RECOGNISING ACHIEVEMENT

GCSE

Science B

Gateway Science Suite

General Certificate of Secondary Education **J640**

OCR Report to Centres

June 2012

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

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This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

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

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Science B (Gateway) (J640)

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Overview

This session's examination papers attracted a significantly lower number of candidates with this specification drawing to an end. There were slightly more entries for B622 than B621, but entries were about one quarter of the normal level, with many of these involving candidates re-sitting these units.

As a consequence of some of these changes in cohort, the standard of answers on many of these scripts was rather low and the mean marks were significantly depressed.

The principal examiners have highlighted some of the common difficulties in their individual reports. These include such issues as failure to write comparative answers and difficulties in converting between different units in calculations.

B621/01 Foundation Tier

General Comments

Much fewer candidates took this examination this year due to the availability of the new specification. Unlike previous years there were many papers that had large numbers of questions not attempted and many papers with marks below 10. This was also true of scripts from candidates provided with appropriate help in writing or reading. It is imperative that candidates should leave an examination with some feeling of giving the examination their best shot. This was not apparent for many candidates this year.

Comments on Individual Questions

Section A B1

1 (a) **Peter** scored for most, probably because his total was the smallest. There were a fair number of totally correct answers here, but many candidates failed to get the idea of working out an average and simply came to the final result by using the totals of the figures given. Several worked out incorrect averages via a variety of routes, some just not being able to do the correct arithmetic, others not using all the data available.

(b) (i)(ii) Very few candidates knew the parts of the eye; some labelled the **lens**, a common response was the pupil and some labelled the **retina** correctly.

(c) Very few candidates knew that **muscles** were effectors.

(d) A number of candidates were able to describe why catching a ruler is not an example of a reflex action.

2 This also was a poorly answered question overall, beginning with the fact that in (a), fibre appeared as a response on only a few occasions; it was more common to find other food types being mentioned eg vitamins, fats etc, followed by some reason in (ii). Those who did score for fibre failed to give an adequate reason for this being absent.

Similarly in (b) where passive was identified the reason was not, the closest being passed on through milk, not from the mother.

A very small number secured the three marks for (b) (iii), these responses being clear and to the point. Most pupils went down the road of answering in terms of white blood cells or the idea of the system simply filtering out the bad things and the body getting rid of them. Even body temperature for the milk in (c) was not well known and there was a range of responses giving suckling babies anything from boiling to ice cold milk.

3 (a) Most candidates could describe what addiction meant.

(b) (i) This question was a give away with either decrease or increase accepted as an answer. About half the candidates were able to give a reason in part (ii) based on their answer to part (i).

(c) (i)(ii) Some candidates were able to name **DNA** as the chemical genes are made from and **mutations** when changes occur to the genes.

Section B C1

4 (a) About a third of the candidates were able to tick the two correct sentences describing the ingredients in margarine.

(b) (i) A few candidates knew what the job of an emulsifier was.

(ii) Only a few candidates could label the **hydrophobic** tail. More candidates gave no answer.

(c) Very few candidates could work out the number of atoms in tricalcium phosphate given the formula.

5 (a) (i) The majority of candidates were able to read the graph and give **50 kJ** as the answer.

(ii) This calculation was less well answered, but a number managed to work the mass of fuel as **5g.**

(b) About half the candidates knew that **oxygen** is needed to burn coal and a similar number named the elements in a hydrocarbon in answer to (c). Carbon dioxide was a common misconception.

(d) This question was reasonably well answered with most candidates able to score a mark for suggesting a factor to take into account when choosing a fuel. Many scored two marks for two reasons.

6 (a) Few candidates knew that (fractional) **distillation** is used to separate crude oil.

(b) This question was better answered with some candidates able to use the information in the table.

(c) Many candidates confused cracking with distillation. Those that scored a mark did so by giving one of the conditions needed for cracking, usually a **high temperature** or a **catalyst**.

7 Part (a) invariably drew a response about stopping sweating and very few candidates got near the correct idea of allowing water vapour (sweat) through the garment. Flexibility of garment was often given as an answer. Part (b) (i) was better answered, but followed up in (b) (ii) by often duplicating the idea of recycling with that of re-using. Ideas such as dumping it in the sea were not unknown. The most common error in (c) (ii) was giving polyethane instead of **polyethene**.

