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FOREWORD

This booklet contains reports written by Examiners on the work of candidates in certain papers. **Its contents are primarily for the information of the subject teachers concerned**.

UNIVERSITY *of* CAMBRIDGE
International Examinations

SCIENCE

GCE Ordinary Level

Papers 5124/01, 5125/01 and 5126/01
Multiple Choice

Paper 5124/01 (Physics/Chemistry)

Question Number	*Key*	*Question Number*	*Key*
1	**B**	21	**A**
2	**A**	22	**C**
3	**B**	23	**C**
4	**D**	24	**C**
5	**C**	25	**D**
6	**A**	26	**D**
7	**B**	27	**B**
8	**C**	28	**B**
9	**A**	29	**B**
10	**D**	30	**D**
11	**B**	31	**B**
12	**B**	32	**D**
13	**C**	33	**D**
14	**D**	34	**B**
15	**A**	35	**B**
16	**D**	36	**A**
17	**C**	37	**D**
18	**D**	38	**C**
19	**B**	39	**B**
20	**D**	40	**D**

Paper 5125/01 (Physics/Biology)

Question Number	*Key*	*Question Number*	*Key*
1	**B**	21	**D**
2	**A**	22	**A**
3	**B**	23	**C**
4	**D**	24	**C**
5	**C**	25	**B**
6	**A**	26	**A**
7	**B**	27	**B**
8	**C**	28	**A**
9	**A**	29	**B**
10	**D**	30	**C**
11	**B**	31	**B**
12	**B**	32	**B**
13	**C**	33	**A**
14	**D**	34	**A**
15	**A**	35	**B**
16	**D**	36	**C**
17	**C**	37	**A**
18	**D**	38	**A**
19	**B**	39	**B**
20	**D**	40	**A**

Paper 5126/01 (Chemistry/Biology)

Question Number	*Key*	*Question Number*	*Key*
1	**A**	21	**D**
2	**C**	22	**A**
3	**C**	23	**C**
4	**C**	24	**C**
5	**D**	25	**B**
6	**D**	26	**A**
7	**B**	27	**B**
8	**B**	28	**A**
9	**B**	29	**B**
10	**D**	30	**C**
11	**B**	31	**B**
12	**D**	32	**B**
13	**D**	33	**A**
14	**B**	34	**A**
15	**B**	35	**B**
16	**A**	36	**C**
17	**D**	37	**A**
18	**C**	38	**A**
19	**B**	39	**B**
20	**D**	40	**A**

Comments on specific questions

Physics, Papers 5124/01 and 5125/01 – Questions 1 to 20

Question 1

Options **A** and **C**, with **A** the more popular, attracted almost a third of the candidates.

Question 2

Again, this question underlined the need for candidates to read every part of the question carefully. For many candidates this question only concerned objects falling freely under gravity and both incorrect options **B** and **D** attracted a significant number of the more able.

Question 3

Ignoring the effect of friction, the majority of less able candidates chose option **C**. The question provided excellent discrimination between candidates.

Question 4

Good discrimination between candidates with the less able choosing, with no particular preference, between the three incorrect options.

Question 5

Excellent discrimination between all candidates with a clear division of response with the more able correctly choosing option **C** and the less able, option **B**.

Question 6

This also showed the same clear division of response between candidates with the more able correctly choosing option **A** and the less able, confusing reflection for emission, option **B**.

Question 7

The non-zero start to the scale posed problems for some candidates with the majority of the less able choosing option **D**. It was, however, completely overlooked by some better candidates in their choice of option **C**.

Question 8

This discriminated well between candidates with the less able guessing their answer from the incorrect options.

Question 9

Excellent discrimination with most of the less able candidates choosing response **B**, the λ / v option.

Question 10

The reference line in defining angles of incidence and reflection was not well known with all three incorrect options **A**, **B** and **C** attracting a significant response from almost 75% of candidates!

Question 11

This discriminated well between candidates with option **C** tempting the less able. A small number of more able candidates chose option **A**!

Question 12

Well known by almost 75% of candidates with option **D** the most popular alternative.

Question 13

Some more able candidates did not consider the circuit or the options carefully enough and chose either option **A** or **B**.

Question 14

The majority of less able candidates incorrectly chose option **C**. The placement of voltmeter V_2 across the resistor rather than across the parallel arrangement may have led them to think the resistor was simply in series with that of V_1.

Question 15

This discriminated well between candidates.

Question 16

In choosing option **C**, some more able candidates overlooked the questions emphasis on the most effective means.

Question 17

This also showed a number of able candidates choosing incorrectly (option **B**), missing the question's emphasis on what must be connected.

Question 18

Some candidates were tempted to use a simple voltage/turns relationship. This misconception was not confined to the less able candidates and resulted in more choosing option **A** than did the correct option, **D**.

Question 19

Excellent discrimination between candidates with the less able more or less evenly divided between options **B** and **C**.

Question 20

This showed good discrimination with the less able candidates guessing an answer from among the incorrect options **A**, **B** and **C**, none of which was particularly favoured.

Chemistry, Papers 5124/01 – Questions 21 to 40 and 5126/01 – Questions 1 to 20

Question 21

This proved to be a difficult question for many of the candidates. Less than a third of the candidates chose the correct option, **A**. Candidates who chose option **C** did not recognise that the question required a sample of dry gas and those candidates who chose option **D** recognised that the gas should be collected by upward delivery but did not understand that an alkaline gas would react with the sulphuric acid.

Question 22

This question proved to be an easy question for the majority of the candidates.

Question 23

Another easy question particularly for the better candidates.

Question 24

A number of the weaker candidates did not recognise that element **X** is a metal and element **Y** is a non-metal and therefore form an ionic bond. These candidates were able to identify the formula, $\mathbf{X_2Y}$, but not the type of bonding in the compound.

Question 25

There was evidence of guesswork particular amongst the weaker candidates. The better candidates recognised that the compound is covalent and chose the correct covalent property.

Question 26

This question proved difficult for the majority of the candidates. A large number of candidates, including the better candidates, chose option **C**, not recognising that the stoichiometry of the equation showed that one mole of the hydrocarbon produces three moles of carbon dioxide.

Question 27

A large number of candidates thought that the temperature of the solution remains constant when the reaction is complete and chose option **A**. Only the best candidates knew that the solution cools down to room temperature.

Question 28

This question proved difficult particularly for the weaker candidates as there was evidence of guesswork. The better candidates knew that lowering the temperature produces the slower reaction shown on the graph.

Question 29

An easy question for the better candidates. A surprisingly number of candidates thought that the potassium sulphate was insoluble in water.

Question 30

A large number of the candidates ignored the results from the experiments and chose option **C**, which listed the halogens in the order of reactivity. The better candidates used the results and chose option **D**.

Question 31

An easy question for many of the candidates.

Question 32

The production of iron from haematite is well known by the better candidates.

Question 33

Another easy question for the majority of candidates.

Question 34

A surprisingly large number of candidates thought that oxygen was not removed from the gas by hot copper and chose option **C**.

Question 35

The better candidates knew that all the members of a homologous series have the same general formula but over a quarter of the candidates thought that the members of a homologous series have the same physical properties.

Question 36

The better candidates knew that the complete combustion of propane does not produce soot. There was evidence of guesswork amongst the weaker candidates.

Question 37

An easy question for the majority of the candidates.

Question 38

Another easy question for the better candidates.

Question 39

This question was well answered by the better candidates but a significant number of the candidates chose option **C**, which was the structure of the ester rather than the compound that reacts with ethanol to produce the ester.

Question 40

There was evidence of guesswork amongst the weaker candidates but the majority of the better candidates correctly identified *Terylene* as a polyester.

Biology, Papers 5125/01 and 5126/01 – Questions 21 to 40

Question 21

Candidates coped well with this question on cell structure, despite the unfamiliar context.

Question 22

This question discriminated well.

Question 23

Weaker candidates often chose **B**, the exact reverse of the correct answer.

Question 24

Over one-third of candidates thought that amylase works best in acidic conditions.

Question 25

This was a simple question.

Questions 26 and 27

These data interpretation questions proved to be quite challenging for candidates.

Question 28

Many candidates believed that water is mainly absorbed in the ileum.

Questions 29 and 30

Candidates appeared to be guessing at the answers here.

Question 31

Although easy, this question also worked well.

Questions 32 and 33

Weaker candidates were again apparently guessing.

Question 34

This was a fairly easy question, but discriminated well.

Questions 35 and 36

These questions discriminated well between candidates.

Question 37

Many candidates tried to attribute acidity in a lake to the use of insecticides.

Questions 38 and 39

These questions were straightforward.

