

2000 HSC Notes from the Examination Centre Science for Life

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Science For Life

Introduction

In the last year of the subject, the number of candidates sitting the examination was 2900.

Since the course was introduced in 1991, the quality of the candidates' responses has greatly improved. It has improved in all areas of the course, including graphing skills, knowledge of content, and general interpretation of questions.

Some areas of the course continued to challenge candidates, including interpretation of unfamiliar contexts (such as the inclusion of many questions with a strong biology focus). As in previous years, the better responses gave specific details, and poorer responses were very general.

Approximate numbers of candidates who attempted each module:

Question Number	Number of candidates	Question Number	Number of candidates
16	369	23	318
17	392	24	604
18	847	25	58
19	420	26	542
20	1191	27	387
21	827	28	254
22	1787		

Part A

Multiple-choice

Question Number	Correct alternative	Question Number	Correct alternative
1	C	6	A
2	D	7	B
3	B	8	C
4	D	9	C
5	A	10	B

Part B

Question 11

- (a) Most candidates correctly plotted points that fell on grid lines and drew a line graph using these points. The most frequently incorrectly plotted point was point E, which was not on grid lines and was not in line with the other points. Some candidates seemed confused by the fact that the Mass was on the horizontal axis and the Volume on the vertical axis and many candidates plotted volume on the vertical axis and put the letter of the rock on the horizontal axis.
- (b) This part was well answered. Most candidates identified correctly the rock which was different from the others giving the different density of rock E as the reason, or stating that rock E did not fit the pattern of the other rocks.
- (c) This part was correctly answered by most candidates.

Question 12

- (a) Most candidates correctly identified the ball of aluminium foil as the object that sank the shortest distance.
- (b) This part was poorly answered by the majority of candidates. Many candidates did not qualify their responses. For example, candidates stated the need for repetition of each step was to “get an average” but they didn’t say an average of what.
- (c) This part was poorly answered by the majority of candidates. Candidates generally did not both state an error and give an explanation as requested. Some candidates did not link their explanation to the situation given in the question.

Question 13

- (a) The majority of candidates correctly identified the relationship between the rabbit and the kangaroo numbers.
- (b) Most candidates were able to choose an area where the rabbit numbers decreased. Generally, however, they had difficulty in explaining their choice.
- (c) This part was generally well answered by the majority of candidates.

Question 14

- (a) The majority of candidates explained correctly the nature of motion displayed by the dots in the answer booklet.
- (b) About half the candidature correctly predicted the pattern, either drawing a pattern as a prediction, or making their prediction in words. Many candidates did not show or explain that the dots would get further apart with each successive dot.

Question 15

Candidates in general, did not know the specific knowledge of the requirements of rabbits, which was needed to answer the question well. Few candidates were able to answer all question parts, but most were able to identify two release sites in part (b).

Modules

Question 16 – Fashion and Science

Part (a)(i) was answered very well, but in part (ii), many candidates did not link responses to part (i) as required, or say how science and technology made the changes. Many candidates simply gave more changes as required in part (i).

Part (iii) was answered well by most candidates but in part (iv), few candidates were able to explain how other factors may affect the popularity of the item.

Part (b)(i) was well answered, but part (b)(ii) in comparison was poorly done. Few candidates outlined a suitable scientific investigation. Few of those who chose to design a survey made reference to target groups or sample size. Also, survey questions were poorly designed. Part (b)(iii) was generally answered well, most referring to TV advertisements, billboards and so on.

In part (c)(i), the responses were good. Most candidates mentioned the loss of animal numbers or the threat of extinction. Some poorer responses simply mentioned the killing of individual elephants. Part (c)(ii) was well answered. Most candidates suggested a new material created e.g. plastic. In part (c)(iii) good examples were given but the effect on the environment was not well explained. There is still much confusion amongst the candidature between global warming and the hole in the ozone layer. In part (c)(iv), many candidates appeared to misinterpret the question. Candidates concentrated on radio and TV in general, rather than its effect on cultural heritage. Better responses gave an example of a cultural trait and discussed it.

Question 17 – Horticulture

The candidates generally displayed a clear understanding of the focus ideas. They gave extended responses for most parts requiring a reason or explanation, often giving more information than required.

There was evidence of not reading the question carefully, particularly in part (b), when “food” reasons were given for growing plants, even though the question asked for reasons other than food.

In part (c), candidates who discussed the methods of growing plants involving a greenhouse generally gave better responses than those who responded using hydroponics.

Few candidates explained the effect of a risk factor on the plant other than stating that it would kill the plant. However, there was a clear understanding of a control for this risk factor.

Question 18 – Human Body

In general, the candidates answered the questions satisfactorily, although there were some very poor responses. Few candidates used specific examples in their response. The length of responses has increased over previous years and better candidates expressed themselves clearly and gave examples or explanations as part of their responses.

In part (a), candidates did not display a depth of knowledge of the syllabus.

This applied also to parts (b)(i) and (ii), where candidates were required to give simple statements. Part (iii) of this question was poorly answered.

In part (c), candidates generally responded well, although a number of candidates were very vague on specific characteristics of the stages.

In part (d), many candidates did not distinguish between mental and physical health. Candidates seemed to have difficulty with the wording of the question “could have had”.

Question 19 – Science Fiction

The length of candidates’ responses has increased over previous years. The candidates who explained their responses in detail tended to receive more marks as a number of questions asked the candidates to do this.

Better responses gave distinct reasons or examples, whereas poorer responses repeated the first example.

The experiment in part (b) was poorly done by many candidates. Poorer responses did not explain the methods clearly, use repetition or controls in the experiments.

Question 20

Part (a) was generally well answered. In Part (i), candidates who scored well compared the plastic blocks with the wooden blocks. Many candidates did not give a disadvantage and an advantage of plastic blocks.

Part (b)(i) was poorly answered. Many candidates did not explain how toys have changed as a result of technology. In part (iii), many candidates did not appear to understand the term “psychological message.”

In part (c)(i), better responses distinguished between a mental and a physical development; poorer responses only addressed one aspect. In part (iii), a number of candidates did not clearly distinguish between mental and physical development.

Part (d)(i) was generally well answered with candidates giving detailed descriptions of the activity in (i) and good explanations in part (ii). Part (iii) was well answered by most candidates.

Question 21 – Sports Science

In parts (a)(i) and (ii), candidates named a drug and described the effect of the drug. Occasionally if the drug had a negative effect it was repeated in part (iv).

In part (a)(iii), most candidates gave good reasons for using the drug. A number simply stated, “to enhance performance” without giving any explanation of the term.

In part (a)(iv), few candidates described a hazard. Instead they listed a few hazards.

Parts (b)(i) and (ii) were well answered.

In part (c)(i), nearly all candidates named a sport and stated a body part from the stimulus diagram.

In part (c)(ii), candidates gave very brief explanations of the importance of the body part.

In part (c)(iii), most candidates were able to describe a procedure to develop this body part.

In part (d)(i), most candidates named one skilled movement.

In part (d)(ii), few candidates gave a description of how a knowledge of physics helped the skill.

In part (d)(iii), better responses outlined three steps of a training program (eg learning the skill, practising the skill and evaluating how the skill is performed); poorer responses outlined three steps of a particular skill (eg throw the ball up, bring the racquet back and hit the ball.)

In parts (e)(i) and (ii), candidates named a physical activity but were vague in describing an injury that may result.

In parts (e)(iii) and (iv), candidates had a good knowledge of a range of treatments to treat an injury and how it could be avoided.

Question 22 – Disasters

Parts (a)(i) and (ii) were well answered by most candidates. In part (i), candidates successfully extracted information from the stem and stimulus material. In part (ii), the trends of both graphs were generally interpreted well. Candidates saw the obvious increase and decrease in the graphs. Few candidates answered part (iii) well, giving insufficient detail in their reasons for the trends.

In part (b)(i), candidates easily stated two disasters resulting from atmospheric changes, but for part (b)(ii) many did not give adequate explanations. Many candidates confused global warming with the hole in the ozone layer.

Part (b)(iii) was poorly answered by most candidates. Candidates seemed to be confused by the wording of the question.

In parts (c)(i) and (ii), most candidates were able to name a suitable disaster and a cause. In part (iii), many candidates did not describe the effects on the people involved, beyond stating that many people died. Better responses provided more detailed effects on lives of family or on homes or workplaces. In part (iv), better responses were specific and linked to the disaster discussed in part (i).

Candidates answered parts (d)(i) and (ii) well. In part (d)(iii), better responses gave specific ways in which groups cooperated in support of their response.

Question 23 – Managing Natural Resources

Parts (a)(i) and (ii) were generally well answered. Some candidates confused non-renewable resources with recycling and reusing resources. Most candidates could describe a strategy to save energy.