Section C P1

8 (a) Few candidates could explain why the increase in temperature for the cubes was different. Some gained a mark of two for stating they were different substances. The most common incorrect answer was that they were different colours.

(b) Some candidates were able to recognise that the temperature stayed the same because the liquid had reached its boiling point.

9 (a) Many candidates thought that corrugated cardboard acts as a good insulator because it traps heat not **air**, as was required.

(b) The calculation was well attempted by all candidates, with about a third scoring two marks. Other candidates divided the figures the wrong way round achieving an efficiency in excess of 100%.

10 (a) It is possible many candidates just guessed the answer, **dull black**, and some got it right.

(b) (i)(ii) More candidates gave a use for microwaves than for infra-red.

(c) Candidates were expected to write about the differences in the way that infrared and microwaves heat food. Part (c) was very poorly answered and no candidates scored full marks, most not even getting off the mark. Answers came through in terms of a description of the actions of the cook in using a microwave oven. The slightly better answers used ideas of different rates of cooking and the role of water in the microwave situation.

11 (a) A number of candidates knew that **digital** was another type of signal.

(b) At this level almost no candidates could describe an analogue signal.

(c) (i)(ii) A number of candidates recognised the **amplitude** and **trough**.

12 It was rare to find anyone who did not give a correct answer to (b), but perhaps to be expected that such a piece of knowledge, sun tan cream / lotion, would be well known. **UV** was given by many as the response to (a), but a significant number offered infra red or just the Sun's rays. Global warming was given frequently as a response to (c), with the ozone layer or the Sun getting closer to the Earth also being offered. The major reason why many candidates did not score two marks in part (c) is because they failed to state burning **more** fossil fuels or driving **more** cars. A number correctly gave **deforestation**.

B621/02 Higher Tier

Generally the standard of the candidates' answers was satisfactory to good. In questions that involved recall and little application candidates performed strongly (eg 1(a), 3(b) 4(a) &(c), 5(d),(9a),11(a). However, they found difficulty when they had to apply their knowledge to a particular situation or when ideas had to be linked for the mark(s) eg1(c), 2(b), 3(a), 6(b), 6(c)(i), 8(b), 9(b)&(c),11(b). This includes the questions that required two parts to the answer because candidates often failed to provide one part of the answer.

Mathematical ability was satisfactory, but there was some poor application of simple addition and division in all three sections.

There did not appear to be any problems with time constraints; there was no evidence of difficulty in completing the examination paper.

1 (a) The majority scored two or three marks, a small number scored zero; the two mark responses usually had an error in division for one person (usually **Tom**). Where one or zero (very rare) was recorded it was usually due to using the 'no result' for **Peter** or **Mary** in their division to calculate the average or, in the weaker answers, simply adding the results for each person and not dividing by the number of attempts to calculate the averages.

(b) This was poorly answered. Only 10% got the muscle mark; the majority answered with the ruler/gravity/the person/hand.

(c) Candidates struggled with this difficult question. They either described the reflex arc or fell short of credit by failing to refer to the idea of transmitter substance at the start then neglecting to use the term 'diffusion' when describing the movement in their answer. Often the idea of 'more' was totally overlooked (many gave correct descriptions of what actually happens, but failed to take note of the context of the question). Some good answers made the correct reference to stimulants or depressants for two marks. A large majority failed to score even one mark.

2 (a) (i) Failing to mention **molecules** was often the shortcoming in answers that did not gain credit; some hit the **allow** of 'proteins broken down into amino acids etc.' Often the question was misread and responses then described what happens after digestion has taken place instead of what is happening when it takes place.

(ii) Some gave good answers in terms of calcium already being small or soluble or able to be absorbed and there were a small number of good answers in terms of diffusion into the blood stream. The main misconception (by the majority) was that calcium was liquid or that it went straight to the bones or teeth.

(b) (i) A very low success rate for an objective question (less than half gained the mark). 'Active' was regularly chosen and to a lesser extent antibiotic, which was often suggested as being needed by babies to fight infection in the next part of the question.

(ii) The small number of candidates that gained the mark often described the idea of being passed on from the mother rather than antibodies not being made by the baby. A number of answers included the idea that the protection would be temporary. Many responses described the function of antibodies.

(c) There were some good answers with the correct use of enzyme action. However, a lot of responses were about the food or milk being at the right temperature for the baby. Better answers that did not quite hit the mark were about the correct body temperature without mention of 'enzymes'.

