



GCSE

Biology B J643

Gateway Science Suite

General Certificate of Secondary Education

Mark Scheme for the Units

January 2009

J643/MS/R/09J

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, GCSEs, OCR Nationals, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new syllabuses to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support which keep pace with the changing needs of today's society.

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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2009

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

CONTENTS

GCSE Gateway Biology B (J643)

MARK SCHEMES FOR THE UNITS

Unit/Content		Page
Mark Scheme Guidance		1
B631/01	Unit 1: Modules B1, B2 and B3 Foundation Tier	2
B631/02	Unit 1: Modules B1, B2 and B3 Higher Tier	8
B632/01	Unit 2: Modules B4, B5 and B6 Foundation Tier	14
B632/02	Unit 2: Modules B4, B5 and B6 Higher Tier	21
Grade Thresholds		28

Mark Scheme Guidance

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

 = underlined words must be present in answer to score a mark

ecf = error carried forward

AW = alternative wording

ora = or reverse argument

B631/01 Unit 1: Modules B1, B2 and B3 Foundation Tier

Question		Expected Answers	Marks	Additional Guidance
1	(a)	iris (1) optic nerve (1)	2	
	(b)	bend light / refract (light) (1)	1	allow focus / helps to form an image (on the retina) allow refraction ignore protection / reflect
	(c) (i)	earlobe shape (1)	1	must be from the list more than one answer score 0
	(ii)	nucleus (1)	1	allow chromosome / DNA
	Total		5	

2	(a)	amphetamines and LSD (1)	1	both answers needed for mark if other drugs are included = 0
	(b)	12 (1)	1	
	(c)	increase brain activity (1)	1	allow helps depression allow higher level answers e.g. correct reference to synapses allow more alert / faster activity ignore stimulates brain / gives / buzz / makes you hyper / brain works harder
	Total		3	

3	(a)	(hydrochloric) acid / HCl (1)	1	formula must be correct incorrect acid name e.g. sulphuric acid scores zero allow stomach acid
	(b)	protease / proteinase (1)	1	allow pepsin / trypsin or any correct example of a protease
	(c)	physical / mechanical (1)	1	allow description e.g. churning / squeezing not chewing
	(d)	oxygen (1) carbon dioxide + water (1)	2	allow correct formulae (ignore balancing) carbon dioxide + water in either order
	Total		5	

Question		Expected Answers	Marks	Additional Guidance
4	(a)	athletes foot = fungus cholera = bacteria dysentery = protozoa	2	3 correct = 2 1 or 2 correct = 1
	(b)	any two from: white blood cells (1) engulf bacteria / microbes / pathogens (1) make antibodies (1)	2	allow form clot (1) ignore scab allow digest / consume / destroy bacteria (1) ignore attack / fight / kill / eat ignore germs allow make antitoxins (1)
Total		4		

5	(a)	tar / particulates (1)	1	ignore nicotine
	(b)	carbon monoxide / CO (1)	1	ignore carbon oxide not carbon dioxide
	(c)	heart disease / bronchitis / emphysema (1)	1	allow heart attack / stroke / angina ignore cancer / asthma / lung disease
Total		3		

Question		Expected Answers	Marks	Additional Guidance
6	(a)	any two from: size / AW (1) shape / AW (1) colour / pattern / AW (1)	2	allow named body parts that show variation e.g. any two from: nose (1) ears(1) tail (1)
	(b) (i)	mammals (1)	1	more than one answer score 0
	(ii)	fur / hair / produce milk / have placenta / mammary glands / suckle young (1)	1	allow give birth to live young / external ears ignore warm blooded / backbone ignore just 'give birth to young'
	(c)	sharp claws / sharp teeth / eyes at front of head / binocular vision / speed (1)	1	allow camouflage / live in groups/ good sense of smell allow fangs / canine teeth allow strong legs / strong jaws allow tail for balance but ignore just tail / legs / jaw
		Total	5	

7	(a)	A = curled dock (1) B = spear thistle (1)	2	more than one answer on each line score 0 for that line
	(b)	3 per m ² / average (per quadrat) = 0.75 (1) BUT 6000 (2)	2	correct answer, no working (2) allow $3 \div 4 = 0.75$ OR $3 \times 0.25 = 0.75$ (1) $6000m^2 = 1$
	(c)	(make) food (1)	1	allow correct examples e.g. glucose / starch allow growth allow cannot eat / feed in any other way (1) ignore energy / nutrients
		Total	5	

Question		Expected Answers	Marks	Additional Guidance
8	(a)	stop them dying out / they are endangered / becoming extinct / AW (1)	1	allow only about 40 left / competition for resources (1) allow grey squirrels are out competing them (1) ignore numbers are going down but allow numbers going down so there are only a very small number left
	(b)	increase / AW (1)	1	
	(c)	reintroduction / (captive) breeding programme / kill grey squirrels / reserves / artificial ecosystems / conservation areas (1)	1	allow education programmes ignore zoos / increase food source / legislation / legal protection ignore isolation unless qualified
	(d)	water / mates / shelter / nesting sites (1)	1	allow territory / space ignore habitats / homes
	(e)	wide field of view / to spot predators / AW (1)	1	allow because it is (a) prey (animal) ignore to see more unless qualified e.g. see more = 0 but to see more for protection = 1 not so they can see prey
		Total	5	

9	(a)	burning / combustion (1) any two from: sulfur dioxide (1) carbon dioxide (1) nitrogen oxide(s) (1) carbon monoxide (1)	3	allow dust / smoke / soot / ash (1) allow higher level answers: acid rain (1) allow greenhouse effect / global warming (1) ignore references to ozone ignore fumes / harmful gases
	(b)	finite (resources) (1)	1	more than one answer score 0
	(c)	ozone depletion / increased UV reaching Earth / AW (1)	1	allow ozone is damaged / destroyed allow increased risk of (skin) cancer ignore greenhouse effect / global warming
		Total	5	

Question			Expected Answers	Marks	Additional Guidance
10	(a)	(i)	(cell) membrane (1)	1	
		(ii)	cytoplasm (1)	1	
	(b)		any three from: peel a thin piece of onion / onion skin (1) place on a (microscope) slide / glass (slide) (1) add a drop of water (1) (add) stain / iodine (1) put on a cover slip or another slide (1)	3	ignore small piece allow place between two (glass)slides = 2 cover must be qualified e.g. cover slip / glass cover / transparent cover
			Total	5	

11	(a)		plant hormones (1)	1	more than one answer score 0
	(b)		produced asexually (1) have the same genes / DNA (1) they are clones / have been cloned (1)	2	allow without sexual reproduction (1) allow produced by mitosis (1)
			Total	3	

12	(a)		sperm (1) tail (1) mitosis (1)	3	ignore gamete allow flagella / mitochondria / chemoreceptors (1) spelling must be phonetically correct
	(b)	(i)	correct plots (2) smooth line through all points (1)	3	5 or 6 correct = 1 allow + or - half a square (for plotting and graph) if incorrect plotting allow line of best fit if correct line with no crosses assume points are correct
		(ii)	boys grow faster / bigger / heavier than girls (1)	1	allow gap between masses is increasing / grow more / mass is greater
			Total	7	

Question			Expected Answers	Marks	Additional Guidance
13	(a)	(i)	capillaries (1)	1	
		(ii)	allow exchange of materials with tissues / 2 nd box (1)	1	more than one answer score 0
	(b)		platelet (1)	1	more than one answer score 0
	(c)	(i)	(gene) mutation (1)	1	
		(ii)	genetic engineering (1)	1	more than one answer score 0
			Total	5	

B631/02 Unit 1: Modules B1, B2 and B3 Higher Tier

Question		Expected Answers	Marks	Additional Guidance
1	(a)	iris (1) suspensory ligament (1)	2	ignore pupil allow lens / ciliary muscle / ciliary body (1)
	(b)	bend light / refract (light) (1)	1	allow focus / helps to form an image (on the retina) allow refraction ignore protection / reflect
	(c)	advantage = can judge distance / depth (1) disadvantage = idea that visual field is not as wide (1)	2	allow see in 3D (1) ignore can judge speed / can see better allow peripheral vision limited / can only see ahead / can not see behind / can not see 360° ignore can not see as well / can not see as much
		Total	5	