Question 40

The unfamiliar format of this question caused a problem for some candidates, although the answer should have been clear enough.

Papers 5124/02 and 5125/02

Physics

General comments

There was the usual range of ability. Whilst it was pleasing to see that there were good answers to all questions, relatively few candidates showed evidence of having learnt all the work well. In particular, there was evidence that a significant number of candidates experienced some difficulty with questions that required use of knowledge in new situations rather than just recall.

As ever, calculations were well done by many, but candidates should be reminded that the unit must be correct if full credit is to be gained for numerical answers.

Comments on specific questions

Question 1

(a) Candidates found this difficult. There was confusion between constant acceleration and constant velocity. Even when the correct part of the graph was identified, some candidates read the scale incorrectly.

(b) Whilst 70 (s) was the most common answer, a significant minority failed to identify the time when the parachute opened. The most common wrong answer was 48 seconds.

(c) Examiners were looking for evidence that the candidate realised that the forces on the parachutist were balanced. Many were able to identify the forces as gravity/weight and drag/air resistance, although some wrongly called the latter "upthrust". Whilst many went on to say that the forces were balanced, there were some imprecise statements such as "the gravity is equal to the speed", which did not gain credit. A small number thought, wrongly, that they had answered the question by stating simply that the parachutist had reached terminal velocity.

Question 2

This was well done with many candidates scoring full marks. There was good detail about how mass and volume were measured and how these results should be used to calculate the density. A small number thought that the volume was the density and made no mention of the need to measure the mass. A small minority suggested little more than seeing if the ring sank in water.

Question 3

(a) Most candidates correctly identified the missing forms of radiation. Misspelling of "violet" was fairly common but was not penalised if reasonably close. The most common wrong answers for "radio waves" were "radioactive" or "radar". These were not given credit.

(b) This was well done but a significant minority confused frequency with period. "The time for one complete wave" was the most common incorrect answer.

(c) Whilst this was well done by the majority, there were some very surprising answers. "300", "330" and even "0" were quite common. A small minority gave 3×10^{-8} or 8×10^{3} as their answer.

(d) This was well done by the majority. The most common correct answers were "transverse" or "they can travel through a vacuum" but any sensible correct property was accepted. The most common error was to state that the waves were longitudinal but Examiners reported other errors such as "they have the same wavelength" or, in a few cases, "they cannot travel through a vacuum".

Question 4

This was very well done. Candidates seem to have a good grasp of moments. Candidates should be reminded that it is in their interests to explain their working carefully. A small minority used F = ma to obtain their final answer. A few candidates failed to gain full marks because they simply calculated the moment about the pivot, and gave "80" as their answer, or made needless arithmetical errors when, quite unnecessarily, they converted 4 cm to metres. The correct answer was 20 newtons.

Question 5

(a) This question was poorly done. The question asked for an energy *transfer*, which requires two energies to be given. Many candidates gave only one form of energy. Credit was given for stating that electrical energy was transferred to kinetic, potential, thermal or sound energy. Credit was also given to those who answered kinetic energy to potential energy. A very common incorrect answer was potential energy to kinetic energy.

(b) The formula mgh was almost always known. Many candidates failed to realise that they had been given the values of m, g and h in the correct units. So they changed 0.1 kg to 100 g or 0.5 m to 50 cm before doing the calculation. A minority of those who worked out the correct value failed to give the correct unit. The correct answer was 0.5 joules.

Only a minority realised that the output power of the pump was the gain in potential energy per second and so did not realise that the numerical answer to **(ii)** was the same as for **(i)**. This led to candidates manipulating numbers randomly. Of those who did realise this, a number failed to give the correct unit. The correct answer was 0.5 watts.

(c) Few candidates scored both marks for this question. Most knew that thermal energy or sound was formed and so gained some credit, but very few stated that this energy was lost to the surroundings. There were many vague statements such as "it is converted to other forms of energy". These were not given credit. A significant number of candidates thought that the waste energy was stored or recycled and many stated that it was used to help pump the water.

Question 6

(a) This was well done in most cases. Most candidates were able to draw two correct rays and showed that they could locate the position of the virtual image. A minority of candidates drew lines at random. A common wrong response was a ray from the top of the object to the focus at the other side of the lens without refraction at the lens. A significant number of candidates drew the position of the image to the right of the lens and attempted to make their rays cross at this point.