(d) Many candidates gained credit for the idea of addiction, but so many answers were about the effects of smoking or passive smoking, passing on cancer, lung disease, underweight baby or just vague 'health problems'.

3 (a) (i)(ii) Although the majority could correctly name the four bases, in the second part the grasp of the ideas about changing the amino acid / protein / haemoglobin or the base codes or sequences was poorly applied to the question. Over half failed to gain any mark.

(b) There were some very good diagrams (usually the Punnet square) in candidates responses. Some failed to identify 'Claire' and lost a mark whilst poorer attempts started with the wrong alleles for the parents or made errors with one or more sibling. Some answers had a single allele for each, or some, individual.

(c) Most candidates correctly used the idea of lack of oxygen or anaerobic respiration but less than half gave both. The use of 'oxygen debt' or descriptions of pain caused by the build-up of lactic acid or attempts to relate the answer to sickle cells undermined many answers.

4 (a) (i)(ii) The term 'hydrophobic' and the definition of hydrophilic where well known by candidates. Poor spelling and repetition of hydrophilic or 'hydrochloric' in the first part and descriptions such as 'stick to water' were the poor responses.

(b) Well done by about ¼ of the total entry; many could not add 3 + 2 + 8 successfully, whilst others tried to add all the relative atomic masses together to obtain a large value as the answer.

(c) (i)(ii) The vast majority of candidates gave a correct reason for cooking food although what is meant by a chemical change was less well known (still correct for > 50%); irreversible / new substance formed / colour change being the frequent correct responses. Change of state was the common error when the mark was not awarded.

5 (a) The correct answer was successfully calculated from the information on the bar chart by most candidates.

(b) There were some good explanations of what constitutes a hydrocarbon. However, most fell short usually omitting '**only**' or incorrectly writing about carbon and hydrogen molecules. Some answers were about hydrocarbons being fossil fuels.

(c) The majority of answers contained the correct reactants and products although balancing was not so well done (just less than 40% were correct for both marks). There were no consistently incorrect errors to report. A small number of candidates tried to balance the equation by changing numbers within the formulae and failed to gain any credit.

(d) Candidates answered this question confidently and readily identified two acceptable factors (energy value, availability, cost and storage were the most common answers).

6 (a) Most candidates understood exothermic reaction.

(b) This was difficult in the sense that three ideas had to be included

- idea of holes in the fabric
- holes big enough to let (sweat) vapour out
- small enough to stop water molecules from getting in.

Some very good answers were given; any of the three points were seen as an omission in answers that did not gain the mark, but the second one was most often omitted where merely 'sweat' was in the answer.

(c) (i) Candidates struggled to apply the concepts of covalent bonds and intermolecular forces to the polymer molecules in the question. Ionic in either part or cross linking in the first were often the errors.

(ii) Vague references to forces pulling the polymer back to shape or ideas about the intermolecular forces in the chains rather than in the cross-links appeared in answers not quite there. Only the very best candidates gave creditable answers. Some candidates were confused between bonds within the molecules and bonds between the molecules.

7 (a) The data in the table was correctly used by the vast majority of candidates.

(b) The concept of weak intermolecular forces was sometimes applied correctly in about one in five answers. Some candidates did not fully appreciate the instruction to 'use ideas about **forces**' in the question and answered in terms of bonds.

(c) Most candidates tried to use the idea of relative demand (or usefulness) as in the table and gained partial or full credit. There were good answers that homed in on the idea of matching supply with demand. Some tried to describe the process of cracking or fractional distillation.

8 (a) Most answers were only about change of state; few (only 1 in 20) went on to mention breaking of intermolecular bonds.

(b) The nature of the question tested the ability to determine the mass of water that was boiled and the need to handle multiples as well as the actual calculation of s.l. h. Some used the initial or final mass and many could not convert the 750 kJ into joules as was needed in the answer line. Few gained both marks. A significant number of candidates who correctly completed the calculation made an error when transferring the number to the answer line, often because they included an unnecessary conversion.

(c) On the surface a relatively simple percentage efficiency calculation where the common errors were to calculate 7.2 ÷ 6.5 or to include a unit (eg 90.3J / 0.9 N) or neglect to put '%' when the answer calculated was 90.3. The majority of candidates scored at least 1 mark.