2	(a)	30+18+2+1 (1) BUT 51 (2)	2	correct answer, no working = 2
	(b)	stimulate receptor sites OR mimic / increase (neuro)transmitter (1)	1	allow increase number of impulses ignore speed up impulses / speed up synapses / transmitters travel faster / impulses cross synapses ignore references to signals / messages
		Total	3	

3	(a)	(hydrochloric) acid / HCl (1)	1	formula must be correct incorrect acid name e.g. sulphuric acid scores zero allow stomach acid
	(b)	protease / proteinase (1)	1	allow pepsin / trypsin or any correct example of a protease
	(c)	oxygen (1) carbon dioxide + water (1)	2	allow correct formulae (ignore balancing) carbon dioxide + water in either order
		Total	4	

Question		Expected Answers	Marks	Additional Guidance
4	(a)	(harmless pathogen carries) antigens (1) antibodies produced (1) (body retains) ability to make (these) antibodies quickly (if reinfection) (1)	3	ignore reference to viruses just 'antibodies' = 0 ignore idea that simply remember how to make antibodies ignore idea that antibodies remain in body
	(b)	to compare the effects of drug and placebo (1) to avoid the thoughts of the patient affecting the test (1)	2	3rd and 4th boxes if tick more than 3 boxes, remove 1 mark for each extra box, to minimum 0 (e.g. 1 correct tick and 2 incorrect ticks = 0, 2 correct ticks and 1 incorrect tick =1)
Total		5		

5	(a)	causes irritation (1) can cause cancer / is a carcinogen (1)	2	additional marking points allow stops cilia working / damage cilia (1) allow 1 mark each for any correct lung disease: emphysema, bronchitis, smokers cough, asthma ignore difficult to breathe / clog lungs / block airways / decrease lung capacity allow prevent passage of oxygen into blood
	(b)	carbon monoxide / CO (1)	1	ignore carbon oxide not carbon dioxide
Total		3		

6	(a)	(i)	mammals (1)	1	more than one answer score 0
		(ii)	fur / hair / produce milk / have placenta / mammary glands / suckle young (1)	1	allow give birth to live young / external ears ignore warm blooded / backbone ignore just 'give birth to young'
	(b)		breed them together / interbreed (1) produce fertile offspring (if same species) (1)	2	
	(c)		idea that parasite gains and host loses (1)	1	just 'lives on / feeds off the host' = 0 'lives on host and harms it' = 1
Total		5			

Question		Expected Answers	Marks	Additional Guidance
7	(a)	3 per m ² / average (per quadrat) = 0.75 (1) BUT 6000 (2)	2	correct answer, no working (2) allow $3 \div 4 = 0.75$ OR $3 \times 0.25 = 0.75$ (1) $6000m^2 = 1$
	(b)	CO ₂ and O ₂ (1) BUT balanced i.e. 6CO ₂ and 6O ₂ (2)	2	
	(c)	cell walls / support (1) storage / source of sugar (1)	2	allow strengthen ignore growth / structure 'sugar store' = 1, 'energy store' = 1 BUT 'energy' = 0
		Total	6	

8	(a)	reintroduction / (captive) breeding programme / kill grey squirrels / reserves / artificial ecosystems / conservation areas (1)	1	allow education programmes ignore zoos / increase food source / legislation / legal protection ignore isolation unless qualified
	(b) (i)	(same) habitat AND (same) role / (same) position in food web / diet (1)	1	idea of where they live and what they do must have both for mark e.g. habitat and diet = 1 ignore 'environment'
	(ii)	idea of competition (for resources) / limited resources / not enough resources (1)	1	allow examples of limited resources e.g. food, BUT ignore (compete) for space ignore references to aggression / fighting for resources allow greys better adapted / ORA allow reds can not compete (successfully) allow reds have no food / resources run out
	(c)	(new) trees (always) being planted (1)	1	ignore 'don't chop the trees down' allow coppicing (1) ignore just 'let trees regrow'
	(d)	reduced surface area (to volume ratio) (1) impermeable / less permeable / waxy (1)	2	allow reduced evaporation / transpiration (1) as an alternative answer for either but only allow once ignore diffusion allow water-proof ignore don't let water out / keep water in
		Total	6	