(b) This question was less well done. Many candidates correctly answered that the diagram showed the arrangement for a magnifying glass. Common incorrect responses were "camera", "OHP" or "slide projector". Those candidates who suggested that the device was a mirror cannot have been thinking carefully.

Question 7

(a) This question was reasonably well done. A few candidates made arithmetical errors and gave an answer that was incorrect by a factor of 10. Others had difficulty in changing P = VI to make I the subject of the equation. Thus, 240/20, leading to 12 amps, was quite common. A small number used the 100 watt lamp. Whilst these could not gain full credit, they did score some of the available marks for showing that they knew how to work out the current. Examiners gave credit for 0.08, 0.083, 0.0833 or 1/12 amps.

(b) This question was disappointingly done. Many failed to calculate the number of kWhs correctly, either by failing to convert 20 W into kW or by multiplying by 3600. Others seemed to be working in dollars but failed to convert back into cents or failed to state that their answer was in dollars. When the Examiners were able to discern what was being done, credit was awarded for correct science. In many cases, this was difficult since the candidates did not explain what they were doing. The correct answer was 80 cents.

(c)(i) This was very well done. Only a small minority failed to calculate the correct answer of 5.

(ii) This was very poorly answered. If all lamps are to have their normal brightness, they must each be connected directly to the power supply and the power supply must be 240 volts. Parallel circuits were rarely seen; series circuits were far more common. Even when candidates drew convincing parallel arrangements, they often lost credit by drawing unnecessary extra components, such as resistors or voltmeters, in series. A significant minority lost credit by drawing lines that shorted out the supply. Only a small minority gained a mark for labelling the supply 240 volts. This mark was awarded even if unsuitable symbols, such as that for a battery, were used.

Question 8

Many candidates scored heavily on this question. They were able to apply their knowledge and understanding to a new situation and make sensible deductions about the radioactive source. Some of these lost some credit because they assumed that the source emitted only one type of radiation. A large minority made sensible deductions about the source but were unable to give a convincing explanation using their knowledge and the information in the table. Some candidates failed to engage with the question and simply gave a list of properties of alpha, beta and gamma radiation without referring to the information given in the question.

There was evidence that some candidates did not understand what was meant by “emit”. These seemed to use it to mean “transmit” or “absorb”. Thus statements such as “the paper emits alpha radiation” were quite common.

Question 9

This was very poorly answered. Answers rarely revealed understanding of the underlying science. A small number gained one mark for noting that the alternating current caused a *varying* magnetic field. Few went on to say that this linked with the secondary coil to induce an e.m.f. in that coil. A significant number thought that the alternating current in the primary was conducted through the core to the secondary because the iron was a good conductor. Most candidates, however, simply talked about step-up and step-down transformers or gave the transformer equation.

Question 10

(a) This was a popular question, since the experiment is well known, but few candidates gained full credit. Most candidates quoted a suitable method of producing a sound and a simultaneous visual signal. The most common method was to use a gun but other valid methods were accepted. Most of these went on to describe a direct method of measuring the time although a large minority described a method involving echoes which was equally valid. There were some confused methods involving two, or even more, walls producing multiple echoes. It was often difficult to understand exactly what was being done in these experiments. Methods involving making sounds to coincide with the echo were less common and generally less clearly described.

The details of how to measure the time interval were generally well described but few felt the need to state that the distance should also be measured and failed to give details of how this should be done. Examiners were looking for no more than “use a tape/metre rule/trundle wheel to measure the distance” but they rarely found it. Distances between the sound producer and the timer were often quite inappropriate. It was not uncommon to find candidates stating that they should be 5 metres apart. Credit was given for a statement that the distance must be large or, if an actual value was quoted, a value of more than 300 metres. Candidates should appreciate that, since the speed of sound is so great, very large errors are introduced if the distance is not also great.

Most candidates gained credit for explaining how the speed of sound could be found from their results but a small number failed to make themselves clear with statements such as “divide the time and the distance”.

(b) This question was reasonably well done with most candidates showing that they understood the basic idea that vibrations are passed from particle to particle in a series of compressions and rarefactions. Many candidates drew clear diagrams to clarify their explanation and so scored good marks.

Question 11

(a) Almost all candidates gave a clear and correct diagram containing the metallic conductor and means of measuring, and varying, the current and the voltage. The most common error was to draw a lamp in the circuit rather than a metallic conductor. It was pleasing to see that few connected voltmeters in series with the conductor. This is usually a common fault. The majority stated clearly which readings should be taken and how to change conditions to get a series of results.

