Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2019

GEOGRAPHY P2

MARKS: 75

TIME: 1½ hours

NAME: _____

		MARKS	HOD	CLUSTER	PROVINCIAL
Q1					
Q2					
Q3					
Q4					

TOTAL MARKS	MOD.
75	75

IGEOGE2

This question paper consists of 17 pages, including a page for rough work and calculations.

RESOURCE MATERIAL

1. An extract from topographic map 2828 CB CLARENS.
2. Orthophoto map 2828 CB 4 CLARENS.
3. **NOTE:** The resource material must be collected by schools for their own use.

INSTRUCTIONS AND INFORMATION

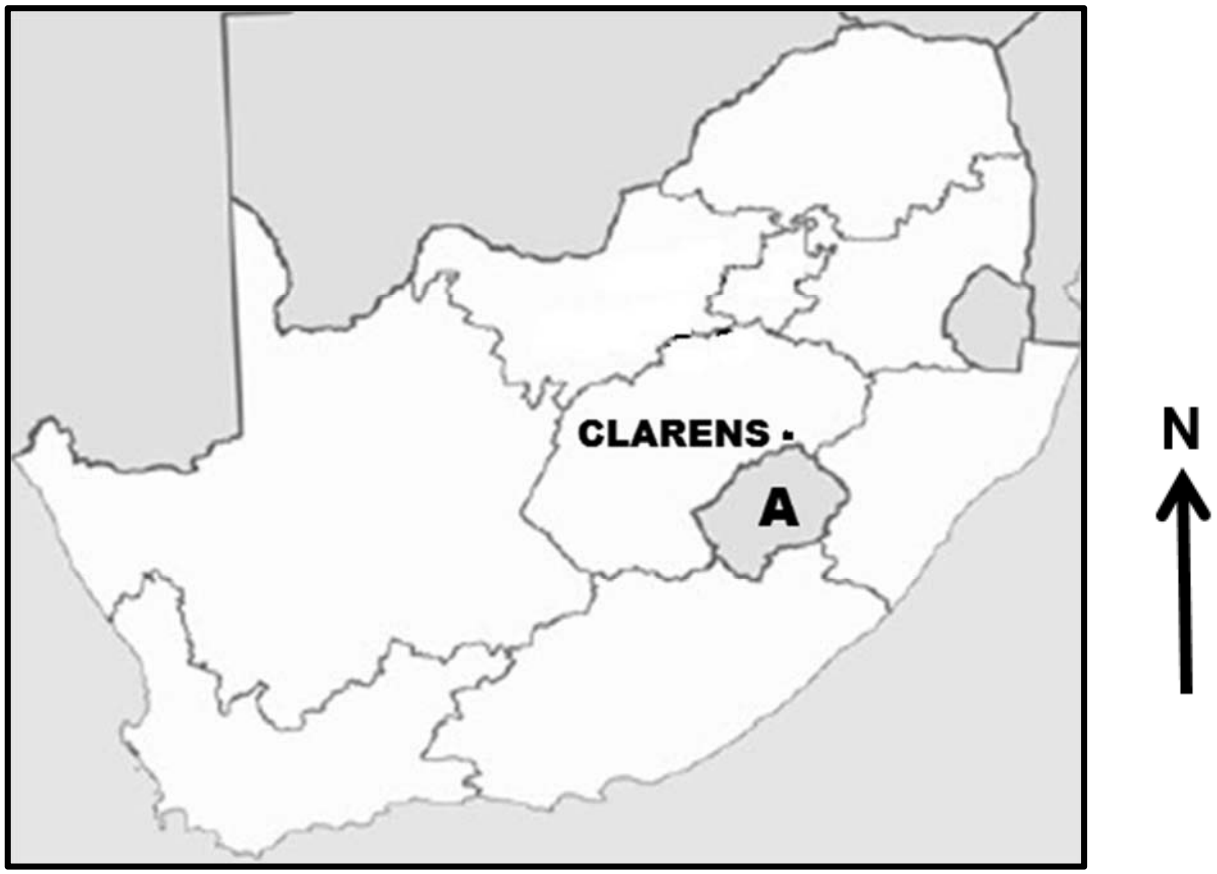
1. Write your NAME in the space provided on the cover page.
2. Answer ALL the questions in the spaces provided in this question paper.
3. You are provided with a 1 : 50 000 topographic map (2828 CB CLARENS) and an orthophoto map (2828 CB CB 4 CLARENS) of a part of the mapped area.
4. You must hand the topographic map and the orthophoto map to the invigilator at the end of this examination session.
5. You may use the blank page at the end of this question paper for all rough work and calculations. Do NOT detach this page from the question paper.
6. Show ALL calculations and use the formulae provided, where applicable. Marks will be allocated for these.
7. Indicate the unit of measurement in the final answer of calculations, e.g. 10 km; 2,1 cm.
8. You may use a non-programmable calculator and a magnifying glass.
9. The area demarcated in RED on the topographic map represents the area covered by the orthophoto map.
10. The following English terms and their Afrikaans translations are shown on the topographic map:

ENGLISH	AFRIKAANS
Aerodrome	Vliegveld
Golf course	Gholfbaan
Diggings	Uitgrawings
Hospital	Hospitaal
Sewerage works	Rioolwerke
Shaft	Skag
Slimes dam	Slykdam

GENERAL INFORMATION ON CLARENS

The town of Clarens is situated in the foothills of the Maluti Mountains in close proximity to the Golden Gate National Park and the mountain kingdom of Lesotho. The town is known as the 'Jewel of the Free State' – rich in beauty, with an aura of peace, tranquility and the local municipality has encouraged community-development projects to help the local people. Clarens is an artist's haven with many well-known artists who either live in or frequent the town on a regular basis. The village is surrounded by scenic views. The mild climate makes for the ideal weekend getaway for city dwellers from Johannesburg, Bloemfontein and Durban. These cities are all approximately 300 km from Clarens – a comfortable 3 to 4 hours' drive away. The temperature averages 13,9 °C and an average rainfall of 764 mm.

[Adapted from <clarens.co.za>]



Coordinates: 28°31'S 28°25'E [Source: Examiner's map]

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographic map 2828 CB CLARENS, as well as the orthophoto map of a part of the mapped area. Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) in the block next to each question.

1.1 Label **A** on the location map (page 3) indicates …

A Free State.
B Gauteng.
C Lesotho.
D KwaZulu-Natal.

1.2 The map reference of the topographic map sheet to the south-west of 2828 CB CLARENS is …

A 2828AD.
B 2828BC.
C 2828CC.
D 2828DA.

1.3 The Townlands Dam labelled **1** on the orthophoto map is to the … of the town of Clarens.

A south-west
B south-east
C south
D west

1.4 The primary economic activity at **B** in block **F6** is a(n) …

A sportsfield.
B dam.
C excavation.
D non-perennial river.

1.5 The human-made feature **2** on the orthophoto map is a …

A dam.
B reservoir.
C building.
D water tower.

1.6 The buildings at **3** on the orthophoto map represent a …

A shopping mall.
B church.
C school.
D clinic.

1.7 The feature labelled **C** in block **D8** on the topographic map is a(n) …

A sand.
B erosion.
C marsh and vlei.
D dry pan.

1.8 The number **2828** on the topographic map refers to …

A latitude and longitude.
B longitude and latitude.
C latitude.
D longitude.

1.9 A human feature found at 28° 31' 24" S and 28° 25' 32" E is a …

A cemetery.
B place of worship/church.
C clinic.
D school.

1.10 The difference in height between trigonometric station 8 in block **A8** and Mount Zion spot height 1892 in block **B7**, is … m.

A 1884
B 557
C 900
D 557,5

1.11 The rows of trees found on Braamhof farm, in block **C2,** are used as …

A demarcation.
B windbreaks.
C plantations.
D firebreak.

1.12 Feature **D** on the topographic map is a(n) …

A embankment.
B mine dump.
C excavation.
D cutting.

1.13 The slope represented by the line running from **4** to **5** on the orthophoto map is a ... slope.

A convex
B terrace
C uniform
D concave

1.14 The feature between **6** and **7** is a …

A pass.
B gorge.
C saddle.
D ridge.

