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Examiners' Report

Principal Examiner Feedback

Summer 2021

Pearson Edexcel International Award in Lower  
Secondary

In Science (LSC11/01)

Paper 01

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## **General comments**

The paper consists of 80 marks assessed by a mixture of different question styles, including multiple-choice questions, cloze and short open response questions, calculations. All questions should be answered in the allowed time of 1 hour 20 minutes.

The paper aimed to give candidates of all abilities the opportunity to demonstrate their knowledge and understanding. Candidates seemed to be well prepared on the whole, and most could attempt all the questions which was evidence of the overall accessibility of the paper. There seemed to be no evidence of candidates being short of time. The paper produced a very wide spread of marks indicating that the paper successfully discriminated between students of varying abilities. The three groups of five multiple choice sections were designed to become more difficult as the paper progressed and this was reflected in the performance of the candidates. As has been the case in the past it was noticeable that Section B, which contained free response questions designed to test practical and experimental skills, proved more difficult to most students than did most questions in Section A.

A smaller number of entries than usual was received.

## **Section A**

### **Multiple choice questions 1 – 5**

This first bank of multiple-choice questions provided an accessible start to the examination for most students. A high proportion of students were able to score at least 3 marks on this part of the examination. Question 5 proved most difficult.

### **Question 7**

Most candidates scored 1 mark on this question though only a small proportion were able to gain both marks.

### **Question 8**

- (a) Most were able to identify hydrogen as the product.
- (b) Nearly all answered this correctly though a few candidates did not understand the pH scale in relation to this question.
- (c) A significant number of candidates were able to record heat energy being produced, although the word exothermic seemed unknown to many.

### Question 9

Overall, this question was well attempted. Reference was often made to a normal ray rather than the correct label of normal. Where drawn this was generally at  $90^\circ$  or just a degree out of alignment but several students lost the third mark as they had not drawn it in at all. The direction of arrow for the reflected ray was usually correctly positioned and the angle of reflection to the incident was drawn reasonably accurate. Too many free hand lines were drawn.

### Question 10

- (a) The structure of a virus was not well known.
- (b) The idea that a virus needs to inhabit a host cell was poorly recognised. Only a few responses recognised that the virus was dependent on the host for reproduction. Most correct responses referred to one of the characteristic not exhibited by the virus, namely respire, move, grow. Incorrect responses often repeated statements from the table in previous part of question eg has no nucleus. Some mentioned need for host but missed out reproduction idea.

### Question 11

- (a) Lots of correct answers seen though the spelling of ohms was often incorrect. Usually the mark was awarded regardless of spelling but a number of candidates gave this as "omps". In this case the mark could not be given as this is too similar to amps.
- (b) It was pleasing to see a good number of well presented correct answers. Many responses gave an answer of 1 ohm as the candidate had not recognised that the battery consisted 3 x 1.5v cells. There was evidence that some candidates were unable to rearrange the given formula.

### Multiple choice questions 12 - 16

This bank of multiple-choice questions again proved accessible with many students were able to score 3 or more marks on this part of the examination. The mathematics skills needed to answer question 12 proved difficult for many.

### Question 17

This question was usually answered well with many candidates scoring at least 2 marks.

### **Question 18**

This was often answered correctly but some students included more than one tick in each row indicating that they had either not read or understood the question properly.

### **Question 19**

Many candidates recognised oxygen as a component of the air with fewer identifying nitrogen as also being present.

### **Question 20**

- (a) This was answered well with many candidates gaining full marks.
- (b) This question was well attempted. The majority of responses referred to thick/white fur. Only a few made reference to small ears and insulation. Some mentioned the presence of fur but did not qualify this as being thick or white and so could not be given the mark.

### **Question 21**

Many candidates found this difficult and struggled with the need to transfer information from the graph into simple equation substitutions.

### **Question 22**

Again many found this difficult. The idea that the resultant force would be zero was not well understood. There were also a few candidates who drew two or more lines from each force box.

### **Question 23**

Some very good responses seen. Some failed to spot that the command word in this question was explain and instead described the graph. Most candidates recognised that there was an increase in pulse rate due to running. A common response was heart beating faster/ pumping blood faster. Very few achieved the second mark as they did not mention that more oxygen was needed whilst others in an attempt to achieve this mark referred to aerobic respiration for more energy but again did not extend their answer to include more oxygen or glucose.

### **Multiple choice questions 24 – 28**

This bank of multiple-choice questions again proved less accessible than the earlier multiple choice questions but with many students were able to score at least 2 marks on this part of the examination.

#### **Question 29**

The calculation was done well by the majority. Some gave an incorrect unit with N/m frequently seen.

#### **Question 30**

- (a) Usually well answered. Some gave an answer of protein which could not be given a mark as this was given in the stem of the question.
- (b) The majority of students gained the first mark for giving a definition for starvation, but there was considerable misunderstanding for the malnutrition strand. The idea of a balanced diet, naming food types was rarely mentioned. Most responses referred to the lack of a single nutrition rather than a nutrient.

#### **Question 31**

- (a) The term reduction did not appear to be familiar to most students, students did gain credit for stating that the reaction was a displacement reaction.
- (b) There was a good attempt at interpreting the experimental comments but unfortunately marks were lost as the candidates often referred to iron oxide being more reactive than lead oxide or vice versa rather than stating the order of metal reactivity. Many candidates needlessly repeated the content of the question.

#### **Question 32**

Overall, this question was poorly answered by candidates. Stating the actual direction of water molecules (into the cell) was rarely made. Many indicated that the water molecules would enter the cell wall. For the second mark, it was evident that only the more able correctly referred to movement from high concentration to lower concentration. Answers were often vague and poorly expressed making them difficult to mark.

### Question 33

- (a) The first mark was for identifying hydrogen as the missing product, and this was generally answered well though a wide range of improbable answers was also seen. It was much less common to see a correctly balanced equation.
- (b) Very few students recognised 5.0g had to be added to 156g to complete the calculation. Candidates should be advised to read the question carefully. Other mathematical errors were made resulting in a range of incorrect answers (multiplication etc.). Only the best candidates were able to achieve 2 marks.

### Question 34

- (a) (i) This should have been an easy question. Too many did not know or simply could not remember the correct name for a measuring cylinder.  
(ii) It was clear that most students had not learned about hazard symbols. Vague and generic answers such as caution were common. Some stated that it stood for corrosive which is incorrect.  
(iii) Most students would rather protect their hands than their eyes! This is not needed in the case of dilute hydrochloric acid. The use of goggles or safety glasses was expected.
- (b) Candidates were often able to identify the independent and dependant variables but were less sure of the correct control variable.
- (c) (i) Usually well answered.  
  
(ii) This question was answered less well than in previous years. A range of responses was seen. The majority of candidates included the anomalous point and/or used a ruler. Unfortunately, on occasions the award was lost as the line was not drawn smoothly.

### Question 35

- (a) Usually answered correctly
- (b) This question was answered well with most candidates recognising that band A stretched as the number of weights increased. However, it was surprising that a significant number of candidates referred to the position of the pointer rather than the stretch of 2.5cm. Many scored for saying 2.5cm of stretch every time a weight was added.
- (c) Only the most able candidates were able to access two marks with very good responses including band B stretched by 18cm and A by 15cm. Failure to achieve

the third mark was generally due to not recognising up to 4 weights, it was Band A with a greater stretch. For just 1 mark the majority of responses referred to band B stretching more than A. It was also evident from this question that candidates were not fully conversant with interpreting data from the evidence given. Furthermore, the answers were generally poorly worded making them difficult to mark.

### Question 36

- (a) Well answered, with more bubbles being produced being the most common correct. Some incorrectly focused on the electric circuit/bulb rather than the pond weed.
- (b) About half of responses correctly showed a voltmeter in parallel. Others incorrectly placed it in series or within the terminals of the battery.
- (c) (i) Many candidates lost this mark as they did not include the appropriate units (bubbles per minute) instead, only stating the number of bubbles. There was also a significant number of responses which referred to voltmeter readings/numbers. This indicated that candidates had a weak understanding of dependent variables.
- (ii) A wide variety of responses was seen. The most successful picked up on the clues given in the question. Some did not understand what is meant by valid and confused this with reliable.
- (iii) Well answered, the best responses stated repeat readings and average.
- (d) Only the most able candidates responded correctly in asking the question whether varying distance would affect bubble production. Several also suggested investigating changing the pH of the water and CO<sub>2</sub> concentration. There was a considerable number of blank responses indicating possibly a lack of understanding of the principle being investigated. Again, as in previous questions above there was incorrect reference to voltage.

## Summary Section

The following are a few general comments based on the performance of candidates on this paper.

- Candidates should be given as much practical experience as possible, such as in setting up electrical circuits and using a range of measuring apparatus.
- Candidates need to know the correct names of laboratory equipment
- Candidates need to ensure they read the question carefully as many were giving answers that were already given in the question and so did not gain credit. They should be encouraged to identify the command word within a question.
- Candidates should be given practice so that they are confident at rearranging a given mathematical equation.
- Candidates should ensure to answer the question applying their knowledge to the context provided.
- Candidates should be reminded that to increase reliability we repeat and average.
- Answers need to be written so that the meaning is clear, eg “the temperature of the water increases”, rather than “it increases”.
- Candidates should be encouraged to avoid vague generic answers. Instead they need to give more detail and qualify their answers. eg Gravitational force instead of gravity.
- Candidates need to be given opportunities to learn about independent, dependent and control variables and their role in an investigation.
- Candidates need to practice drawing lines and curves of best fit.