OCR
RECOGNISING ACHIEVEMENT

GCSE

Biology B J643

Gateway Science Suite

General Certificate of Secondary Education

Reports on the Units

January 2010

CONTENTS

GCSE Biology B Gateway (J643)

REPORTS ON THE UNITS

B631/01 Foundation Tier

General Comments

The level of difficulty of the paper appeared to be appropriate for the ability range of the candidates, producing a good distribution of marks, covering almost the whole mark range available. Questions targeted at grades C and D allowed the more able candidates taking the paper to demonstrate what they knew and understood, whilst questions targeted at grades E, F and G allowed all candidates access to the paper. All candidates appeared to have had sufficient time to complete the paper, with most attempting most of the questions. The quality of candidates' spelling, punctuation and grammar was reasonably good and there were only a few cases where deciphering a candidate's writing posed a serious difficulty.

Comments on Individual Questions

Q 1   (a)(i)   Over three quarters of candidates correctly calculated Rejna's pulse rate as 105 beats per minute and the increase in Jody's pulse rate as 48 beats per minute.

      (a)(ii)   Almost all candidates correctly chose Nicola as the student whose pulse rate increased the most.

      (b)   This question discriminated well at a low demand, with about a third of candidates gaining one mark, a quarter gaining two marks and half as many again gaining full marks. An example of a weaker answer is 'oxygen and carbon dioxide are carried to and from the muscles' (no marks) whereas a better answer was 'oxygen is carried to the muscles and carbon dioxide is carried from the muscles' (two marks). For three marks candidates also had to give an explanation such as 'oxygen is needed for respiration'.

Q 2   (a)   Around three quarters of candidates correctly identified the flu pathogen as a virus.

      (b)   Most candidates correctly matched the body defences to the ways in which they work.

      (c)   This question, targeted at standard demand, proved difficult for candidates, with only a small proportion being able to describe a difference between passive and active immunity.

Q 3   (a)   Only just over a third of candidates identified the response as a reflex. Some described it as 'fast' or 'automatic' and did not score.

      (b)(i)   Around a third of candidates could identify the pin as the stimulus.

      (b)(ii)   Only a very small number could identify the effector as the arm muscle.

      (c)(i)   Most candidates correctly chose aspirin as the painkiller in the list.

      (c)(ii)   Very few candidates could explain that painkillers work by blocking nerve impulses. Instead, many gave answers that sounded like advertising sound bites, such as 'they go straight to the source of the pain'.

Q 4   (a)(i)   Only around two thirds of candidates could name the cells produced in ovaries as egg cells. A common incorrect answer was oestrogen, suggesting many candidates did not read the question properly.

        (a)(ii)   When asked how sex hormones travel to the ovaries, only around a quarter of candidates could correctly answer 'in the blood'. 'Swim' was a common incorrect response.

        (b)   About a quarter of candidates could state the number of chromosomes in a skin cell as 46, with incorrect answers ranging from one to thousands.

        (c)   Most candidates identified the scar in the picture as being the characteristic only caused by the environment.

        (d)   About a quarter of candidates could state the female sex chromosomes.

Q 5   (a)   Most candidates could correctly use the key to identify the two shells as a wentletrap and a tellin.

        (b)   Around two thirds of candidates could use the information in the question to identify molluscs as invertebrates. A common error was to suggest amphibians.

        (c)   Around half the candidates gained two marks for identifying the gull and the crab as predators. Just less than half gained one mark, either for only choosing one predator or for incorrectly choosing the mollusc in addition to the two correct answers.

Q 6   (a)(i)   Over half the candidates could name a food made in photosynthesis.

        (a)(ii)   Around two thirds of candidates knew that the gas made in photosynthesis is oxygen. Understandably, the common incorrect answer was carbon dioxide.

        (b)   Just over half the candidates gained at least one mark, and about half of these gained two marks, for explaining what is meant by a sustainable resource. Candidates need to be careful about their choice of language. For example, stating that the resource can be produced again gained a mark, but stating that it can be re-used did not.

        (c)   Over two thirds of candidates could explain why plants grow faster in summer than in winter with the common answers being that there is more light or that it is warmer. In questions like this, candidates must give a comparative answer, so, for example, simply stating that it is warm in summer is not enough. Another common error was to state that there is 'more sun' in the summer.

