2000 HSC Notes from the Examination Centre Geology

Geology

Introduction

206 candidates presented for the 2000 Higher School Certificate Geology examination. This was a decrease on the 1999 candidature.

The examination afforded candidates the opportunity to demonstrate a wide range of communication, interpretive and analytical skills as well as geological knowledge. It covered a broad range of course outcomes with a significant amount of the course content represented in the questions. As in previous years, the quality of the responses varied considerably. The most able candidates produced well-developed answers to extended response questions integrating maps, diagrams and tables where appropriate. A few candidates showed little engagement with the subject whilst the majority demonstrated knowledge of the course content but had difficulty in interpreting new data and applying geological reasoning to new situations. This was particularly evident in extended response questions where weaker responses provided little information and a significant number of candidates provided no response at all.

Section I – Core

PART A – Multiple Choice   (15 marks)

The table shows the percentage of the candidature that selected the correct answer.

Question	Correct Answer	% of Candidature
1	A	62.07
2	A	56.65
3	C	87.19
4	D	88.67
5	D	83.25
6	A	69.95
7	C	63.05
8	D	63.55
9	C	60.10
10	A	86.70
11	B	65.52
12	C	72.91
13	B	40.89
14	B	59.61
15	D	70.44

PART B – 3 mark questions (30 marks)

Overall, this section of the paper was well handled by many candidates. It involved a large proportion of interpretive type questions relating to stimulus material such as maps, diagrams and graphs. The majority of candidates demonstrated good graph reading skills and knowledge of rank advance in question 16. In question 17, good responses referred to the stimulus material to assist in answering the question. Those who ignored the diagram often incorrectly provided non-hydrothermal explanations for the formation of the copper. The majority of candidates appeared to correctly read the map in question 19 and to infer the reverse situation required in (a). In question 23, many candidates did not understand the significance of the water table in the diagram and were unable to interpret its significance in producing engineering problems. In question 24, most candidates successfully interpreted the diagram and appropriately added the drill hole. The rather unusual representation of hot spot volcanic activity illustrated in question 22 was well handled by the majority of candidates but candidates who had difficulty interpreting the diagram found it very difficult to correctly answer the question.

Some of the questions that required recall of knowledge were poorly answered by a significant number of candidates. These questions included questions 18, 20 and 21. In particular, the candidates' knowledge of shield areas was poor and some confused them with shield volcanoes. In question 25, nearly all candidates had difficulty with the concept of isostatic adjustment. Even those who appeared to have some understanding of the concept found it difficult to explain in words and few thought to use diagrams to assist with their answers. Lack of detail and attention to accuracy when drawing diagrams was apparent in question 22(b). Whilst the standard of some diagrams was excellent, many candidates produced illustrations that contradicted their written information, eg. candidates explained why the volcanic cone was relatively low and broad yet drew it with a slope of up to 45^0.

PART C – 5 mark questions (30 marks)

Overall, candidates found Part C more difficult than Part B. Again, many of the questions had stimulus material that appeared to assist the majority of candidates. Question 27 was particularly well answered by most candidates. In question 26, reference to the Tongariro volcanic zone, in the stem of the question, confused some candidates who tried to relate the distribution and thickness of the ash shown, to Mt Tongariro rather than to Mt Ruapehu. Also in this question a significant number of candidates did not represent the *internal* structure of the volcano in their diagram. About 20% of candidates had difficulty accessing any part of question 28. However at the other end of the scale there were some excellent responses demonstrating accurate interpretation of a complex series of diagrams, manipulation of data, analysis and written communication.

Questions 29 and 30 examined understanding and knowledge of fold mountain areas. The responses to the more interpretive question (question 29) were better than those more dependent on the recall of knowledge. Many candidates could not name an appropriate rock of each type and even when they did, they had difficulty explaining how it became part of a fold mountain. Question 31 examined the concept of polar

wandering curves. Many candidates appeared confused by the concept, particularly as the poles don't move. They found the diagram difficult to interpret. However most candidates were aware of the data, which would be required to construct a polar wandering curve.

Section II – Electives

The Igneous Rocks elective was again the most popular, followed by Economic Geology and Contemporary Sedimentary Processes. No candidates attempted the Regional Geology elective.

Question 32 – Contemporary Sedimentary Processes   23.5%
Question 33 – Igneous Rocks   41.3%
Question 34 – Economic Geology   25.5%
Question 35 – Regional Geology   0
Question 36 – Palaeontology   9.7%

The quality of the responses in the electives was very wide ranging. As in past years, elective responses often did not reflect the depth of study expected.

Question 32
Only four case study areas were used for this question on Contemporary Sedimentary processes. Three of these were in the Northern Beaches area of Sydney and the other on the South Coast. All four provided good resources for the elective. The quality of maps drawn has improved but many are still lacking adequate labelling or use of a key. Candidates appeared more skilled and confident in answering questions on textures than on composition. Many of the more open questions lacked detail and geological significance with the effect of organisms on the environment being described in very general terms such as *they changed the sediment*. Most candidates indicated an understanding of histograms and frequency distribution curves.

Question 33
Igneous Rocks again appeared to have been attempted by a number of candidates who had not studied the elective. Most candidates handled questions (b) and (c) well, but a significant number misinterpreted the diagrams in (a) and did not recognise the fact that not all the melt had crystallised when the samples were taken.

Question 34
In this question on Economic Geology, questions (a) and (b) were generally well done with the most able candidates demonstrating an excellent knowledge of their deposits and an understanding of the processes involved. They communicated the information appropriately in written form and diagrams. Some candidates generally made a good attempt at the more open ended questions and although they lacked the detail of the better responses, they were able to gain marks. In question (c), many candidates, including those who had done very well in the other parts of the question, did not relate their responses to the stimulus provided.

Question 35
Regional Geology. No candidates attempted this elective.

Question 36
The Palaeontology elective was only attempted by a few candidates. Most of the candidates had difficulty accurately reading the graphs provided. In open-ended questions their answers lacked depth.