Question		Expected Answers	Marks	Additional Guidance
9	(a)	ozone depletion / increased UV reaching Earth / AW (1)	1	allow ozone is damaged / destroyed allow increased risk of (skin) cancer ignore greenhouse effect / global warming
	(b)	ever-increasing rate / gradient / AW (1)	1	allow graph showing ever-increasing gradient
	(c)	resources running out / less resources (1)	1	allow valid examples of finite resources allow famine / civil unrest / war / spread of disease / loss of species / habitat loss / overcrowding / shortage of housing / deforestation ignore simply 'need more resources' ignore any consequences of pollution e.g. global warming
Total			3	

10	(a)	diploid (1) mitosis (1)	2	if spelt incorrectly, must sound like <u>mitosis</u>
	(b)	(i) correct plots (2) smooth line through all points (1)	3	5 or 6 correct = 1 allow + or – half a square (for plotting and graph) if incorrect plotting allow line of best fit if correct line with no crosses assume points are correct
		(ii) 0.6 (kg) (1)	1	allow answers in range 0.5 – 0.7 allow ecf from candidates graph (+ or – half a square)
		(iii) to provide an indication of any growth problems / to make sure baby is growing properly / AW (1)	1	ignore just keep a track of weight ignore references to health or development
Total			7	

Question			Expected Answers	Marks	Additional Guidance
11	(a)	(i)	capillaries (1)	1	
		(ii)	allow exchange of materials with tissues / 2 nd box (1)	1	more than one answer scores 0
	(b)		arteries have <u>thicker</u> walls / <u>more</u> elastic (tissue) / <u>more</u> muscle (tissue) / ora (1)	1	assume unqualified answers refer to arteries ignore simply 'arteries are stronger' ignore simply 'arteries are thicker' answer must be comparative, so 'arteries have a thick wall' = 0 but 'arteries have thick walls and veins have thin walls' = 1
	(c)	(i)	(change in the) base order / base sequence (1)	1	allow any description of a change in base sequence allow bases change / base pairs change
		(ii)	different (order of) amino acids (1)	1	allow reference to stop and start codons (1)
		(iii)	there may be side effects / not sure of consequences / not sure of long-term effects / think that it is ethically wrong (1)	1	allow not natural / playing God (1) ignore may not work / may go wrong / may kill them / dangerous ignore 'mutations' ignore 'designer babies' / genetic underclass 'may cause cancer' = 1
			Total	6	

12	(a)		any two from: becomes denatured (1) changes shape (1) active site changes (1)	2	allow additional marking point bonds break ignore destroyed / damaged / killed 'active site changes shape' = 2
	(b)		The bases in DNA code for the order of amino acids in the protein / 4 th box (1)	1	more than 1 tick = 0
			Total	3	

Question		Expected Answers	Marks	Additional Guidance
13	(a)	villi (1)	1	if no answer on line, look in table
	(b)	any two from: absorb food (1) into blood (stream) (1) by diffusion (1) idea that any of above happens quickly (1)	2	ignore incorrect foods, e.g. protein allow active transport (as alternative to diffusion) 'absorb more food' = 1 'absorb food more quickly' = 2 'quick absorption' = 1
	(c)	(rich) blood supply / permeable (surface) / thin (wall) / long / narrow (lumen) / muscles / contracts (to push food along) (1)	1	allow lymph (vessels) / lacteal(s) allow produce / secrete enzymes allow villi if part (a) answered incorrectly
Total			4	

B632/01 Unit 2: Modules B4, B5 and B6 Foundation Tier

Question		Expected Answers	Marks	Additional Guidance
1	(a) (i)	flower (1)	1	
	(ii)	leaves (1)	1	
	(b)	tick in fourth box (1)	1	more than one tick = 0
	(c) (i)	(making and adding) fertilisers (1) 4500 (1)	2	allow answer in range 4400-4600, but not 4400 or 4600
	(ii)	harms the environment / health / causes more pollution (1)	1	<p>not just kills or harms animals not unnatural / does not taste as good</p> <p>allow specific example / higher level answers e.g. fertilizers: cause eutrophication not kill animals directly</p> <p>pesticides: kill animals which are not pests / bioaccumulation / disruption of food webs</p> <p>herbicides: kill plants other than weeds</p>
		Total	6	