9 (a) There were many good two mark answers, but very few scored the maximum of three. This was mainly due to candidates regurgitating **similarities** in both methods (ie how the bulk of the food was heated by conduction or convection) rather than the **differences** as asked in the question. A small number gave general properties or uses of infrared and microwave radiation.

(b) Many responses only gave one creditworthy answer. Ideas that failed to gain the mark were;

- change her mobile company
- get a different phone
- use a stronger or different signal
- use a different satellite
- put up another satellite.

(c) This was another question where candidates often gave a partial answer, usually the reflection from the ionosphere, failing to include the satellite function in their answer. Very few gained credit.

(d) The success rate was below the level in previous examinations. Some described digital whilst others gave a property of analogue signal (eg picks up interference). Very few gave an acceptable diagram.

10 (a) Only the very best candidates gave a diagram with the idea of peaks and troughs in step. Many drew a correct diagram, but failed to label it appropriately, or at all. Often the diagram was a basic drawing of a beam, intended to be an intense laser beam following the theme of the question. A significant number of candidates only gave a diagram of a **single** wave.

(b) (i)(ii) The first part of the question was answered much more accurately than the second part. Pits, or another acceptable word and a correct description of reflection of the laser beam, gaining the marks in good responses. The error in the first part was to describe being put there by a laser or to write about 'grooves' or stored in the memory.

In the latter part, some answers that were almost there failed to mention laser or light being reflected. Poorer answers only included 'playing in the CD player'. Consequently a big majority did not score a mark here.

11 (a) Too many responses only repeated 'primary' or 'secondary' and others gave the correct answers for the types of wave or the media in the reverse order.

(b) As with earlier questions where candidates had to link two ideas many only gave a partial answer usually neglecting to include the idea of increased UV levels. Many potentially good answers were spoilt by concluding that global warming would increase. However, more were successful with this question compared to others where a link or two points were needed for a single mark with many good descriptions being given.

12(a)(b)(c) This question about heat transfer in the context of insulation in a cavity wall highlighted how candidates find the abstract ideas about conduction, convection and radiation difficult to grasp and even more difficult to explain. In the first two parts the idea that the warm air moves into the cavity **then** is trapped was common. The **reflection** from the shiny foil was often omitted in the last part. Very few responses were correct for the first two parts. More candidates had the correct answer for one part in a **different** part of the question. A number included ionising radiation in the last part.

B622/01 Foundation Tier

General Comments

There were approximately 7400 candidates and marks ranged from 0 to 54 out of 60. Approximately a fifth of the candidates achieved a grade C. The mean mark for the paper was 24.4 which is lower than in previous sessions. The paper discriminated satisfactorily over the target grade range of C to G. The paper allowed candidates to demonstrate positive achievement in all three areas of science.

There was little evidence that candidates had insufficient time to complete the paper, but there were a number of questions omitted by a significant number of candidates. A small minority of candidates did not follow instructions regarding how to answer questions or how many answers to provide. Where the intentions of the candidate were clear, marks were awarded.

Some examiners reported that poor handwriting from some candidates made marking difficult and in extreme cases may have cost the candidate marks.

Comments on Individual Questions

1 (a) This was intended as an accessible starter, but it did differentiate across the grades. The majority of candidates correctly identified the island fox as a vertebrate and mammal and knew how it is adapted as a predator. However, most thought that eyes at the front of its head allowed it to see further. The principle of binocular vision is not well known.

(b) Most could provide a good explanation of the meaning of endangered.

(c) Just over half of candidates interpreted the graph to correctly identify the two islands. Many identified one of the islands correctly, but not both. Explanations were not well written. Reference to both lowest numbers and recent years was required before the mark was awarded. Many wrote about numbers decreasing, but this was true for all of the islands. The majority of candidates could identify one conservation method but two were required to gain the mark.

(d) The idea of using fossil evidence was generally well known although the use of the Internet was frequently mentioned.

2 (a) Fewer than half the candidates correctly identified community as the different types of organism.

(b) Nearly a quarter of candidates made no attempt at the word equation for photosynthesis. Only a quarter of the remainder scored both marks. Common errors included reversing the equation and attempting a combination of words and symbols. The use of symbols instead of words is accepted, but all too often the symbol for carbon dioxide would be written as CO2 or CO^2.

(c) This question was generally well answered.

(d) Nearly half the candidates made no attempt at this question. Few of those who did answer were familiar with the term *host*.

(e) The use of sugar for growth, respiration or repair is not well known. Candidates who were awarded the mark usually wrote about energy or making glucose.

3 (a) Many candidates failed to identify a quadrat as being the equipment needed for sampling. Answers that referred to counting needed to be specific about where the counting took place.

(b) The majority could find the average correctly.

(c) Most could identify a trend in the data.

(d) Many candidates simply repeated the answer to the previous question and made no mention of sulfur dioxide.

4 (a) The term thermochromic was better understood than the term phosphorescent.

(b) A quarter of candidates totally omitted this question. The majority of the others failed to score a mark. Glue, dye, emulsion and water were common incorrect responses. Candidates who mentioned binder or binding medium often referred to its job as sticking the paint together.

5 (a) Most candidates identified one effect of plates moving against each other, usually earthquake. Continental drift was sometimes mentioned.

(b) Whilst iron was the most common answer for the metal in the Earth's core, aluminium was frequently mentioned along with titanium.

(c) Well under a tenth of candidates knew the term lithosphere. Many repeated crust from the question stem. Others mentioned atmosphere.

6 (a) Half the candidates could correctly read from the graph and identify the trend. Many referred to time getting faster; others confused rate of reaction with time for reaction to take place.

(b) The majority of candidates thought the curing time would increase with an additional concentration of hardener.

(c) Few candidates were unable to count the number of hydrogen and nitrogen atoms correctly.

7 (a) Almost all correctly identified the metal with the highest melting point.

(b) The majority believe that aluminium is an alloy. Few knew the correct answer.

(c) The candidates who chose to use copper as the metal for the decorative pan were usually awarded all three marks as a result. Candidates choosing aluminium often listed incorrect reasons for their choice. A sizeable minority of candidates suggested iron, zinc or lead as suitable.

8 (a) Whilst some candidates appeared to select words at random, most were awarded one mark and many obtained two marks. The most common distractor was to suggest that electric currents are produced when the Sun warms the air.

(b) A third of candidates knew that black surfaces absorb energy. Unfortunately, many still believe that black surfaces attract energy.

9 (a) Few candidates could name a nuclear fuel. Coal, petrol, water and carbon dioxide were some examples of incorrect responses. Likewise, the advantages of using nuclear power stations are not well known. Few mentioned global warming in their answers. Some referred to the depletion of fossil fuels. Many simply stated less pollution or safer as their answer.

(b) A fifth of the candidates could explain power output. Many referred to the amount of electricity; others merely stated the unit. A third of candidates omitted part (ii) and very few mentioned fermentation or a description of the process. Many candidates ignored the emboldened part of the question and suggested burning the biomass.

10 (a) One of the most common answers was to suggest that nothing could live in space because there is no oxygen.

(b) Most candidates could suggest one advantage of unmanned spacecraft and this was usually related to astronaut safety. Similarly most suggested at least one example of information that could be sent back from an orbiting spacecraft; temperature, pictures and information about life forms were the most common examples given.

(c) The majority of candidates were able to link the space objects with their correct description.

11 (a) There were many poor descriptions of the graph showing the voltage from a battery. Descriptions of straight and consistent were common.

(b) Some candidates looked at the maximum value on the axes instead of the peak value of the graph displayed.

(c) A third of candidates omitted this question and few of the remainder could identify the transformer as the device that could increase or decrease AC voltage. Variable resistor was a common incorrect response.

(d) The dynamo effect is not well understood. Some suggested moving a plug near a socket.

(e) Many suggested that the remaining energy from a power station is reused; others lacked detail in their description of how the energy is wasted.

B622/02 Higher Tier

General Comments

The number of candidates taking this paper was significantly reduced in this session. The paper was generally considered fair and accessible, but a large proportion of the candidates seemed to find it quite challenging. Many candidates lost marks on comparative questions. Candidates need to be encouraged to write comparative answers eg 1cii “smallest population” 2ci, “takes more sugar”, 2cii, "more chlorophyll", 7b "stronger". Candidates also found the conversion of units in Q9bi very difficult.

Comments on Individual Questions

1 (a) Generally well answered. Some candidates lost a mark for including features of mammals that were not shown in the diagram or features which were not unique characteristics of mammals.

(b) This was one of the most poorly answered questions on the paper.

(c) (i) Quite well answered.

