



GCSE MARKING SCHEME

SCIENCE - BIOLOGY

JANUARY 2015

INTRODUCTION

The marking schemes which follow were those used by WJEC for the January 2015 examination in GCSE SCIENCE - BIOLOGY. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

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GCSE BIOLOGY - B1

JANUARY 2015 MARK SCHEME

Question			Marking details	Marks Available
1	(a)	(i)	Bunting	1
		(ii)	Starling	1
	(b)	(i)	any two from: <ul style="list-style-type: none"> • <u>{some/most}</u> hedges {gone/cut down}/{fewer/ loss of} hedges; • <u>{Less/loss of}</u> grassland; • <u>reduced</u> crop {variety/ types/OWTTE}/ no {peas/potatoes} grown/only wheat grown; • more buildings; NOT less trees	2
		(ii)	any two from: habitat/ place to live/shelter/cover/hide from predators; NOT hide alone Food/ to get prey; nest sites/place to lay eggs;	2
	Question 1 total			[6]

Question		Marking details	Marks Available
2	(a)	vertebrates; <i>Equus</i> ; <i>ferus</i> ; correct spelling for all three answers upper case 'E', lower case 'f'	3
	(b)	(i) DNA;	1
		(ii) <u>species</u> ;	1
	Question 2 Total		[5]

Question		Marking details	Marks Available																												
3	(a)	<table border="1"> <thead> <tr> <th rowspan="2">condition</th> <th rowspan="2">bacteria</th> <th colspan="3">excess</th> </tr> <tr> <th>alcohol</th> <th>energy in food</th> <th>salt in food</th> </tr> </thead> <tbody> <tr> <td>high blood pressure</td> <td></td> <td></td> <td></td> <td>given</td> </tr> <tr> <td>infection</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>drug dependence</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>obesity</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>	condition	bacteria	excess			alcohol	energy in food	salt in food	high blood pressure				given	infection	✓				drug dependence		✓			obesity			✓		3
		condition			bacteria	excess																									
			alcohol	energy in food		salt in food																									
		high blood pressure				given																									
		infection	✓																												
drug dependence		✓																													
obesity			✓																												
(b)	(i)	infection;	1																												
	(ii)	obesity;	1																												
(c)		{Thick/excessive} mucus; NOT mucus alone {Blocking/clogging} bronchioles; Reject lungs/trachea	2																												
Question 3 Total			[7]																												

Question		Marking details	Marks Available
4	(a)	(i) all plots correct;; +/- ½ small square tolerance 0 errors = 2 marks 1 error = 1 mark 2 errors = 0 marks	2
		(ii) correct line through the plots;	1
		(iii) (nitrate makes it) increase, then fall;	1
	(b)	To show that the {effect/difference} is due to nitrate;	1
	(c)	(i) I 7; II 7;	2
		(ii) 1 number of dead/decaying plants increase; 2 (bacteria/decomposers/fungi) use oxygen/respire; <i>point 2 is dependent on point 1</i> Alternative 1 number of living plants increase; 2 plants produce oxygen/photosynthesis; <i>point 2 is dependent on point 1</i>	2
	Question 4 Total		[9]

Question		Marking details	Marks Available								
5	(a)	23;	1								
	(b)	X;	1								
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td></td> <td>given</td> <td>X</td> </tr> <tr> <td>given</td> <td>given</td> <td>XX</td> </tr> <tr> <td>Y</td> <td>XY</td> <td>XY</td> </tr> </tbody> </table> <p>one mark for correct gametes; one mark for correct mechanics from correct gametes; NO ecf from (i)</p>		given	X	given	given	XX	Y	XY	XY
	given	X									
given	given	XX									
Y	XY	XY									
		Question 5 total	[4]								