Part (a)(iii) was poorly answered by the majority of candidates. Many candidates seemed confused as to whether the question related to the survey design or to the factor relating to the strategy for reducing energy. In part (iv), most candidates could write a question relating to (iii).

Part (b)(i) was generally well answered, apart from a number of candidates who did not relate the effect to the ecosystem in the diagram. In part (ii), a number of candidates simply restated the introduction to the question. The candidates that selected other sources of energy generally answered the question well.

In part (c)(i), most candidates named a natural resource. Part (ii) was generally well answered, with most candidates giving valid reasons as to why not all resources are equally accessible. In part (iii) most candidates gave one way the resource could be made more accessible.

In part (d)(i), most candidates copied the table, named a natural resource and its use and an environmental consequence. Many candidates displayed little understanding of the term “abundance of supply”.

Part (d)(ii) was very well answered, with most candidates showing an understanding of the management of resources.

Question 24 – Marine or River Studies

Part (a) was generally answered well by the majority of candidates. Some candidates did experience some difficulty linking the impact of living in a dry continent with lifestyle.

Part (b)(i) was well answered, but in part (ii) most candidates did not give specific details about how household activities could cause water pollution.

In part (c), most candidates did not successfully write an aim and a conclusion. Most candidates simply wrote the results for their conclusion. The variables were answered very well in part (iii), but few candidates could state why these results would be useful to a sugarcane farmer.

Part (d) was poorly answered by most candidates. Many did not relate their slogan to water safety. The better candidates gave specific details of the impact of recreational activities on water quality and related these activities to water quality.

Question 25 – Biotechnology

In part (a)(i), most candidates interpreted the question as asking them to name a biotechnology, not give the use of the technology. In part (ii), many candidates experienced difficulty in describing how the biotechnology was used. Those candidates who did describe the biotechnology did so very well. Part (iii) of the question was well answered.

In parts (b)(i) and (ii), most candidates named an ethical issue and explained why this issue is important. Most candidates also explained how the issue was resolved, although few candidates gave specific examples.

Parts (c)(i) and (iii) were well answered. In part (ii), most candidates could not identify the biological system itself, but instead described the biotechnology.

Parts (d)(i) and (ii) were well answered, although a number of candidates gave very general responses.

In part (e)(i), most candidates did not explain well why biological control is a form of biotechnology. In part (e)(ii), most did not explain the relationship between the two organisms. Part (iii) was well answered.

Question 26

Many candidates made parts (a)(i) and (ii) more difficult than they needed to be, by choosing messages and ideas that were too complex. In part (iii) more detail was required than was provided by most candidates.

Part (b), in general, was well answered by most candidates, although many did not give sufficient detail in part (iii).

In part (c), there were many creative designs given by candidates, but some candidates relied too much on written text in their designs, rather than visual stimuli.

In general, candidates answered part (d) well. Most candidates were able to explain the term “noise”. Part (ii) however, was not as well answered. Few candidates correctly described both the coding and the decoding of their chosen method.

Parts (e)(i) and (ii) were generally well answered. In part (iii), few candidates demonstrated the link between the technological advance named in (ii) and an impact on society. Most candidates only related the effect to themselves or to a small number of people.

Question 27

Candidates experienced difficulty naming or describing the technology of their consumer product although they were very clear about the advantage of the product. Likewise, they generally were able to make a strong link to the environmental consequence of the technology. There was a tendency to leave out the explanation of who should be responsible for product safety. A considerable number of candidates left out the graph in part (b), even though most responses scored well. Explaining the trend shown in the graph was also well done. While candidates showed a good understanding of strategies of advertisers, they often failed to link their response specifically to the use of well-known people. The last question was often misread with candidates giving consequences of not having a law about car recycling; they also missed the problem of applying the law.

Question 28 – Space Science

Part (a) was generally well answered by most candidates. In part (a)(ii), some candidates did not focus on the information sent back.

Part (b) was well answered. Candidates had prepared well for this part of the syllabus.

In part (c)(i), many candidates gave responses that were too brief, and did not clearly identify the problems. Part (ii) was well answered.

In part (d), most candidates were familiar with this problem and answered the parts of the questions well. In part (iii) there were some unrealistic responses suggested for the precautions.

In part (e)(i), many candidates attempted to answer this by referring to both materials and techniques as mentioned in the stimulus, rather than limiting themselves to the materials as required in the question. In part (ii), most candidates prepared suitable examples of space spin-offs.

Part (f) was, in general, poorly answered. Many candidates confused this with part (e), using similar examples.