Q 7   (a)   Three quarters of candidates gained both marks for describing two ways that mosasaurs were adapted as predators. Candidates' answers to this type of question have improved, for example, most said 'sharp teeth', which gained a mark, rather than simply 'teeth', which did not. Some thought that having eyes on the sides of the head was an adaptation to being a predator. Few candidates gained no marks.

        (b)(i)   Most candidates knew that the word 'extinct' describes species that have not survived.

> **(b)(ii)** Three quarters of candidates knew that the evidence for extinct animals comes from fossils.

Q 8 **(a)(i)** Around half the candidates correctly calculated the percentage of gravestones with lichens as 20%.

(a)(ii) Even though 'error carried forward' was allowed from part (i), far less than half the candidates correctly chose the town with the highest level of lichens (which corresponded to the lowest level of sulphur dioxide pollution).

(b) Only a small minority were able to describe the relationship between the fungi and algae as an example of mutualism. Far more common were words such as 'co-operation', 'sharing' or even 'friendly'.

(c) Most candidates seemed distracted by the idea of pollution and suggested that lichen grow on gravestones, rocks and walls because there is too much sulphur dioxide pollution in the soil. Only a small minority were able to suggest that there is usually too much competition from plants such as grass on soil.

Q 9 **(a)** Two thirds of candidates were able to state that the job of red blood cells is to carry oxygen. Candidates should be aware that if they give wrong answers as well, e.g. 'carry oxygen and food', they won't gain the mark.

(b) Most candidates were able to name a type of blood vessel other than an artery, usually giving a vein.

(c) Almost all candidates knew that blood is pumped by the heart.

(d) Around half the candidates could write down the job of the nucleus, usually giving an answer along the lines of 'controls cell activities', which was acceptable for a low demand question. Credit was not given for 'controls what enters or leaves the cell' which occurred a few times.

(e) Around half the candidates correctly chose the first statement from the list. The most common error was to choose the last statement, 'oxygen leaves the blood in the lungs'.

Q 10 **(a)** Only a minority of candidates gained either one or two marks for correctly describing the stages in selective breeding. Most simply repeated information from the question and did not seem to appreciate that having selected the parents, the strongest offspring would then be selected for breeding and that this process would then be repeated over many generations.

(b) Half the candidates correctly chose asexual reproduction as the term best describing cloning.

(c) Half the candidates could explain that the clone would have the same characteristics as the original dog because it would have the same genes. Some misunderstood cloning and said that it would have similar genes.

Q 11 **(a)** Less than a quarter of candidates knew that, apart from for growth, cells divide to replace or repair damaged tissue.

(b)   Most candidates gained at least one mark for describing the adaptations of sperm cells, usually for explaining that the tail is for swimming. Only a minority were able to give a valid second answer. Many described 'pointy heads' for entering the egg cell, which was not credited.

(c)   Only around half the candidates correctly chose 'cell differentiation' as the way different types of cells are made.

(d)   Very few candidates could correctly explain what stem cells are. Around a third of candidates left this question out and those that did answer often described it as a cell from a plant stem.

Q 12   (a)   Around half the candidates correctly chose flowering as the process controlled by plant hormones.

(b)   Just over half the candidates gained at least one mark, and half of these gained the second mark, for describing the pattern shown in the graph. Candidates should be made aware that if they are asked to describe a graph they should use the wording from the axes, i.e. 'the percentage increase in length increases and then decreases as the concentration of hormone increases'. The second mark, as it often is, was for quoting relevant data from the graph, in this case, that the peak was at 100ppm. Many candidates misunderstood the graph and thought that shoots grew and then shrunk.

Q 13   (a)   A small minority of candidates knew that the process occurring in mitochondria is respiration. Around a third did not give an answer.

(b)   Around half the candidates correctly answered the question, however, of the remainder, many didn't seem to have read the question properly. As it asked what effect enzymes have on the speed of chemical reactions, candidates should have realised that the answer had to be either 'increases', 'decreases' or 'no effect'. Instead many candidates who attempted the question just wrote about enzymes.