Question		Marking details	Marks Available
6	(a)	Sweat gland {produces/releases/creates} sweat; Travels up sweat duct and onto the (skin) surface;	2
	(b)	<ul style="list-style-type: none"> • blocks {pore/duct}/sweat cannot get out/no sweat on surface; NOT no sweat {produced/released} alone/no sweating <ul style="list-style-type: none"> • {less/no} {cooling/heat loss}; • {No/less} evaporation; 	3
		Question 6 Total	[5]

Question		Marking details	Marks Available
7/1	(a)	(i) 2 17 3456 1 all correct 1 mark	1
		(ii) I Four trophic levels showing the correct shape and labelled; <div style="text-align: center;"> <p>oak tree 5137kg caterpillars 43 kg blue tits 1.2 kg sparrowhawk 0.18 kg</p> </div> II All masses correct including units; (independent of shape)	1
	(b)	Food chain column correct; Trophic level column correct;	1 1
	(c)	iv Question 7/1 total	1 [6]

Question		Marking details	Marks Available
8/2	(a)	(i) 1344;; <i>If answer incorrect award 1 mark for</i> $16 \times 20 \times 4.2$	2
	(b)	(ii) 6720 (ecf from a(i)); Any 3 from: 1 mark each <ul style="list-style-type: none"> • Time between igniting the food and placing it under the boiling tube varies (OWTTE); • Distance of the burning food from the boiling tube varied/ not placed in the same spot; • {Type/ kind} of food (burnt) varied; • Incomplete burning; NOT {mass/size} of food varied/different volume of water/ not burnt for same length of tome/ different food Question 8/1 total	1 3
			[6]

Question		Marking details	Marks Available	
9/3	(a)	<p>Any one from:</p> <ul style="list-style-type: none"> • Does not kill/ harm} {insects/ organisms} {which are beneficial/ that pollinate crops/ which are useful}/ ORA; • Only 1 application/ it is cheaper/ ORA; <p>NOT bioaccumulation</p> <ul style="list-style-type: none"> • No (chemical) pollution/ ORA; 	1	
	(b)	<p>Fertilizers/GM (crops)/ selective breeding/named fertilizer/ manure/slurry/biological control/genetic engineering;</p> <p>NOT reference to pesticide use/herbicides</p>	1	
	(c)	(i)	1947/ 1948 ;	1
		(ii)	<p>Leaching/run off/spray carried by air onto water/(rain) {carried/ washed} it into rivers ;</p> <p>NOT DDT sprayed onto water/rain leaked it into rivers</p>	1
		(iii)	<p>It (bio)accumulates/builds up (in tissues)/it is persistent/it concentrates in tissues/it is not destroyed after it enters the body;</p> <p>At the concentration found in the Bald Eagle it is {toxic/poisonous}/ORA;</p> <p>NOT kill/lethal</p> <p>2nd mark linked to 1st</p>	2
Question 9/3 Total			[6]	

Question	Marking details	Marks Available
<p>10/4</p>	<p>Indicative content:</p> <p>Pancreas Secretes insulin Travels in blood stream To liver Glucose is converted to glycogen Glycogen stored in the liver</p> <p>5 – 6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3 – 4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1 – 2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p> <p>Question 10/4 Total</p>	<p>6</p> <p>[6]</p>

Question		Marking details	Marks Available									
5	(a)	(i) One {form/version/variant} of <u>a</u> gene/{two/different}{forms/types/versions} of {the <u>same/a</u> } gene;	1									
		(ii) <ul style="list-style-type: none"> In a {heterozygous organism/OWTTE} the allele that is not {expressed/shown}/ only {expressed/shown} {when homozygous/when in a pair of recessive alleles}/ 	1									
	(b)	(i) Gametes correct (must use correct letter for this mark); Mechanics of cross correct; Allow ECF of incorrect gametes but must use B/b	2									
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Gametes</td> <td>B</td> <td>b</td> </tr> <tr> <td>B</td> <td>BB</td> <td>Bb</td> </tr> <tr> <td>b</td> <td>Bb</td> <td>bb</td> </tr> </table>	Gametes	B	b	B	BB	Bb	b	Bb	bb	
		Gametes	B	b								
B	BB	Bb										
b	Bb	bb										
(ii) 75%/ 0.75/ $\frac{3}{4}$ / 3 in 4; NOT ratio	1											
(iii) 3 : 1 ;	1											
Question 5 Total			[6]									

