Instructions:
The following paper is divided into two sections; section A comprises 6 short answer questions. Total for section A = 60 marks = 60% of the paper. Section B comprises two long answer questions. Answer just ONE question from section B. Total for section B = 40 marks = 40%. Questions 3, 4 and 8 should be answered within this question booklet, and it should be submitted along with your answer booklet.

SECTION A

1. Write short notes on four of the following topics:
   (a.) Stormberg Group (b.) Lebowa Granite (c.) Pretoria Group
   (d.) Moodies Group (e.) Wolkberg Group (f.) Soutpansberg Group

   (16 marks)

2. Compile a list of important palaeo-environmental conditions which encouraged the growth of stromalites in the Late Archaean and Proterozoic.

   (5 marks)

3. Below is a table with a number of important economic commodities, which are mined within South Africa. Complete the table by filling in the most likely geological setting in which each of the commodities are found (choose one from the list below), the most appropriate locality (chosen from the numbered localities on the accompanying map) and an approximate age which is likely (in Ma) for the host rock. Note that not all the settings and localities provided are appropriate answers, and also that answers can be used more than once.

<table>
<thead>
<tr>
<th>Commodity/Element</th>
<th>Geological Setting</th>
<th>Location on map</th>
<th>Approximate age (Ma)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Au</td>
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<td></td>
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<tr>
<td>Coal</td>
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<td></td>
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<td>Cr</td>
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<tr>
<td>Cu, Fluorite, Vermiculite</td>
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<tr>
<td>Fluorite, Sn</td>
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<tr>
<td>Cu, Pb, Zn</td>
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<td>Pt</td>
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<td>Fe</td>
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<td></td>
<td></td>
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<tr>
<td>Diamond</td>
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</tr>
</tbody>
</table>
Possible Geological settings or localities: Lebowa Granite Suite, Phalaborwa Complex, Rooiberg Group, Aggenys area, Ecca Group, Beaufort Group, Rustenberg Layered Suite, Central Rand Group, Mozaan Group, Pretoria Group, Asbesheuwels Subgroup, Drakensberg Group, Chuniespoort Group, Moodies Group, Kimberlite pipe, Dolerite dyke, Limpopo Belt, Vredefort Dome.

(15 marks)
4. Examine the following geological map, and answer the questions in the spaces provided below (dotted lines are contour lines in metres):

![Geological Map]

4a. What is the strike of the bedding?
4b. What is the dip of the bedding?
4c. What is the dip direction of the bedding?

4d. In the box below, draw a sketch section along AB, showing the geology and topography.

![Sketch Section]

(10 marks)

5. Examine the sketch cross-section on the next page. A total of ten geological events can be identified on this section, including deposition of various sedimentary strata, intrusion of various igneous rocks, and deformation events. Use the laws of superposition and cross-cutting relationships to make a list of events from oldest to youngest. N.B. that the legend is not in any stratigraphic order.
6. Answer the following questions:

6a. In geology, what do the letters TTG stand for?

6b. Scientific evidence suggests that the Earth and Solar System are 4.6Ga in age. Rewrite this age in terms of Ma (½ mark), and in terms of years (½ mark).

6c. The Pretoria Group has been interpreted to have been deposited in an ‘epeiric sea’. Briefly define this term.

6d. Which geological term could be used to describe a gap in the sedimentary record with erosion followed by renewed deposition, but involving no deformation?

SECTION B

Answer one of the following questions:

EITHER

7. Write an illustrated essay describing the geological history of southern Africa from the Cambrian to the Cretaceous.

OR

8. Examine the following geological map on the next page, and construct a cross-section along the line A-B on the grid provided. Answer the question in the space beneath the grid.
Question: In the space below, write the sequence of geological events from oldest to youngest which account for the strata and structures shown on the map: