ii) it is illegal / needs a licence (1)	1	allow could produce a harmful product ignore dangerous / harmful ignore harmful effects of alcohol e.g. cirrhosis
		Total	5	

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