Question		Marking details	Marks Available
6	(a)	There are {46 chromosomes/(23) pairs/has a diploid number/ not haploid/has both X and Y;	1
	(b)	No {corresponding/matching} part of chromosome (for paired allele)/only has one X chromosome/ only has one {copy of the gene/allele};	1
	(c)	Linearly/in a line/in a row;	1
		Question 6 total	[3]

Question		Marking details	Marks Available
7	(a)	<i>Penaeus japonicus</i> ; Correct spelling and format	1
	(b)	<i>Penaeus kerathurus</i> ; Correct spelling and format The {DNA/genetic} profile is <u>most</u> similar to the unknown species/ both are in the same genus/both have the same first {scientific/latin} name/ <u>most</u> similar <u>DNA banding pattern</u> ; NOT genetic fingerprint/ genotypes/genus	2
	(c)	They use the same name of genus and species/same {scientific/universal/Latin/international/binomial} name/scientific name is universal;	1
		Question 7 total	[4]

Question		Marking details	Marks Available
8	(a)	As the nitrate concentration increases, the gap between the shells increases (up to 4mm) and <u>levels off</u> ;	1
	(b)	Any two from: Predation; Disease; flow of water/tides/current other named chemical (e.g. phosphates/sewage/oil/salt) competition for {food/space}; pH; temperature; oxygen; NOT weather/climate	2
	(c)	(Nitrate causes) excess plant growth/ algal bloom/OWTTE; Plants {die/decay}/OWTTE; NOT bacteria eat plants {Bacteria/decomposers/ fungi} use oxygen for respiration; 3 rd mark point linked to 2 nd mark point	3
		Question 8 Total	[6]

Question		Marking details	Marks Available
9	(a)	$655 - 280 = 375$ $\frac{375}{655} \times 100 =$ $= 57.25/ 57.3\%$ NOT 57.0/57 Correct answer = 2 marks Allow 1 mark for correct working but incorrect answer	2
	(b)	(i) Flatworms compete with hedgehogs for {food/ invertebrates}; Therefore hedgehogs eat <u>more</u> birds' eggs (avoiding the competition); (must be linked for second mark)	2
		(ii) Numbers of { <u>some</u> birds/named birds (Snipe/Dunlin)} dropped (without introduction of hedgehogs);	1
		(iii) {Lack of/no/less} {predators/carnivorous mammals/carnivores}; Abundance of {food/ eggs}/large variety of food/less competition for food;	2
Question 9 Total			[7]

Question		Marking details	Marks Available
10	(a)	One axis labelled- number of leaves and other axis labelled – length of leaf(mm); Suitable linear scales (including origin) + at least half of grid used; Bars correct heights (drawn with ruler);	3
	(b)	Continuous;	1
		Question 10 Total	[4]

Question	Marking details	Marks Available
11	<p>Indicative content</p> <p>Agouti/coat gene appeared as a mutation led to variation in the fur colour colour change was an advantage because of camouflage allowed the mutant to survive to breed mutant gene was passed on DNA comparison between modern deer mice and the remains of ancient ones.</p> <p>5 – 6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3 – 4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1 – 2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p> <p>Question 11 Total</p>	<p>6</p> <p>[6]</p>

