This exam is composed of two sections: A: Short answers (60 marks). B: Essay or cross-section (40 marks)
Spend approximately 55 minutes on section A, 35 minutes on section B

Section A: Short Answers
Answer all the questions.

1: Write short notes on four of the following topics:
(a.) The Limpopo Belt (b.) Rustenburg Layered Suite (c.) Dwyka Group
(d.) Malmani Subgroup (e.) Damara Belt (f.) Ecca Group

(20 marks)

2: Write an illustrated paragraph briefly explaining the events associated with sediment deposition and gold accumulation in the Witwatersrand Supergroup.

(15 marks)

3. Write a list of factors which you feel are important in enhancing the likelihood that the remains of an organism will be found in the fossil record.

(5 marks)

4. Examine the following geological map of South Africa, which has had its legend/stratigraphic column deleted. Use the following list of stratigraphic, lithologic and structural units from the South African rock record to link the numbers on the map to the appropriate unit. Also re-shuffle your list so that each event is in the correct order, from oldest to youngest unit.

(15 marks)

List of stratigraphical, lithological and structural units:
Griqualand West basin (Transvaal Supergroup); Karoo sedimentary rocks; Waterberg Group; Namaqua Metamorphic Province; Limpopo Belt; Bushveld Complex; Ventersdorp Supergroup; Cape Supergroup; Pongola Supergroup; Drakensberg Group; Vredefort Dome.

(15 marks)
5: Examine the sketch cross-section below. 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.
Section B: Long answers:

Read the following instructions carefully! Either write a short text on ONE of the following essay topics, or complete a cross-section based on the accompanying geological map. Note that for the essay questions, the correct use of written English is considered important!

**EITHER**

6. **Essay topic 1**: Write an illustrated essay which discusses the following statement: “The orientation of sutures between accreted terranes during the Archaean growth of the Kaapvaal Craton played an important role in the subsequent development of sedimentary basins and the extent of igneous provinces across the craton”.

   *(40 marks)*

**OR**

7. **Essay topic 2**: Write an illustrated essay outlining the history of sedimentary and tectonic events associated with the deposition of the sedimentary rocks in the Karoo Supergroup. Your essay should indicate how subduction of the Palaeopacific plate affected the Cape Supergroup, and how these tectonics controlled the Karoo basin.

   *(40 marks)*

**OR**

8. Construct a scaled cross-section from point X to point Y on the following geologic map. The section should be plotted on the grid provided below. Your completed section should show topography, the geology beneath the surface, and also indicate the geology removed by erosion. Add a stratigraphic column to the side of the cross-section indicating the relative age of each of the rock types, and indicate on the column the timing of important structural events, relative to the ages of the strata.

   *(40 marks)*

**TOTAL: 100 marks**