(b) This was well attempted. There were many well-drawn sketch graphs, although some drew both a straight line for an ohmic conductor and a curve for a lamp, leaving the Examiner to decide which was correct. These did not gain credit for the line. Few mentioned the need for temperature to be constant.

Question 12

(a) This question required the candidates to design an experiment that they were not familiar with, although they were familiar with many appropriate techniques. Some candidates were not comfortable with having to use their knowledge rather than describe an experiment that they had learnt but the majority made a very creditable attempt. There was a wide range of interesting methods suggested, all of which gained credit if the method involved taking measurements. A number of candidates described experiments that involved absorption or emission of radiation. These did not answer the question and so did not gain credit. The most common method suggested involved putting hot water into the cups and measuring temperatures at regular intervals or after an appropriate time. Most candidates explained how they would use their results to reach a conclusion. Relatively few mentioned the need to have equal volumes of water in each cup and even fewer stated that lids were needed (to reduce the effects of evaporation and convection). Other common errors were to use inappropriate times or to feel the cups rather than take measurements of temperature. These lost some, but not all, of the available marks.

(b)(i) Most knew the basic reason for the heater being at the bottom; convection was quite well understood. The explanation of why convection happens was more prone to error. Candidates were aware that something rose but too often Examiners saw “hot air rises” or “heat rises”, neither of which gained credit. Mentions of change in density were less common and many of these lost credit by stating that “molecules” or “particles” became less dense.

(ii) This was disappointingly done. Many candidates simply re-phrased the question or made statements such as “dirt traps the heat” or “dirt is a bad conductor” or “dirt does not reflect the heat”. There was little unambiguous understanding that the factor involved was radiation and that dull surfaces are better emitters of radiation.

Papers 5124/03 and 5126/03

Chemistry

Comments on specific questions

Section A

Question 1

The tests for the gases, oxygen, carbon dioxide and hydrogen were well known, the most common error being to use a glowing splint in testing for hydrogen. Using sodium hydroxide to test for an ammonium salt was not well known.

Question 2

(a) Most candidates knew the names of Group I and Group VII as, respectively, alkali metals and halogens; 'alkalis' was not accepted. Part **(iii)** required the application of knowledge of how to write chemical formulae. The most common error was for candidates to write 'K_7Br', but even so, this did indicate that candidates were attempting to apply their chemical knowledge.

(b) Few candidates had difficulty in distinguishing between these metals and non-metals, i.e. aluminium, chlorine, nitrogen and sodium.

(c) Examiners were looking for answers describing the arrangement, i.e. number, of electrons in the outermost shell as a means of distinguishing between metals and non-metals. A single mark was given to those candidates that described metals as 'giving electrons' and non-metals as 'receiving electrons'.

Question 3

The classification, as element, compound and mixture, of these four substances was well completed. A knowledge of the atom(s) composing such substances as graphite and steel was often not shown by candidates: a wide range of atoms were accepted for the contents of steel, though this range had to include iron. Most candidates realised that water is a compound containing hydrogen and oxygen atoms that are bonded together.

Question 4

The structures and properties of these organic compounds were very well understood, though some candidates appeared to believe that the carbon:oxygen bond in ethanoic acid is sufficient to classify the acid as being unsaturated. The least well answered was **(f)**, i.e. the name of the compound converted by the catalytic addition of steam into compound **D**, compound **D** being ethanol and the answer ethene.

Question 5

'Redox' was not accepted as a correct description of the change of germanium(IV) oxide into germanium. Many candidates gained full marks for both calculations and this must be a good measure of their chemical knowledge and skills. Some candidates left their solution to the problem unfinished in that they did not complete the final arithmetical calculation, and for this incompleteness they were penalised.

Question 6

Answering questions on these five different nuclei was demanding and needed good knowledge of atomic structures. Two responses were required to parts **(a)** and **(c)** – both were needed for the single mark to be gained. Candidates found **(c)** the most demanding, i.e. identifying the atoms with only one electron in their outermost shell.

Question 7

(a) The drawing and labelling of an apparatus to prepare, collect and measure the volume of gas formed when it is being produced by reacting a dilute acid with a reactive metal caused many candidates considerable problems. Even so, there were some very good drawings, including those that showed the collection of gas by means of a gas syringe.

(b) Candidates gave good descriptions of how particle collisions determine rates of reaction and how changes in such conditions as increase in temperature, concentration and surface area increased the chances of particles colliding. Some candidates included 'effective collisions' in their answers but, at this level, this was not considered necessary for the full marks to be awarded. Even so it was an indication of the high quality of these candidates.

Section B

Question 8

(a) A description of covalent bonds between identical or different atoms were both equally acceptable. There were many good descriptions of the sharing of electrons by two non-metal atoms.

(b) Candidates gained full marks for descriptions of differences in melting and boiling point, volatility, solubility and electrical conductivity, though in this latter case the description had to include that compounds with ionic bonds only conduct electricity when they are in solution or molten. For full marks, descriptions of the reasons for these differences had to include some mention of both molecules being present in covalently bonded substances and ions present in substances that have ionic bonding.

Question 9

'Galvanizing' and 'alloys' were the most commonly described uses of zinc. In addition, candidates were required to interpret information supplied as a schematic representation of the reactions of a zinc salt. If candidates incorrectly identified the zinc salt as being zinc sulphate, this did not result in them not being able to score marks for parts **(c)** or **(d)**, as in **(c)** they would have been given full marks for writing suitable chemical equations, and in **(d)** full marks for writing 'zinc and dilute sulphuric acid'. However, in this latter instance, i.e. identifying K as zinc sulphate, they would not have gained any marks for writing 'zinc and dilute hydrochloric acid' in part **(d)**. One mark was given for correctly describing state symbols in the chemical equation. Many methods of preparing zinc chloride, the correct response to 'K', were acceptable, including displacement and the reaction of zinc with chlorine.

Question 10

(a) Either water or dilute acid were acceptable for determining the order of chemical reactivity of calcium, copper and sodium. Some description of the level of reactivity was required. With water such descriptions, respectively, as 'moderate', 'none' and 'fierce' gained full marks.

(b) Examiners were looking for an explanation of recycling that included collection/separation of the discarded materials and their re-use. Examples of 'reasons for recycling copper' accepted by Examiners were: 'copper is expensive', 'copper is a limited natural resource', 'copper is being depleted', 'recycling copper reduces pollution', 'recycling copper prevents damage to the environment', 'recycling copper is cheaper than extracting copper from its ores' and 'copper is scarce'.

Papers 5125/04 and 5126/04

Biology

General comments

In general, the performance of candidates on this paper was disappointing. For the majority, knowledge of the syllabus was sparse with most candidates showing little grasp of key concepts. It was clear that many failed to understand the questions, giving answers with little or no relevance. A few candidates showed familiarity with some parts of the syllabus, but only in rare instances did this extend across the whole syllabus. Although performance in ***Section A*** was disappointing, that in ***Section B*** was even worse. Given the freedom to frame answers themselves, most candidates wrote vague and irrelevant attempts that often scored no marks.

Comments on specific questions

Section A

Question 1

The majority of candidates showed little knowledge of cells structure and function.

(a) Only the more able candidates could complete the diagram labels correctly. Common incorrect answers included cell wall, chloroplast, red blood cell, neurone.

(b)(i) More able candidates gave correct answers such as lack of chloroplast, cell wall or vacuole. Many weaker candidates, following the labelling they had given in **(a)**, incorrectly suggested that only animal cells have chloroplasts or a cell wall.

(ii) Very few candidates successfully completed this question. Many seemed to have added letters to the boxes in a random order.

Question 2

Few candidates evidenced an understanding of the process of photosynthesis.

(a) Very few of even the more able candidates could make a reasonable attempt at a symbol equation. Most candidates wrote a word equation, some correctly. Others mixed words and symbols.

(b)(i) More able candidates knew that light provides energy for photosynthesis, but not why energy is needed. Less able candidates generally gave vague answers that repeated the question, such as 'light is needed for photosynthesis'.

(ii) Most candidates knew that light is absorbed by chlorophyll. The answer 'chloroplast' was also accepted. A variety of incorrect answers were given by weaker candidates, including 'by photosynthesis', 'by respiration', 'in process of diffusion' and 'carbon dioxide'.

(c) Only a few of the more able candidates knew that gaseous exchange takes place through the stomata, but even fewer knew that this involves the process of diffusion.

(d) A few candidates gave correct uses of glucose, including storage and respiration. Synthesis was never seen. Most candidates gave incorrect answers such as 'to grow', 'support', 'to produce oxygen'. Some described the process of photosynthesis, many left the answer lines blank or wrote meaningless answers.

Question 3

Most candidates did not understand the question based on the table, choosing contents from the table inappropriately.

(a)(i) Some of the more able candidates gave the correct answer 'fibre', but most quoted an example of food from the table.

(ii) Protein and carbohydrate content were often included in the incorrect answers of more able candidates. Many weaker candidates gave no answer. A few candidates correctly mentioned constipation, but gave no further details.

(iii) Answers rarely related to the answer already given in **(i)**, and many seem to have been chosen randomly from the foods in the table. Some candidates gave examples not in the table.

(iv) Most candidates failed to understand the term 'dietary requirement' and gave examples of foods from the table or from their own knowledge. Only a few of the more able suggested water, minerals or vitamins. A common incorrect answer from more able candidates was 'mineral water'.

(b) Many candidates suggested that this diet might cause a heart attack, but few gave any details of how this would occur. Obesity was a common correct answer, and some candidates went on to describe harmful effects of obesity, including heart disease and diabetes.

Question 4

Only the most able showed a reasonable knowledge of seed function.

(a)(i) Only the more able candidates made sensible suggestions, and many opted for plumule instead of the correct answer radicle. Most candidates gave incorrect answers such as cotyledon, root, root hair. Many left the answer line blank.

(ii) Few candidates gave the correct answer 'root'. Plumule and radicle were common incorrect answers.

(iii) Most of the more able candidates gained one mark for mention of protection, but did not include detail of what factors the testa protected the seed from to gain both marks. Weaker candidates gave a variety of incorrect answers, including 'to produce sperms', 'to make the seed hard and strong' and 'for growing a new generation'.

(b)(i) Most candidates correctly identified dandelion and sycamore. Many weaker candidates gave only one answer, others included bur or blackberry in their answers.

(ii) Only the more able mentioned 'wings' on the sycamore seed or a 'parachute' on the dandelion seed. Most gave vague answers about flying, or suggested that the fruit was light, and gained no credit.

(iii) Some of the more able candidates correctly suggested that dispersal allows plants to grow in new areas. Many candidates gave incorrect answers based on pollination, or made no attempt to answer.

Question 5

Few candidates knew the syllabus definition of the term drug, or could demonstrate much knowledge of the effects of alcohol on the body.

(a) The majority of candidates assumed that the term drug meant illegal drugs such as heroin and cocaine. Others thought it to be a medicine taken when you are ill. Only a very few candidates attempted the correct definition given in the syllabus.

(b)(i) Very few candidates gave the correct answer 'plasma'. The most common incorrect answer was 'red blood cells'. Other incorrect answers included white blood cells, capillary and artery.

(ii) More able candidates correctly suggested the liver. Incorrect responses included a variety of body parts such as alveoli, lungs, stomach and brain.

(c) Few candidates gained more than one mark. Answers were generally too vague to gain credit, with only the more able candidates giving clear, concise answers.

Question 6

This was the least popular question, attempted by only a very few candidates. It was very poorly answered, with most of those who attempted it scoring no marks.

(a) Most candidates showed no knowledge of how this apparatus could be used. Answers were often long and vague, with no worthwhile content. Many thought that the coloured water would result in colour in the plant.

(b) The answers given by most candidates did not relate in any way to the distribution of stomata on the upper and lower surfaces of leaves. Few answers had any relevance to the question or could gain any merit.

Question 7

A popular question, but answered very badly. Most candidates showed little or no knowledge of the mechanism or purpose of gaseous exchange. Few candidates gained any marks.

(a) Very few candidates could describe any adaptations of the alveoli that enable gaseous exchange to occur rapidly. Mention of factors such as a moist surface, thin wall or large surface area was very rarely seen.

(b) Almost all candidates who attempted this question based their answer on the ideas that oxygen is needed for the body to live, and that carbon dioxide is poisonous. Respiration was almost never mentioned. Few answers gained any credit.

Question 8

This question prompted many candidates to write at length, but little of what was written was relevant to the question. Most candidates scored a few marks, but few managed more than half of those available. For most candidates this was, however, their better answer in ***Section B***.

(a) Answers were often long and mostly irrelevant. Many candidates could not distinguish between examples of international importance and those that caused local damage. Most candidates managed to gain some marks.

(b) Many candidates quoted international examples rather than local ones, but most managed to score some marks. Much irrelevant material was included.