GCSE BIOLOGY - B2

JANUARY 2015 MARK SCHEME

Question		Marking details	Marks Available																				
1	(a)	<table border="1"> <thead> <tr> <th>Features</th> <th>Bacteria</th> <th>Algae</th> <th>Yeast</th> </tr> </thead> <tbody> <tr> <td>Cell wall</td> <td align="center">✓</td> <td align="center">✓</td> <td align="center">✓</td> </tr> <tr> <td>nucleus</td> <td align="center">✗</td> <td align="center">✓</td> <td align="center">✓</td> </tr> <tr> <td>Chloroplast</td> <td align="center">✗</td> <td align="center">✓</td> <td align="center">✗</td> </tr> <tr> <td>Reproduce by budding</td> <td align="center">✗</td> <td align="center">✗</td> <td align="center">✓</td> </tr> </tbody> </table> <p>1 mark per correct row;;; Assume blank = ✗</p>	Features	Bacteria	Algae	Yeast	Cell wall	✓	✓	✓	nucleus	✗	✓	✓	Chloroplast	✗	✓	✗	Reproduce by budding	✗	✗	✓	3
	Features	Bacteria	Algae	Yeast																			
Cell wall	✓	✓	✓																				
nucleus	✗	✓	✓																				
Chloroplast	✗	✓	✗																				
Reproduce by budding	✗	✗	✓																				
	(b)	<p>(i) Smaller;</p> <p>(ii) Cannot reproduce alone/needs a (living) cell for reproduction; Accept – no cell membrane/no cytoplasm NOT needs a cell to survive</p> <p>Question 1 total</p>	1 1 [5]																				

Question		Marking details	Marks Available
2	(a)	A trachea/cartilage ring; NOT windpipe B alveoli/ alveolus; Accept air sac	2
	(b)	(i) (Diaphragm) down/flattens; NOT contract (can be neutral) (Ribs) up and out/ribcage expands;	2
		(ii) Decreases	1
	Question 2 Total		[5]

Question		Marking details	Marks Available					
3	(a)	(i) Nucleus;	1					
		(ii)	4					
		<table border="1"> <tr> <td>46,46;</td> <td>23,23,23,23;</td> </tr> <tr> <td>Growth/replacement of {worn out/damaged/old} cells/repair damaged tissue; NOT producing new cells</td> <td></td> </tr> <tr> <td></td> <td>Different/ non identical;</td> </tr> </table>	46,46;	23,23,23,23;	Growth/replacement of {worn out/damaged/old} cells/repair damaged tissue; NOT producing new cells			Different/ non identical;
	46,46;	23,23,23,23;						
	Growth/replacement of {worn out/damaged/old} cells/repair damaged tissue; NOT producing new cells							
		Different/ non identical;						
	(b)	(iii) Gametes;	1					
(i) Repair tissue/replace damaged tissues/{treat/cure} disease(named disease e.g. bone marrow transplants/ Parkinson's/blindness/repairing {tendon/joint injury}/spinal cord repair);		1						
(ii) Involves {destruction of/damaging} embryos/loss of potential life; Leading to ethical/religious/moral objection; 2 nd point linked to 1 st point		2						
Question 3 Total		[9]						

Question		Marking details	Marks Available	
4	(a)	High and low; (1) both for one mark Semi-permeable; (1)	2	
	(b)	(i)	3/ the strong solution of blackcurrant squash;	1
		(ii)	All readings correct (20 (column 2) + 24 (column 3));	1
		(iii)	2 bars of correct height in correct position;	1
		(iv)	2 and no change in <u>mass</u> /the potato chip was still 20g after 30 minutes; NOT weight	1
		(v)	Water concentration was higher outside the chip; Water {passes in/is absorbed}/chip gains water; Marks can be linked in either direction	2
		Question 4 Total	[8]	

Question		Marking details	Marks Available
5	(a)	(i) {Carbon dioxide/CO ₂ } and {oxygen/O ₂ };	1
		(ii) Chlorophyll;	1
	(b)	(i) Increases then {steady/plateau/reference to constant}; (increases) up to 4 a.u.;	2
		(ii) Two correct readings (13.5 & 16.5); Correct calculation (3 a.u.); Correct answer = 2 marks Allow one mark for two correct readings if answer incorrect	2
		(iii) {Carbon dioxide/CO ₂ }; NOT light/ temperature	1
	(c)	Starch; (formation of) cell walls;	2
Question 5 total			[9]

