

Mark Scheme for June 2011

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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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The **Abbreviations, annotations and conventions** used in the detailed Mark Scheme are:

/	=	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
—	=	underlined words must be present in answer to score a mark
ecf	=	error carried forward
AW	=	alternative wording
ora	=	or reverse argument

Question			Expected Answers	Marks	Additional Guidance
1	a	i	plastic / bag covers soil or pots (1)	1	allow plastic is impermeable / waterproof
	a	ii	C (1) correct reference to 227 (1)	2	
	b		evaporation / transpiration / diffusion(1) from leaves (1)	2	allow through stomata / pores (1) allow from respiration
	c		A (1) max two from: more light / most light (1) for photosynthesis (1) (more) stomata open (1)	3	allow photosynthesises the most (1)
Total				8	

Question			Expected Answers	Marks	Additional Guidance
2	a		(too) cold (1) no decomposers / no microorganisms / no microbes / no bacteria / no fungi (1)	2	allow lack of / no air / oxygen (1) allow enzymes / chemical reactions do not work when frozen / solid (1) allow (microbes) cannot respire (1)
	b		teeth (1)	1	if > 1 ring, 0 marks
	c		protein (1)	1	allow ammonium compounds / ammonia / nitrites / urea / amino acids / peptides / DNA
	d		carbon dioxide / methane (1)	1	allow correct formulae allow biogas / hydrogen sulfide / ammonia
Total				5	

Question		Expected Answers	Marks	Additional Guidance	
3	a	photosynthesis (1)	1		
	b	(energy lost as) heat / respiration / movement / egestion / excretion / not all corn eaten / not all (parts of) chickens eaten / not all food digested (1)	1		
	c	i	10 (%) (1)	1	
	c	ii	0.5 (%) (1)	1	
	d	get more energy / less energy lost / can feed more people (1)	1		
	e	nitrate (1) phosphate (1)	2		
		Total	7		

Question		Expected Answers	Marks	Additional Guidance
4	a	(given to someone) having an operation / haemophiliac / blood disorder / cancer patient (1)	1	allow provide clotting factor / for research allow an example of an operation
	b	anti – coagulant (1)	1	allow ringed answer but mark answer line first more than one answer on answer line scores zero
	c	capillary / artery (1)	1	allow arterioles / venules ignore named blood vessel
	d i	B neg(ative) / B-(1)	1	not B positive / B
	d ii	8 (1)	1	
	e	more people are O positive / O positive can donate to more people / more blood types (1)	1	allow can be given to anyone / is a universal donor ignore it is more popular
Total			6	

Question		Expected Answers	Marks	Additional Guidance
5	a	ligament (1)	1	
	b	synovial / hinge (1) triceps (1) antagonistic (1)	3	allow moveable
Total			4	

Question			Expected Answers	Marks	Additional Guidance
6	a	i	<u>excretion</u> (1)	1	not defecation / filtration / egestion
	a	ii	salt and water (1)	1	
	b		(made in) liver (1) (from) amino acids / proteins (1)	2	allow ammonia / nitrogen compounds (1) ignore carbon dioxide
Total				4	

Question			Expected Answers	Marks	Additional Guidance
7	a	i	gills (1)	1	
	a	ii	respiration / releasing energy from food (1)	1	allow for energy / making energy ignore keep alive / to move / to swim / to breathe
	b		ideas of gills needing a flow of water over them (1) eg gills do not work out of water / gills dry up ignore it does not have lungs	1	allow gills dry up / gills stick together / gills (out of water) have a larger (exposed) surface area ignore it does not have lungs
Total				3	

Question		Expected Answers	Marks	Additional Guidance
8	a	when egg and sperm fuse (1)	1	allow sperm enters egg ignore when egg and sperm meet
	b	maximum two from: different genes / DNA (1) different diet (1) but more protein / calcium (2) one exercised more than the other (1) different (amounts) hormones (1) but Ben has more growth hormone (2) ora Daniel may have had a disease / Ben is more healthy (1)	2	allow environment / lifestyle (1) if no other environmental answer given
		Total	3	

Question		Expected Answers	Marks	Additional Guidance
9	a	glass bottles <input type="checkbox"/>	2	incorrect tick loses a mark
		plastic bottles <input type="checkbox"/>		
		sewage <input checked="" type="checkbox"/>		
		steel cans <input type="checkbox"/>		
		vegetable peelings <input checked="" type="checkbox"/>		
	b	biogas (1)	1	allow biofuel (1) ignore "natural gas"
	c	(cell) B (1)	1	allow cell B ringed in table (1)
	d	5 x 4.5 (1) 22.5/0.15 (1) but 150 (2)	2	
Total			6	

Question			Expected Answers	Marks	Additional Guidance
10	a	i	fungus (1)	1	allow fungi (1)
	a	ii	<p>alcoholic drink type of plant material</p>	2	3 correct (2) 1 or 2 correct (1)
	b	i	4.4 (percent)	1	allow +/- 0.1(1)
	b	ii	increase in temperature causes faster reproduction (1)	1	allow can reproduce quicker in warmer conditions (1) allow growth as an alternative to reproduction ignore it makes reproduction faster
	c		gasohol (1)	1	allow biofuel ignore ethanol
			Total	6	

Question		Expected Answers	Marks	Additional Guidance
11	a	sample site 3 (no mark) water flows downstream carrying insecticide from farm B (1 mark for correct reason)	1	allow run-off from farm B goes downstream (1)
	b	i	DNA (1)	1 allow deoxyribonucleic acid(1) allow bases / A T C & G
	b	ii	(insect poison) gene removed from bacterium / put gene into plasmid (1) Inserted new gene into the cotton plant (1) New gene works in cotton plant to produce insect poison (1)	3 allow plasmid has insect poison gene in it (1) allow get plasmid and put it in cotton plant (1)
Total			5	

Question		Expected Answers	Marks	Additional Guidance
12	a	through skin / mouth / (open wound) (1)	1	allow person to person contact / kissing / handshaking (1) ignore breathing
	b	any two from: antibiotics only destroy bacteria / fungi (1) antibiotics usually swallowed or injected (1) antiseptics kill different types of micro-organisms (1) antiseptics applied to external body parts like the skin (1) antiseptics can be used on surgical instruments / surfaces (1)	2	
		Total	3	

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