(ii) The main reason that many candidates failed to score this mark was because of a failure to state the ‘smallest population’. Most candidates commented on the decrease in population, but did not say that the populations were now the smallest.

(iii) Many candidates only ticked one box despite the stem clearly stating ‘ticks’.

(d) There were some excellent answers here, especially from top candidates. Others failed to explain that resistant foxes survive and many omitted the idea of surviving to reproduce. The idea of mutation was only seen from top candidates. Some candidates failed to recognise the difference between immunity and resistance so were penalised.

2 (a) A good discriminator at this level. Most candidates on this paper should be able to write this equation.

(b) Many candidates correctly recalled the word host.

(c) (i) A comparative answer was required here – many candidates lost a mark by not stating **more** sugar and others for not making it clear that the sugar was taken from the tree.

(ii) There were few correct answers here. Many candidates did not use the data and tried to read something into the names ‘dwarf’ or ‘eastern’.

3 (a) Many candidates simply stated that it was a single cell organism, but the more able candidates scored well.

(b) (i) The use of too many ticks meant that a number of candidates often failed to score.

(ii) Only the more able candidates could correctly use the word ‘niche’, but many others scored for ‘compete’.

4 (a) Most candidates answered correctly.

(b) Many candidates scored here, but a minority gave ‘binding medium’ or ‘oil’.

(c) The majority of candidates scored two marks, but some wrote, it used waste nuclear materials or simply that the paint stayed brighter longer.

5 (a) (b) (c) Only the best candidates scored all three marks. Some scored a mark for less dense (b) and some for lithosphere, but many candidates only scored one of the three marks.

(d) Most candidates scored one mark for the idea of predicting eruptions, but many answers were simply related to plate movement.

6 (a) Most candidates answered correctly, although a few gave 13 which fell outside the acceptable range.

(b) Many of the able candidates scored one or other of the marking points, more often the collision ‘frequency’ as opposed to the ‘effective collisions’. Very few scored both. The concept of ‘frequency’ was not understood by many, with these candidates simply stating that there were ‘more collisions’.

(c) This was an accessible mark for most, but some failed to write down a number and others doubled rather than halved the time.

7 (a) Those candidates who chose copper scored three marks, whereas those choosing aluminium frequently lost a mark for giving incorrect reasons, often including the melting point.

(b) (i) Many candidates failed to score a mark for ‘strong’ instead of ‘stronger’ and others for referring to protection aspects rather than damage.

(ii) Far more candidates scored two marks for the protective coating and rusting. Some correctly linked less dense with fuel economy, but those who wrote it meant the cars go faster failed to score.

8 (a) Most candidates scored, although some suggested wind or heat.

(b) Many able candidates scored two marks. Most others lost marks by simply stating they were non-polluting.

(c) Most candidates scored two marks due to the inclusion of lenses in the mark scheme.

9 (a) (i) A surprising number of candidates could not name a nuclear fuel.

(ii) Most responses were correct.

(b) (i) Only a very few candidates scored two marks. Many could not perform the correct conversion of the units and so scored one mark for 6384.

(b) (ii) Only the most able candidates referred to fermentation or identified methane as a gas that could be produced.

10 (a) Many candidates identified gravity as the reason, but failed to state it was Jupiter's larger gravity, so did not score.

(b) (i) Few candidates scored more than one mark. This was often for the idea of difficulty in fixing faults.

(ii) Many candidates scored two marks. Those who did not score made suggestions that were not related to the planet, but space in general.

(c) Able candidates scored a mark for the idea of stars/galaxies moving away. Many attempted to bring red shift into their answers, but did not state or infer it was light from these stars/galaxies that was exhibiting the red shift.

11 (a) Most candidates answered correctly.

(b) Some candidates scored two marks, but many failed to understand the significance of the laboratory and tried to explain how electricity is generated in a power station and others explained how a circuit could be set up without putting emphasis on the coil and magnet.

B625 (Incorporating separate Biology B635, Chemistry B645 and Physics B655)

The reports sent for moderation in this, the final year of this specification, were of a similar standard to recent years. Most centres applied the criteria appropriately and as a result the majority of centres had their marks confirmed. There are one or two places where centres consistently applied the criteria generously. Some centres still seem to have ignored the advice given in previous reports about the application of criteria.

There were significantly more arithmetical errors this year and often these were reducing the marks of the candidates. At least one centre, for example, failed to add the Can Do tasks marks to the total.