Question		Marking details	Marks Available
6/1	(a)	(i) extinct in the wild/ extinct;	1
		(ii) It will be {reduced/lower/smaller}/ there will be fewer species/less diverse;	1
	(b)	(i) Because they are receiving payment/they do not want the monkey to become extinct/ stop it becoming extinct;	1
		(ii) Any two from <ul style="list-style-type: none"> • Link up the remaining isolated pocket of rainforest (OWTTE); • Extend the corridors outside the area shown in the diagram (OWTTE); • {Widen/ thicken} corridors/ increase area of corridor; NOT larger • More than one corridor to each area; 	Max 2
(c)	(iii) Any two from: monkey can extend its range/increased habitat/more {area/space} to live in/can {move/spread} to different areas; breed with other monkeys outside its own pocket of rainforest; correct ref to gene pool; increase food {source/variety}/less competition for food; escape predation; isolated population have more chance of dying from disease;	Max 2	
	Any one from: SSSIs; captive breeding programme; NOT breeding in zoos/wildlife parks alone National parks; seed banks; {wildlife/nature} reserve; Legislation on deforestation;	Max 1	
Question 6/1 Total			[8]

Question		Marking details	Marks Available		
7/2	(a)	(i)	All correct 2 marks 1 error 1 mark, 2 errors 0 marks	2	
			Inspired air (%)		Expired air (%)
		Oxygen	21		16
		Carbon dioxide	0.03/0.04		4
		Nitrogen	79		79
		Water vapour	varies		1
		(ii)	(16%) oxygen in {expired air/air breathed out};	1	
		(iii)	Sodium hydroxide/potassium hydroxide/soda lime; Accept Sofnolime (trade name in diving community)	1	
	(b)	(i)	(The lime water in test tube A {remains/is}) {clear/colourless}; NOT no change/does not go cloudy/stays the same (The lime water in test tube B would turn) milky/cloudy;	2	
	(c)		Any one from Can {remain submerged/stay down} for longer; Smaller tank needed;	Max 1	
Question 7/2total			[7]		

Question		Marking details	Marks Available
8/3	(a)	The more cigarettes smoked the higher deaths. The more cigarettes smoked higher {incidence/ chances} of lung cancer (OWTTE); {lag/delay/gap} {between commencement of/ time that they smoke/ smoking/ cigarette consumption} and possibility of (death from) lung cancer (OWTTE); Accept the more cigarettes smoked, the higher the deaths from lung cancer and these are roughly 20 years apart = 2 marks	2
	(b)	Accept any year between 1943 & 1947;	1
		Question 8/3 total	[3]

Question	Marking details	Marks Available
9/4	<p>Indicative content:</p> <p>amylase digests/breaks down starch to glucose {pores/holes} in visking tubing/visking tubing is selectively permeable too small for starch <u>molecules/particles</u> to pass through/or ref to molecule size big enough to allow glucose <u>molecules/ particles</u> to diffuse through/or ref to molecule size water heated strongly/boiled with Benedict's reagent positive colour change (reference blue to green/orange/red) iodine solution added to water remains brown</p> <p>5 – 6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3 – 4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1 – 2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p> <p>Question 9/4 Total</p>	<p>6</p> <p>[6]</p>

Question			Marking details	Marks Available
5	(a)	(i)	Peristalsis;	1
		(ii)	<u>Muscles</u> contract; and push/force the food along; 2 nd mark is linked to 1 st mark	2
	(b)	<ul style="list-style-type: none"> Washing-up liquid emulsifies the milk fat/ OWTTE; Increasing the <u>surface area</u> for the action of enzymes/ lipase; enzyme digests (milk) <u>fat</u> into <u>fatty acids</u> (and glycerol) which {<u>lower pH/ more acidic</u>}; 2 nd mark linked to 1 st mark, 3 rd mark is independent	3	
	Question 5 Total			[6]