1.15 An orthophoto map is a … aerial photograph which has contour lines and other labelled features drawn on it.

A high oblique
B low oblique
C horizontal
D vertical

(15 x 1) **[15]**

QUESTION 2: MAPWORK CALCULATIONS AND TECHNIQUES

2.1 Refer to the trigonometric station 8, in block **A8**, and spot height 2169, in block **A7**.

2.1.1 Identify the landform between the two heights.

(1 x 1) (1)

2.1.2 Calculate the difference in height between the two points.

(1 x 1) (1)

2.2 Refer to the line that runs from **8** to **9** on the orthophoto map.

2.2.1 Calculate the average gradient of the slope between contour 1780 **(8)** and spot height 2202 **(9)**. Show ALL calculations. Marks will be awarded for calculations.

Formula: **Gradient** = $\frac{\textbf{vertical interval (VI)}}{\textbf{horizontal equivalent (HE)}}$

(5 x 1) (5)

2.2.2 (a) Would you describe the gradient you have calculated in QUESTION 2.2.1 as steep or gentle?

(1 x 1) (1)

(b) Explain your answer to QUESTION 2.2.2 (a).

_____

_____

_____

(1 x 1) (1)

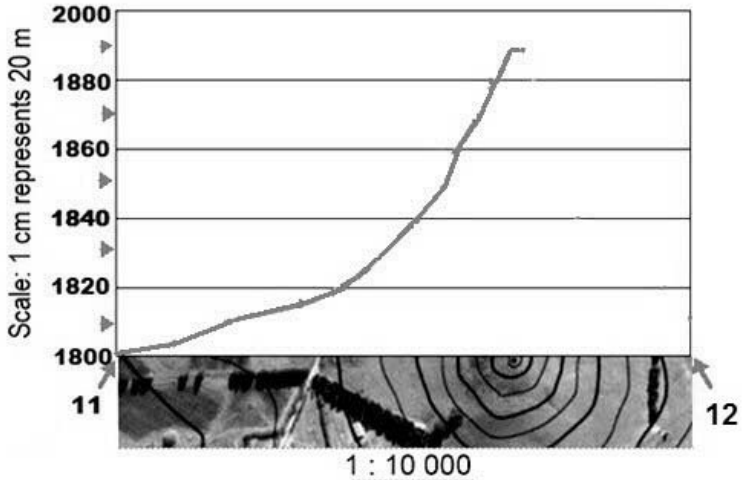
2.3 Refer to the feature labelled Mount Zion between line **11** and **12** on the orthophoto map.

2.3.1 What is the highest point of Mount Zion?

_____

(1 x 1) (1)

2.3.2 Use the contour lines below on the horizontal axis of the cross-section to complete the cross-section between **11** and **12** below. Some heights have been included to assist you.



_____

(2 x 1) (2)

2.3.3 Write the vertical scale of the cross-section as a ratio.

_____

(1 x 1) (1)

2.4 Calculate the magnetic bearing of trigonometrical station 175 (block **C5**) from the spot height 1768 (block **C4**) for the year 2019. Show ALL calculations. Marks will be awarded for calculations.

Formula: Magnetic bearing = True bearing + Magnetic Declination
(TB + MD)

2.4.1 **True Bearing =** _____

(1 x 1) (1)

2.4.2 **Magnetic Declination for 2019**

The difference in years: _____

Mean annual change: _____

_____

Total change: _____

_____

Magnetic declination for 2019: _____

_____

_____

(5 x 1) (5)

2.4.3 **Therefore the magnetic bearing for 2019:**

_____

(1 x 1) (1)
[20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to the table below, the information on Clarens (on page 3) and the topographic map to answer the questions that follow.

Average monthly precipitation (mm) for Clarens

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
122	95	91	59	29	11	12	19	34	83	105	104

3.1.1 Name the season that experiences the lowest precipitation.

_____

(1 x 1) (1)

3.1.2 Calculate the average annual rainfall (mm) for Clarens.

_____

_____

(1 x 1) (1)

3.1.3 Given the above rainfall data and Clarens location, suggest ONE reason why there are many non-perennial streams in the area.

_____

_____

_____

(1 x 2) (2)

3.2 Study both the photograph of the mountain range outside Clarens below and the area covered by blocks **A6/7** on the topographic map before attempting the questions below.

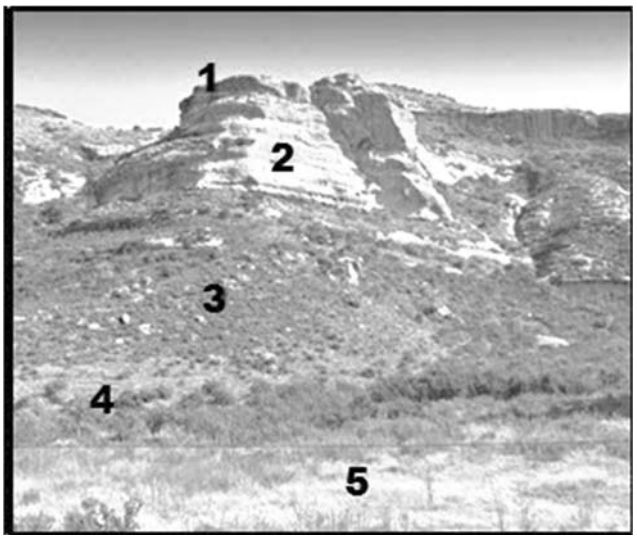
1._____

2._____

3._____

4._____

5._____



3.2.1 Next to the photograph, label the slope elements (**1**–**5**) using the list below:

cliff; pediment; talus; crest; knickpoint

See photograph 1–5.

(5 x 1) (5)

3.2.2 Give ONE topographic map evidence why the slope element **5** is much more suited for the construction of 712 main road.

_____

_____

_____

(1 x 2) (2)

3.3 Refer to the blocks **C7** and **C8** on the topographic map.

3.3.1 In which general direction is the Little Caledon River flowing? Give TWO reasons for your answer.

Answer: _____

Reasons: _____

_____

_____

_____

_____

(1 + 2 x 2) (5)

3.3.2 What type of a river is the Little Caledon River in block **D8**?

_____

(1 x 1) (1)

3.4 Rock falls occur in blocks **H3** and **I2** on the topographic map. Describe TWO factors that have increased rock falls in this area.

_____

_____

_____

_____

_____

(2 x 2) (4)

3.5 Refer to blocks **H7** and **H8** on the topographic map in which an NGO has been contracted to improve rural development.

3.5.1 Identify the main economic activity found in blocks **H7** and **H8**.

_____

(1 x 1) (1)

3.5.2 State and explain ONE way in which the aid agency can improve on the economic activity mentioned in QUESTION 3.5.1.

Statement:

_____

_____

Explanation:

_____

_____

_____

_____

(1 + 2) (3)

[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 Which data storage model, vector or raster, comes closest to the topographic map, as we know it?

_____

(1 x 1) (1)

4.2 Differentiate between *vector* and *raster* data.

Vector: _____

_____

Raster: _____

_____

(2 x 1) (2)

4.3 Answer the following on spatial resolution.

4.3.1 Define the term *spatial resolution*.

_____

_____

(1 x 1) (1)

4.3.2 Does the orthophoto map or the topographic map have a higher spatial resolution?

_____

(1 x 1) (1)

4.4 A number of different GIS maps for Clarens are shown in FIGURE 4.4 **(A–C)** together with a key, FIGURE 4.4 **(D)** on page 15.