(c)   Only about half the candidates were able to state that proteins are used for growth or repair.

B631/02 Higher Tier

General Comments

Candidates generally performed well on this paper. Very few questions were not attempted and a number of candidates showed a good breadth of knowledge.

Areas of the specification that were clearly understood included;
- Anaerobic respiration
- The equation for photosynthesis
- Selective breeding
- DNA bases.

Areas of the specification that were clearly not understood included;
- How pathogens cause the symptoms of a disease
- Effectors within a reflex arc
- The idea of increased competition affecting the distribution of an organism
- The role of haemoglobin and the adaptation of blood vessels.

Comments on Individual Questions

Question No. 1

(a) Most candidates correctly made reference to anaerobic respiration, lack of oxygen or not enough oxygen causing the build up of lactic acid.

(b) The majority of candidates could correctly plot the points on the graph, however many were unable to draw a curve through the points.

(c) The majority of candidates were able to identify 6 minutes as the correct answer. Those few that got this wrong tended to give 5 minutes as their answer.

Question No. 2

(a) Many candidates were unable to answer this question correctly. Vague comments about damage to the body without reference to cell damage were common.

(b) In part (i) some candidates lost a mark because they only put one tick. Candidates should be encouraged to check the number of marks awarded for each question when they give their answer. Many candidates found part (ii) difficult as they confused antigens and antibodies. The correct answers tended to simply state that passive immunity is short lived.

Question No. 3

(a) Although most candidates understood that the pin was the stimulus very few realised that the effector was the muscle and not simply the hand.

(b) The majority of candidates correctly identified the painkiller as aspirin.

(c) In part (i) candidates were able to identify the synapse however in part (ii) they often neglected to mention that caffeine affects the synapse by increasing the amount of neurotransmitter released. The most common error was reference to caffeine as 'speeding up the brain'. Candidates should be encouraged to use the word stimulant when referring to caffeine and not to make vague comments about stimulating the nerves.

Question No. 4

(a) In part (i) few candidates understood that the process was ovulation, many believed it was menstruation. Many candidates lost a mark in part (ii) because they were not specific enough; they need to refer to the substances as 'sex hormones' and not just 'hormones'.

(b) Most candidates realised there were 46 chromosomes in skin cells.

(c) Again most candidates understood the significance of the X chromosome.

Question No. 5

(a) Many candidates were able to calculate the percentage cover for Hughesly. In part (ii) Smithton was a common error as candidates failed to understand that more lichen means less pollution. In part (iii) candidates often confused reliability with fair testing and incorrectly suggested that the same number of graves should be counted in each town.

(b) Few candidates correctly answered part (i) the incorrect answer of mutual relationship appeared regularly. In part (ii) more candidates gained one mark than two. They were more likely to know why fungi were not plants than why they are not animals. Incorrect answers included the belief that fungi did not need to respire.

(c) Many candidates incorrectly referred to sulfur dioxide levels when answering this question. Few understood the idea that it was due to increased competition or lack of light.

Question No. 6

(a) The majority of candidates realised the pollen was transferred by wind. However in part (ii) many thought the pollen would need to be sticky instead of lightweight and small.

(b) Most candidates were able to complete the word equation for photosynthesis. However few candidates understood that starch is better for storage because it is insoluble. Many candidates incorrectly thought it was to do with the size of the molecule or that starch would last longer. Candidates found it difficult to apply their knowledge in part (iii) with many of them drawing the line upside down.

Question No. 7

(a) The majority of candidates lost marks because they were not precise in their descriptions. Candidates should be encouraged to distinguish between the soft parts decaying and the hard parts being replaced by minerals. Many simply said the mosasaur turned into rock. Other incorrect answers include vague terms such as 'imprinted' and 'buried under rock'; instead of sediment.

(b) Most candidates gave a correct reason for the extinction of the mosasaur, however some incorrectly thought it was hunted by humans or they made a vague reference to pollution. Candidates should be encouraged to read all the information given in the question. Some candidates gave competition as an answer even though this was in the stem of the question.

(c) About half the candidates answered this correctly. All combinations were seen which suggested a degree of guesswork.