Question		Marking details	Marks Available
6	(a)	Any 2 from: (James) Watson; (Francis) Crick; (Maurice) Wilkins; (Rosalind) Franklin Correct spelling for all names. If first name is attempted it must relate correctly to the second name.	2
	(b)	TAGACATGTC	1
	(c)	3	1
	Question 6 Total		[4]

Question		Marking details	Marks Available
7	(a)	Alien/exotic;	1
	(b)	<p>Any two from:</p> <ul style="list-style-type: none"> • All the types of food eaten/ effect on biodiversity or wildlife/ if it would become a pest itself/ make sure it does not eat non target species; • If it survives/ reproduces (in Wales); • If it carries disease/ parasites; • If it has predators; <p>Question 7 total</p>	2
			[3]

Question			Marking details	Marks Available											
8	(a)	(i)	Stem (cells);	1											
		<table border="1"> <thead> <tr> <th>Function of cell division</th> <th>Part of cell which controls cell division</th> <th>Number of chromosomes in each cell</th> </tr> </thead> <tbody> <tr> <td>increases the number of cells; ✓</td> <td>cytoplasm</td> <td>twice as many as in the cells in Stage 1</td> </tr> <tr> <td>increases the size of each cell</td> <td>nucleus; ✓</td> <td>same number as in the cells in Stage 1; ✓</td> </tr> <tr> <td>keeps the number of cells the same</td> <td>cell membrane</td> <td>half as many as in the cells in Stage 1</td> </tr> </tbody> </table>	Function of cell division	Part of cell which controls cell division	Number of chromosomes in each cell	increases the number of cells; ✓	cytoplasm	twice as many as in the cells in Stage 1	increases the size of each cell	nucleus; ✓	same number as in the cells in Stage 1; ✓	keeps the number of cells the same	cell membrane	half as many as in the cells in Stage 1	3
			Function of cell division	Part of cell which controls cell division	Number of chromosomes in each cell										
			increases the number of cells; ✓	cytoplasm	twice as many as in the cells in Stage 1										
	increases the size of each cell	nucleus; ✓	same number as in the cells in Stage 1; ✓												
keeps the number of cells the same	cell membrane	half as many as in the cells in Stage 1													
(c)	Destruction of {embryonic cells/ embryos/ potential life} ;	1													
Question 8 total			[5]												

Question		Marking details	Marks Available
9	(a)	There is less lactic acid (in blood) (than A); There is a faster {removal/ break down} of {lactic acid/payback of oxygen debt}; NOT faster return to normal	2
	(b)	(i) 3:1;	1
		(ii) Should show some of each but more than 50% aerobic respiration; Accept alternative key if labels correct	1
	(c)	Glucose is completely broken down; Releases more energy/produces more ATP; NOT produces more energy	2
Question 9 Total			[6]

Question		Marking details	Marks Available
10	(a)	<ul style="list-style-type: none"> • Osmosis; • Movement of water into potato; • From where water is in high concentration to low concentration/ down concentration gradient; • Via semi permeable membrane; <i>3rd marking point linked to 2nd marking point</i>	4
	(b)	Water { <u>molecules/ particles</u> } {move faster at higher temperature/ have more energy};	1
	(c)	{Rate of/ volume} water passing in equals {Rate of/volume} of water passing out/no net {movement/flow} of water; NOT concentration of water is the same inside and outside the potato/dynamic equilibrium	1
		Question 10 Total	[6]

Question		Marking details	Marks Available
11		<p>Indicative content</p> <p>plants use chlorophyll to absorb light energy. convert carbon dioxide and water into glucose and oxygen glucose can be changed to starch and stored used to make cellulose/ proteins light, temperature and carbon dioxide are limiting factors</p> <p>5 – 6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3 – 4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1 – 2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p> <p>Question 11 Total</p>	6
			[6]



WJEC
245 Western Avenue
Cardiff CF5 2YX
Tel No 029 2026 5000
Fax 029 2057 5994
E-mail: exams@wjec.co.uk
website: www.wjec.co.uk