4.4.1 With reference to FIGURE 4.4 **(A–C)**, explain the GIS concept of overlaying.

_____

_____

(1 x 1) (1)

4.4.2 With reference to FIGURE 4.4 **(D)**, what is *attribute data*?

_____

_____

(1 x 2) (2)

4.4.3 Identify the type of symbol used in GIS with reference to FIGURE 4.4 **A–C**. Complete the table below by placing a tick in the correct box, indicating the type of symbol used in a GIS for the features listed below:

Symbol	Roads	Schools(S)	Land-use
Point			
Line			
Polygon (Area)			

(3 x 1) (3)

FIGURE 4.4 **A** Clarens: Roads and Rivers

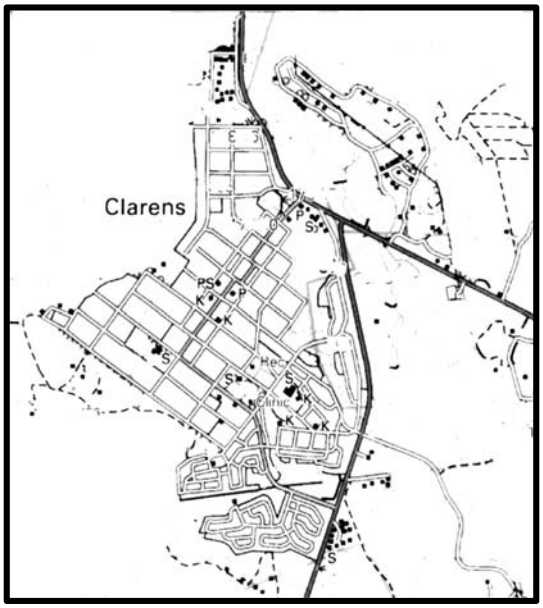


FIGURE 4.4 **B** Clarens: Land-use

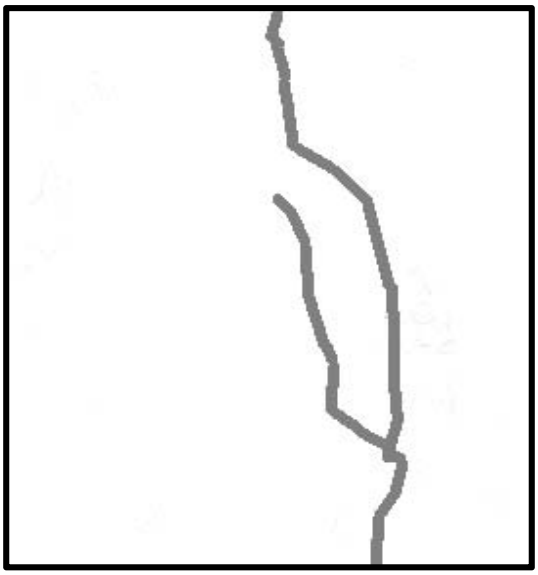


FIGURE 4.4 **C** Clarens: Buffer zones

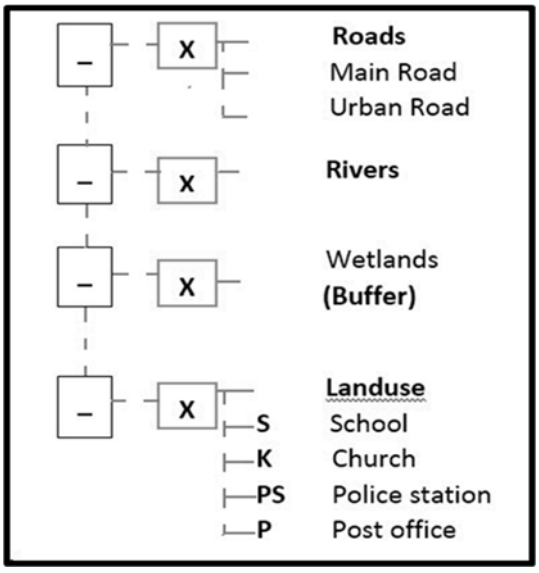


FIGURE 4.4 **D** Clarens: Key

4.5 The Department of Human Settlements (Housing) wants to build low cost housing in Clarens.

4.5.1 Suggest TWO data layers the department would need to consider in order to select the best site (position) for this housing project.

_____

_____

_____

(2 x 1) (2)

4.5.2 Provide any ONE reason for the choice of the layer in your answer to QUESTION 4.5.1.

_____

_____

_____

(1 x 2) (2)
[15]

TOTAL: 75

ROUGH WORK-AND CALCULATIONS
(NOTE: Do not detach this page from the question paper.)