Question		Expected Answers	Marks	Additional Guidance
2	(a)		2	one correct = one mark two or three correct = 2 marks
	(b)	fungi (1) oxygen / O ₂ (1)	2	allow mould / specific examples e.g. yeast (1) not O
	(c)	to break down / decay / decompose (plant) waste / heap / compost (1)	1	not just 'break down' / 'decay' / 'decompose'
Total		5		

3	(a)	(an organism that) makes food / sugar / glucose / starch / photosynthesises (1)	1	ignore a plant unless qualified allow higher level answers – e.g. build up carbon compounds using light energy
	(b)	any two from: transpiration / loss of water from the leaves (1) pulls it up (1) through the xylem (1)	2	not just passes up to the leaves and is lost
Total		3		

4	(a)	roots / root hairs (1)	1	
	(b)	photosynthesis (1)	1	allow to make chlorophyll / to make food
	(c)	yellow (1)	1	allow smaller / stunted growth ignore withered / dried up
Total		3		

Question		Expected Answers	Marks	Additional Guidance
5	(a)	lets in / out carbon dioxide (for photosynthesis / from respiration) (1) lets out / in oxygen (produced by photosynthesis / from respiration) (1) transpiration / water loss / cooling / transport minerals (1)	2	for exchange of gases / photosynthesis / respiration = max one mark (not in addition to first or second marking point)
	(b)	(top surface has) small / no / few stomata (1)	1	allow waxy / cuticle (layer)
Total			3	

6	(a)	red (blood cell) (1) white (blood cell) (1)	2	allow RBC / erythrocyte (1) allow WBC / leucocyte (1) ignore lymphocyte
	(b)	any two for one mark max: A B AB O	1	allow Rhesus positive / negative
	(c)	anti-coagulant (1)	1	
	(d)	haemophilia (1)	1	
Total			5	

Question		Expected Answers	Marks	Additional Guidance
7	(a)	cartilage (1)	1	bone + cartilage = 0
	(b) (i)	gills (1)	1	
	(b) (ii)	any two from: release energy (1) from food (1) (in aerobic) respiration (1)	2	ignore actions such as swimming ignore just for energy / stay alive
	(c)	idea of blood only passing through heart once on one circuit of body (1)	1	allow series circuit / there is one circuit ignore descriptions of a two-chambered heart
	(d)	capillaries (1) open (1)	2	
Total		7		

Question		Expected Answers	Marks	Additional Guidance
8	(a) (i)	skin / lungs (1)	1	allow large / small intestine not bladder not bleeding / spitting / crying / vomiting not sweat glands
	(a) (ii)	<u>liver</u> (1)	1	not gall bladder
	(b) (i)	decreases (1)	1	
	(b) (ii)	26(°C) (1)	1	allow answers in the range 25.7 – 26.3
	(c)	(heat is required) for evaporation (1)	1	allow change of state requires energy / correct reference to latent heat
		Total	5	

9	(a)	testis (1) ovary (1)	2	
	(b)	mitosis (1)	1	allow phonetic spellings eg mytosis, meitosis not meiosis / meiotsis
		Total	3	

Question		Expected Answers	Marks	Additional Guidance
10	(a)	(i) all correct (2) BUT 1 or 2 correct (1)		2
		(ii) nose / skin / cuts / wounds / reproductive organs / ears / eyes / lungs / respiratory organs (1)		1 allow higher level answers referring to valid processes: breathing / sex
		(iii) tuberculosis (1)		1
	(b)	(i) remove gene / DNA from one organism / cell / human (1) inserting gene / DNA into another organism / bacteria / cell (1)		2
		(ii) 8 (1)		1
	(c)	too small (too see) / a few microns / a few thousandths of a mm (1)		1 allow microscopic
		Total		8

11	(a)	phytoplankton (1)	1	
	(b)	anchorage (1)	1	
	(c)	immobilisation (1)	1	
	(d)	from farms / horticulture / soil / fields / sprayed onto crops (1) (via) rivers / streams / run-off / leaching (1)	2	
	(e)	(depends on) season / time of year (1)	1	allow higher level answers: more light / longer days / brighter light / warmer / fewer animals / minerals from sewage
		Total		6

Question			Expected Answers	Marks	Additional Guidance
12	(a)	(i)	X (1)	1	
		(ii)	line rising up but never above the existing line (1)	1	ignore whether line eventually reaches existing line
	(b)		glucose / sugar (1) carbon dioxide (1)	2	allow formulae if correct / any other named sugar (1)
	(c)		any two from: no / less carbon dioxide produced / less global warming / less greenhouse effect (1) less sulfur dioxide produced / less nitrogen oxides produced / less acid rain (1) no / less particulates (1) less fossil fuels used / less petrol used which is non-renewable (1)	2	not just less pollution not gasohol is renewable allow more renewable
			Total	6	

B632/02 Unit 2: Modules B4, B5 and B6 Higher Tier

Question		Expected Answers	Marks	Additional Guidance
1	(a)	tick in fourth box (1)	1	more than one tick = 0
	(b) (i)	total for intensive = 11500 (1) total for organic = 12000 (1) BUT intensive uses 500 less / ORA (2) OR intensive needs 3000 more for fertilisers / ORA (1) BUT uses 3500 less for machines and fuel / ORA (1)	2	
	(ii)	pesticides: may accumulate in / affect food chains / may kill organisms which are not pests / fertilisers: cause eutrophication / herbicides: kill plants other than weeds (1)	1	<p>not fertiliser directly harms animals</p> <p>ignore references to carbon dioxide output not just kills or harms animals</p>
Total		4		

2	(a)	any two from: (organism that) decays / decomposes / feeds on dead material (1) releases enzymes / extracellular digestion (1) absorbs soluble / smaller / digested products (1)	2	
	(b)	draws water out of the organisms (1)	1	allow lowers the water potential ignore osmosis unless direction of water is qualified
Total		3		

Question		Expected Answers	Marks	Additional Guidance
3	(a)	any two from: transpiration / loss of water from the leaves (1) pulls it up (1) through the xylem (1)	2	not just passes up to the leaves and is lost
	(b)	phloem (1)	1	ignore vein / vascular (bundle/tissue)
Total		3		

4	(a)	photosynthesis (1)	1	allow to make chlorophyll/ to make food
	(b)	yellow (1)	1	allow smaller / stunted growth ignore withered / dried up
	(c) (i)	active (transport) (1)	1	
	(ii)	it requires energy / for respiration / to move minerals against a concentration gradient (1)	1	
Total		4		

Question		Expected Answers	Marks	Additional Guidance
5	(a)	guard cell labelled with an X (1)	1	
	(b) (i)	(top surface has) small / no / few stomata (1)	1	allow waxy / cuticle (layer)
	(ii)	bottom surface is cooler / shaded so less (1)	1	allow converse
	(c) (i)	tick in second box (1)	1	more than 1 tick = 0
	(ii)	stomata have to be open (at some point) for gas exchange / to obtain carbon dioxide / for photosynthesis (1) lose oxygen from photosynthesis (1)	2	allow obtain oxygen for respiration allow to lose carbon dioxide from respiration (1) allow stomata have to be open to allow transport of minerals (1) allow (transpiration for) cooling / supply of water (1)
Total			6	
6	(a) (i)	carry / transport oxygen (1)	1	allow transport of carbon dioxide ignore reference to haemoglobin
	(a) (ii)	idea of larger surface area (1)	1	allow flexibility allows movement through narrow capillaries
	(b)	A and AB (1)	1	both answers needed for mark
	(c)	haemophilia (1)	1	
Total			4	