Centres should be assured that it is the role of moderators to support the marks given by the centre whenever possible. Annotation of the sample, to show clearly where marks are awarded, helps considerably in doing this.

Administration

Centres coped well with the system of selection of candidates, but sometimes the delay in sending in marks to OCR slowed the process. The Jubilee holiday also slowed down the process. As a result, some samples were late getting to moderators. Centres are reminded that completed CCS160 forms are necessary and not sending them also delays the process. Not putting centre and candidate numbers on the work, wastes more time in moderation and increases the risk of candidates being given wrong marks.

Supervision of candidates

Centres are reminded that candidates can only bring in copies of their sources to the supervised session. They must not prepare the reports beforehand and then copy them out. This is tantamount to drafting and redrafting which breaks the rules. Many candidates word process their reports. They should not have access to the Internet when they are writing their reports and should not have their sources electronically. Some candidates paste in large amounts from websites or paste in graphs from websites. Pasting in text alone from websites is of little value and pasted in graphs have no value.

Can do tasks

These were introduced to ensure that candidates entering for Science would have some practical experiences and credit could be given for this. It is disappointing that many candidates, who can score the maximum of 24 marks on Can Do tasks, can do little or nothing on Science in the News. A 3 mark Can Do task was intended to be challenging if done properly.

Science in the News

Every year new tasks have been added, but still centres choose tasks which have been available from Year 1. Some centres say it is because they have marking schemes for these tasks and so they prefer to use them. There should not be marking schemes and the reports should be marked against the criteria. With the new Controlled Assessments, the tasks will change every year and old tasks cannot be used. Marking these against the criteria is essential.

Quality A

This is about researching and continues to be important with Controlled Assessments. It is not about the number of sources, but the way they are used in the report that is important. For 4 marks there must be at least two fully referenced sources which are used in the report. Too many centres, having awarded 4 marks correctly, go on to award 6 marks when there is no real attempt at a balanced report. The aim of a Science in the News task is to get the candidates to look at both sides of a question equally and then by the end of the report come up with a reasoned answer. It is not unusual for the candidate to give the answer in the first sentence or for most of the evidence to point one way. This is not balanced.

Quality B

There is still the problem of candidates not identifying trends and teachers not being able to distinguish a trend from a fact. This will continue to be a problem in Controlled Assessments. Without a trend, irrespective of any attempt at processing, the mark is zero. For 4 marks there must be two trends stated and some basic processing which might involve changing data from one form to another eg table to graph, fraction to percentage etc. Still centres award over 4 marks when there has not been further processing to reveal additional information. Just plotting another graph does not match what is required as it is not finding out further information. Plotting an apparent anomaly on the graph drawn for basic processing again is not creditworthy as further processing to reveal additional information has not been carried out. Candidates should decide for themselves what further processing they should do. They should not be told what to do for further processing.

Quality C

As acknowledged in the recent publication on nomenclature by The Association for Science Education (ASE), the use of the terms reliability and validity within Science in the News does not match the way they are used in scientific investigations. Here it is a more everyday use of the terms. For 2 marks the candidate needs to comment upon the quality of information. However, for 4 marks there must be a comparison of likely reliability of sources which identifies, with some explanation, the most and least reliable. Sometimes candidates refer to usefulness of sources or order of preference of sources. These are not the same as reliability. To go higher there should be a consideration of the reliability and validity of data. With Controlled Assessments candidates do not have to consider the reliability of sources they use for Research.

Quality D

Here candidates consider the social, economic and environmental aspects of the topic. They do not have to consider all three, but there must be some depth in their responses to support high marks. They must also include correct and appropriate Science.

Quality E

This is where the candidate uses all their resources to come to an answer to the question. Without reference to sources, the maximum mark for an answer with a reason is 2. For 3 or 4 marks the candidate must show where the sources have been used. Only if the candidate considers the relative significance of the sources in coming to an answer, can a mark above 4 be considered.

Quality F

It was usually possible to support the marks awarded for this Quality. The only problem comes when the candidate has word processed the report and pasted in sections from sources. Marks can only be given for what the candidate has written themselves. If short sections are pasted in they should be highlighted.

The Skills Assessment associated with Gateway Science was intended to give candidates an opportunity to study a scientific question and with research come to an individual answer to the question. It is pleasing to read the balanced arguments of the better candidates.

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