(d) Most candidates made some valid reference to religion with a minority suggesting lack of proof and evolution from apes/monkeys/primates.

Question No. 8

(a) Well answered by the better candidate, most gaining the mark for references to antibodies. A number of candidates lost this mark by explaining the function of the cell with saying how it was adapted. For example they mentioned engulfing pathogens without making reference to flexibility.

(b) Only the better candidates were able to successfully explain the role of haemoglobin. Those that understood that haemoglobin reacted with oxygen normally correctly mentioned oxyhaemoglobin. A few candidates also gained one mark for correct reference to oxyhaemoglobin without first saying the oxygen reacted with the haemoglobin.

(c) Very few candidates gained both marks for this question. A large number of candidates understood valves and their function. However the adaptation of large lumen was less well understood. The common error here was to not be specific about blood flowing more freely. Too many simply repeated the information in the question, 'to help the blood flow at low pressure. The most common errors with weaker candidates were to give 'thin walls' and 'long length'.

Question No. 9

(a) This was answered well by the better candidates who gave clear, simple answers to cover all three marking points. Others candidates did have the correct idea but did not always clearly distinguish between breeding of parents and offspring. The most common error was not to select the strongest but simply breed the best offspring. A small number of candidates incorrectly referred to artificial insemination and genetic engineering.

(b) Most candidates gained at least one mark for this question. However some candidates lost marks because they did not make it clear which nucleus was removed and which was placed into the egg cell.

Question No. 10

(a) In part (i) few candidates were able to correctly identify mitosis. Only the better candidates were able to successfully describe what happens to chromosomes. Many candidates confused mitosis and meiosis. There was also further confusions with DNA replication.

(b) Very few candidates correctly identified part X as the acrosome. Many candidates thought it was the head or the nucleus.

(c) Candidates found it very difficult to clearly describe stem cells as cells that had not differentiated or become specialised. A number of candidates made reference to the use of stem cells, for example in experimental gene therapy.

Question No. 11

(a) Less than half the candidates knew that plant hormones are not required for photosynthesis.

(b) Candidates found it difficult to accurately describe the graph. The most common error was the misinterpretation of the y axis. This resulted in candidates assuming the plants got shorter if a concentration of more than 100 parts per million was used.

Question No. 12

(a) About half the candidates understood that respiration takes place in the mitochondria.

(b) The most common incorrect answer to part (i) was four. This is probably due to confusion with the number of different types of bases. Part (ii) was successfully answered by most candidates.

(c) All four responses were seen to this question with less than half the candidates correctly identifying synthesis as the correct answer.

B632/01 Foundation Tier

General Comments

The very small number of candidates attempting this paper makes it difficult to pin point any significant trends.

However, this paper elicited a good spread of marks across all three sections, with a mean mark above half marks.

The graphical skills displayed on Q.10 were good but there were areas where mathematical ability was lacking in many candidates. Marks were also lost in questions requiring comparative statements, such as Q.12(b).

Centres also need to address the weaknesses in the knowledge of immobilised enzymes which resulted in poor marks on Q.13.

Comments on Individual Questions

Q 1(a) This proved to be a good start for most candidates, with most answers correct.

   (b) The majority of candidates could state the origin of the minerals but a small number suggested sunlight or photosynthesis.

   (c) Again, largely correct with answers split between nitrogen and nitrates.

Q 2(a) Most candidates could perform this simple subtraction although a small number selected the wrong figures.

   (b) Many correctly answered transpiration or evaporation but osmosis or transportation were sometimes seen.

Q 3(a) Only a very few candidates failed to identify the biodegradable substances.

   (b) A number of correct decomposers were seen but some answers named detritivores and so did not score.

   (c) The correct answer of oxygen was commonly seen here.

Q 4(a) The better candidates appreciated that the question was asking for organic methods and gave good examples involving biological control and organic fertilisers. Weaker candidates just suggested the use of fertilisers, herbicides and pesticides.

   (b) Most candidates correctly chose carbon with only a few worryingly choosing uranium.

Q 5(a) Very few candidates failed to score at least one mark on this question.

   (b) (i) Although some candidates lost marks for failing to follow the principle, there were a significant number who could not perform the subtraction correctly or gave an answer without any units.