Question		Expected Answers	Marks	Additional Guidance
7	(a)	any two from: provides a good framework for body (1) can grow (with body) (1) easy to attach muscle (1) flexibility (1)	2	
	(b)	any one from: large surface area (1) good blood supply (1) permeable / thin (membranes) (1)	1	allow idea of counter current mechanism
	(c)	idea of blood only passing through heart once on circuit of body (1)	1	allow series circuit / there is one circuit ignore descriptions of a two-chambered heart
	(d)	any two from: idea of capillaries (1) heart has four chambers (1) involved double circulation (1) one direction of flow (1) valves in veins (1)	2	allow no holes in / passage of blood through septum (1) allow away from heart in arteries, back in veins (1)
		Total	6	

Question		Expected Answers	Marks	Additional Guidance
8	(a)	<u>liver</u> (1)	1	not gall bladder
	(b) (i)	decreases (1)	1	
	(ii)	26(°C) (1)	1	allow answers in the range 25.7 – 26.3
	(c)	any three from: concentration / water content of blood (1) detected by brain / hypothalamus (1) release of anti-diuretic hormone / ADH (1) from pituitary gland (1) acts on kidney (tubules) (1) more water reabsorbed by tubules / into blood (1) concentration of the blood returns to normal (1)	3	allow negative feedback (1)
	(d)	(heat is required) for evaporation (1)	1	allow change of state requires energy / correct reference to latent heat
		Total	7	

9	(a)	amniocentesis (1)	1	
	(b)	better health care / treatment (1)	1	allow ideas about better diet / spending more time in a family rather than institutions
	(c)	description of a problem involved in bringing up a handicapped child (1)	1	e.g. how much care would be needed / would they need care as an adult / cost care / who would care for them / quality of life / mental abilities
		Total	3	

11	(a)	movement / AW (1)	1	allow swimming
	(b)	rod (1)	1	
	(c)	any two from: poor hygiene / sanitation / not washing hands (after toilet) (1) in (contaminated) food / drinking water (1) insufficiently cooking (1)	2	in food that has not been cooked sufficiently = (2)
	(d)	bacteria (1)	1	
		Total	5	

Question		Expected Answers	Marks	Additional Guidance
12	(a)	<p>any three from: gains water (1)</p> <p>through gills / mouths (when feeding) (1)</p> <p>by osmosis (1)</p>	3	<p>allow absorb salt(s) (1) by active transport (1)</p>
	(b) (i)	bigger yield (in same time) (1)	1	ignore grow faster / more profit
	(ii)	could pass on genes to native salmon / out-compete normal salmon / AW (1)	1	allow need more food / long term effects of eating them unknown
Total			5	

13	(a)	(i)	fructose (1)	1	
		(ii)	idea that do not need to use as much (1)	1	ignore examples e.g. it's healthier ignore cheaper
	(b)	(i)	so can be absorbed / enter the blood / enter cells (1)	1	
		(ii)	no / not enough lactase / enzyme (1)	1	
Total			4		

Grade Thresholds

General Certificate of Secondary Education
 Biology B (Specification Code J643)
 January 2009 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A*	A	B	C	D	E	F	G	U
B631/01	Raw	60	-	-	-	36	29	22	15	8	0
	UMS	69	-	-	-	60	50	40	30	20	0
B631/02	Raw	60	43	34	25	17	11	8	-	-	0
	UMS	100	90	80	70	60	50	45	-	-	0
B632/01	Raw	60	-	-	-	33	27	21	15	9	0
	UMS	69	-	-	-	60	50	40	30	20	0
B632/02	Raw	60	42	34	26	18	13	10	-	-	0
	UMS	100	90	80	70	60	50	45	-	-	0

Specification Aggregation Results

Overall threshold marks in UMS (ie after conversion of raw marks to uniform marks)

	Maximum Mark	A*	A	B	C	D	E	F	G	U
J643	300	270	240	210	180	150	120	90	60	0

The cumulative percentage of candidates awarded each grade was as follows:

	A*	A	B	C	D	E	F	G	U	Total No. of Cands
J643	44.2	82.7	86.5	96.2	100.0	100.0	100.0	100.0	100.0	52

For a description of how UMS marks are calculated see:

http://www.ocr.org.uk/learners/ums_results.html

Statistics are correct at the time of publication.

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

14 – 19 Qualifications (General)

Telephone: 01223 553998
Facsimile: 01223 552627
Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations
is a Company Limited by Guarantee
Registered in England
Registered Office: 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity

OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553