   (ii) Weaker candidates often just stated that energy was lost, without any explanation of why or how.

(c) The correct definition of hydroponics was rarely seen.

(d) There were many correct answers here.

Q 6(a) (i) Almost all candidates scored here.

(ii) Mostly correct with the few incorrect answers giving the kidney.

(iii) Again, it was pleasing to see most answers were correct.

(b) (i) Many candidates gave a heart condition but some stated more general circulatory problems or cancer.

(ii) The best candidates correctly referred to tissue matching and size or lack of donors. Many candidates only scored one mark.

Q 7(a) Intra vaginal fertilisation proved a strong distracter, being chosen by about 50% of the candidates.

(b)(i)&(ii) Most candidates could state the site of production of eggs but very few could correctly say what happens at ovulation. Incorrect answers often referred to menstruation or fertilisation.

(c) (i)&(ii) Sperm was correctly stated by all but very few gave the word mitosis and even fewer spelled it correctly.

Q 8(a) (i)&(ii) Sometimes these two answers were transposed but there were many correct answers.

(b) (i) Inhaler was the most common correct answer although there were several iron lung suggestions.

(ii) Throat or windpipe were both credited as alternatives to trachea but many candidates simply wrote lung in the second box.

Q 9(a) A large majority gave the correct choice.

(b) In contrast to (a), very few could state anticoagulant, with antibiotic being a common incorrect answer.

(c) A number of different letters were stated here, not limited to A, B or O.

(d) The first option proved to be the most commonly chosen distracter.

Q 10(a)&(b) Most candidates answered correctly.

(c) (i) It was good to see that most candidates could read from the graph correctly.

(ii) There were fewer correct answers here, with a number of candidates simply continuing the line.

(d) (i) Very few correct references to gasohol were seen.

(ii) Candidates are still referring to gasohol as renewable or say that it does not give off carbon dioxide if it is burnt. Centres should emphasise the fact that only the ethanol portion is renewable.

Q 11(a) There were a number of incorrect references to nucleus here.

(b) Most candidates answered correctly.

(c) Answers were split between influenza and food poisoning.

Q 12(a) Virtually all candidates answered correctly.

(b) A number of candidates lost marks by failing to make comparative statements, simply saying that light is needed for photosynthesis.

(c) The idea of support from the water was only seen in a few scripts.

Q 13(a) (i) Very few correct answers here, with candidates often referring to washing powders.

(ii) High scoring candidates often referred to measuring sugar levels but weaker candidates lost the mark by suggesting that the reagent strips could actually control or alter the blood sugar levels.

(b) (i) Lipase was a more common answer than the correct answer of alginate.

(ii) Very few candidates wrote answers that were close to gaining credit.

(c) A positive end to the paper for most candidates with two or three marks often scored.

B632/02 Higher Tier

General Comments

The level of difficulty of the paper appeared to be appropriate for the ability range of the candidates, producing a good distribution of marks, covering almost the whole mark range available. Questions targeted at grades A*, A and B allowed the more able candidates taking the paper to demonstrate what they knew and understood, whilst questions targeted at grades C and D allowed all candidates access to the paper. All candidates appeared to have had sufficient time to complete the paper, with most attempting most of the questions. The quality of candidates' spelling, punctuation and grammar was good overall and there were only a few cases where it was difficult to interpret a candidate's writing.

Comments on Individual Questions

Q 1   (a)   Most candidates correctly linked the leaf adaptations to their functions.

(b)(i)   Around half the candidates correctly calculated the energy lost from the food chain as 3980kJ. The most common incorrect answers were 3080kJ or 3780kJ. The mark was not given if the unit was absent.

(b)(ii)   Around two thirds of candidates were able to explain why or how energy was lost from the food chain. Common acceptable answers included as heat, through movement, from respiration, through egestion or through excretion. Some candidates still think that energy used for growth is lost from the food chain.

(c)   Around two thirds of candidates were able to explain the term hydroponics as growing plants without soil, or in a nutrient solution. It was not enough to state that they are grown just in water. Most non-scoring candidates did not seem familiar with the term at all.

(d)   Most candidates were able to give a correct function of the xylem, usually in terms of transport of water or minerals, although some did refer to support. Some lost the mark for stating that xylem transports food.

Q 2   (a)   Most candidates gained at least one mark with nearly half gaining two. One mark was for correct plotting and one for a straight line through the origin. Those gaining just one mark usually lost the line mark.

(b)   Around two thirds of candidates correctly named the process, usually as transpiration, although diffusion was also acceptable. Too many suggested evaporation which had been given in the question.

(c)   This question discriminated well with all marks from zero to three being regularly seen. Most candidates knew that stomata are more common on the underside of leaves although only a few went on to explain that this is because the underside is cooler. More able candidates were able to correctly explain that stomata close to reduce water loss and that this is due to the guard cells becoming flaccid. Weaker answers described stomata opening and closing and guard cells becoming turgid or flaccid but did not link it to the specific question of how water lost is reduced. Marks were also not awarded for statements such as 'guard cells close up' or 'stomata become flaccid'.

Q 3   (a)(i)   Around two thirds of candidates knew that decay was not affected by the amount of nitrogen available.

       (a)(ii)   Candidates found this difficult and only a minority seemed familiar with the term saprophytic.

       (a)(iii) Around half of the candidates were able to give one reason why detritivores increase the rate of decay in the compost heap, for example by aerating the compost or by increasing the surface area available to decomposers.

       (b)   This turned out to be a difficult question and few candidates correctly gave the expected answer, enzymes, or the allowable answer, proteins. The most common non-scoring answer was nitrates, though potassium was also commonly seen.

       (c)   Around a third of candidates appreciated that the question was about active transport with about half of these explaining that active transport is needed to move compounds against their concentration gradient.

Q 4   (a)   About half the candidates knew that root nodules contain nitrogen-fixing bacteria. The most common incorrect answer was nitrifying bacteria, although denitrifying was also commonly seen. Surprisingly, 'nitro-fixing' was also commonly seen.

       (b)   About a third of candidates were able to describe a change brought about by nitrifying bacteria, most commonly, ammonia or ammonium compounds being converted to nitrates. Incorrect answers often included nitrogen gas.

Q 5   (a)(i)   Answers were fairly evenly split between the correct answer, the liver, and the kidney. As the question clearly asked for the site of production of urea, this perhaps reveals a common misconception.

       (a)(ii)   Most candidates correctly chose bone.
       (b)(i)   Over half the candidates correctly explained that heart action can be monitored by ECGs or echocardiograms, or less commonly with X-rays or ultrasound. Common incorrect suggestions included pacemakers and heart monitors.

       (b)(ii)   Most candidates were able to explain why there is a shortage of donor hearts, citing a shortage of donors or healthy, undamaged hearts or the need for matching age, size or tissue. Nearly half gained both marks. Unfortunately however, many candidates still mix up tissue matching with matching blood groups. No credit was given for the fact that donors have to be dead.

       (c)   Some candidates misread the question and tried to give reasons for and against organ donation itself, rather than the system described in the question. Nevertheless, over half gained both marks.

Q 6   (a)   Most candidates correctly chose what IVF stands for, although all of the other options were seen.

       (b)   Only around half the candidates correctly described ovulation as the release of an egg (from an ovary). Other candidates confused it with other stages of the menstrual cycle.

(c)(i)   About half the candidates knew that FSH stimulates the growth of immature eggs. Other common suggestions were growth hormone, LH or oestrogen.

(c)(ii)   This was a difficult question with a majority of non-scoring answers. A common invalid suggestion was that the new technique might be more successful. What was required instead was that this technique means that women don't have to worry about possible side effects of the hormone treatment. Simply stating that it is safer was not sufficient.

Q 7   (a)   Most candidates knew that an asthma attack can be treated with an inhaler, with some candidates naming the drugs.

       (b)   About three quarters of candidates gained at least one mark for describing what happens to airways during an asthma attack, with about a quarter gaining both marks. Candidates should appreciate the importance of how they phrase answers. For example, marks were credited for stating that the airways narrowed but not if candidates said that they completely closed, and for stating that air movement was restricted but not if they said air movement was stopped.

       (c)   About a third of candidates could correctly describe the function of the ciliated cells. Although many candidates knew they are involved in cleaning the lungs, marks were not awarded for stating that they trap pathogens, or that they prevent their entry. A noticeable minority of candidates confused their role with that of alveoli.

Q 8   (a)   Around half the candidates could name an example of an anti-coagulant drug, although many other drugs were seen, such as penicillin or insulin.

       (b)   Over two thirds of candidates knew that haemophilia is an inherited condition preventing blood clotting.

       (c)   Most candidates gained at least one mark for explaining the idea that only transfusions between certain blood groups are successful or for describing the consequence if the wrong transfusions are made. Only a minority went on to explain this in terms of antigens and antibodies, thereby gaining the second and third marks.

Q 9   (a)   About a third of candidates gave the completed balanced symbol equation for fermentation. Few candidates gained only one mark.

       (b)(i)   Candidates either divided 12 by 20, or 20 by 12. Only slightly more did it the correct way (the latter), calculating the rate as 1.67 cm^3 / minute.

       (b)(ii)   The majority of candidates correctly drew a steeper line on the graph. It is worth noting however that a noticeable minority missed out the question. Centres should stress to candidates that they read each question carefully and be aware that not all answers may go on the dotted answer lines.

(c) Around half the candidates gave a valid advantage of using an alcohol-petrol mixture over using just petrol, with answers such as reduced carbon dioxide production, a reduced greenhouse effect or reduced use of fossil fuels. Credit was not given to answers stating that there would be no (net) carbon dioxide production or no impact on the greenhouse effect. Similarly, although some gained a mark for pointing out that the alcohol is renewable, no credit was given to those who said that the mixture is renewable.

Q 10 (a) Two thirds of candidates gave a correct job of the bacterial DNA. Simply identifying it as DNA was not enough. Another, non-scoring, answer was that it controls what enters or leaves the cell.

(b) Two thirds of candidates could explain why yoghurt-making equipment has to be sterilised before use. Simply stating that bacteria are killed was not enough.

(c)(i) A third of candidates correctly chose Vibrio as the bacteria causing cholera. All of the other choices were seen.

(c)(ii) Most candidates could explain why cholera outbreaks are more likely after an earthquake.

11 (a) Almost all candidates correctly identified the phytoplankton as the photosynthesising organisms.

(b) Around a third of candidates gained one mark and about half gained both for explaining that producers increase in summer because there is more light and it is warmer or because there is more photosynthesis. Simply stating that it is warm or there is light was not sufficient and candidates should be made aware that in questions like this a comparison should be made. Candidates should also be made aware that in questions like this, the answer 'there is more sun' will never gain a mark.

(c) Half the candidates could explain that water provides support for large marine mammals. Those who didn't gain the mark often gave poorly phrased answers such as 'there's no gravity in water'.

(d) Most candidates correctly identified at least two statements as either true or false, gaining one mark, but few correctly identified all four statements for the full two marks.

12 (a)(i) Half the candidates could correctly name both glucose and fructose as the sugars produced when sucrose is digested. Although most could name glucose, other sugars, such as galactose, were also seen.

(a)(ii) Less than half the candidates could give an advantage of using immobilised sucrase, i.e. the idea that it is more easily removed from the product or that it can easily be used again. A common incorrect suggestion was that it speeds up the reaction.

(b)(i) The majority of candidates correctly named the enzyme as lipase.

(b)(ii) Although many candidates knew that the products of digestion are smaller, only a quarter of candidates could explain that fatty acids and glycerol are more easily removed from clothes than fat because they are soluble.

Grade Thresholds

General Certificate of Secondary Education
Biology B (Specification Code J643)
January 2010 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A*	A	B	C	D	E	F	G	U
B631/01	Raw	60	-	-	-	34	27	21	15	9	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	-	-	-	36	29	22	15	8	0
	UMS	69	-	-	-	60	50	40	30	20	0
B632/02	Raw	60	45	37	29	21	15	12	-	-	0
	UMS	100	90	80	70	60	50	45	-	-	0

For a description of how UMS marks are calculated see:
http://www.ocr.org.uk/learners/ums/index.html

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