Province of the
EASTERN CAPE
EDUCATION

NATIONAL
SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2012

GEOGRAPHY P2
MARKING GUIDELINE

MARKS: 100

This memorandum consists of 8 pages.

SECTION A

QUESTION 1:   **MULTIPLE-CHOICE QUESTIONS**

The following statements are based on the 1:50 000 topographical map 3419 AB CALEDON and the orthophoto map 3419 AB 24 of the same area. Various options are provided as possible answers to the following statements/questions. Choose the correct answer and write only the letter (A – D) in the block next to the question/statement.

1.1   The province in which Caledon is situated is ...

       A   Kwa Zulu Natal.
       B   Eastern Cape.
       C   North West.
       D   Western Cape.

            D

1.2   The topographical map number 3419 refers to the ...

       A   longitude and latitude.
       B   latitude and longitude.
       C   contour line and isobar.
       D   longitude and contour lines.

            B

1.3   When travelling by rail in an easterly direction from Caledon station (O11) the next station will be …

       A   Botrivier
       B   Greyton.
       C   Riviersonderend.
       D   Klipdale.

            D

1.4   The type of rural settlement pattern found at Môreson (F12) is …

       A   circular.
       B   nucleated.
       C   irregular.
       D   linear.

            B

1.5   Caledon is classified as a ... town.

       A   mining
       B   break-of-bulk
       C   central place
       D   fording/bridging

            C

1.6   What natural feature is found at 34°10'00"S and 19°22'56"E on the topographical map?

       A   River
       B   Spur
       C   Dam
       D   Marsh and vlei

            D

1.7   The street patterns evident in the suburb Vleiview on the orthophoto map are ...

     A   gridiron and irregular.
     B   irregular and circular.
     C   circular and gridiron.
     D   radial and irregular.

> **A**

1.8   The letter E on the orthophoto map indicates a/an …

     A   new housing development.
     B   farm dam.
     C   excavation.
     D   vineyard.

> **B**

1.9   The letter D on the orthophoto map indicates a ...

     A   sewerage treatment plant
     B   reservoir
     C   silo
     D   power station

> **C**

1.10   What tertiary activity is found in block E7?

     A   Sewerage works
     B   Police Station
     C   Prison
     D   Cultivated lands

> **C**

                                                     (10x2)   (20)

TOTAL SECTION A: 20

SECTION B

QUESTION 2:   MAPWORK TECHNIQUES AND CALCULATIONS

2.1   Calculate the area in square kilometres (km²) of the region covered by the orthophoto map on the topographical map. Show ALL calculations.

AREA = L x B ✓

$L = \frac{11,1}{2}$ (or 11,1 ✓ x 0,5)   (Allow for 1 mm less or 1 mm more)

$B = \frac{9,2}{2}$ (or 9,2 ✓ x 0,5)

= 5,5 km   x 4,6 km ✓

= 25,53 km² ✓   (Range = 25,0 – 26,0 km²)   (5)

2.2   Calculate the average gradient from spot height 825 (block D6) along the Donkerhoekberge watershed to spot height 579 (block E5). Show ALL calculations.

GRADIENT = $\frac{VI}{HE}$ ✓

VI = 825 – 579 m = 246 m ✓

HE = 6,7 x 0,5 = 3,35 km (6,7 x 1 000) = 3 350 m ✓

Gradient = $\frac{VI}{HE}$

= $\frac{246}{3350}$ m ✓

= 1 : 13,6   (Range 1: 13,4 – 1: 13,8) ✓   (5)

2.3   Calculate the magnetic declination for the year 2012. Show ALL calculations.

Declination: 2012 – 2001

11 ✓ years x 4' = 44' ✓

  23°46'
+ ✓4 4 '
  23°90'
  24°30' W ✓✓   (5)

2.4   Calculate the vertical exaggeration of a cross section if the vertical scale is 1 cm = 30 m and the horizontal scale is 1:50 000. Show ALL calculations.

VE=$\frac{VI}{HE}$ $\frac{1}{30} \div \frac{1}{500}$ ✓   VE=$\frac{VS}{HS}$ $\frac{1}{3\,000} \div \frac{1}{50\,000}$ ✓

= $\frac{1}{30}$ X $\frac{500}{1}$ ✓✓   = $\frac{1}{3\,000}$ X $\frac{50\,000}{1}$ ✓✓

= 16,67 times ✓   = 16,67 times ✓

VS = 1 cm: 30 m ✓   VS = 1 cm: 30 m (1 cm: 3 000 cm)✓
HS = 1 cm : 50 000 cm   HS = 1 cm : 500 m   (5)

TOTAL SECTION B: 20

SECTION C

QUESTION 3:   MAP INTERPRETATION AND ANALYSIS

3.1   Refer to the Riviersonderend and Theewaterskloof Dam, which is an interbasin water transfer scheme, on the topographical map and answer the following questions:

   3.1.1   What is the general direction of flow of the Riviersonderend river?

   West to East/Eastwards/Easterly/East/East Northeast ✓✓   (1x2)   (2)

   3.1.2   The Riviersonderend river on the topographical map has several characteristics of a river in its lower course. Which of the following characteristics are visible on the map?

   > **Meanders/Levees (dykes)/Braided stream channel/**
   > **Gentle gradient/Fertile flood plain/V-shaped cross profile**

   Meanders ✓✓
   Gentle gradient ✓✓
   Fertile flood plain ✓✓   (3x2)   (6)

   3.1.3   State and explain TWO physical factors that favoured the location of the Theewaterskloof Dam.

   Mountains form a natural wall cutting down construction costs ✓✓
   Many non-perennial rivers flow into the dam ✓✓
   Many first order streams/many tributaries ✓✓
   There is little siltation as the dam is on a mountain ✓✓
   Evaporation rates are lower, because of restricted surface area
   formed by the steep slopes ✓✓
   Melting of snow will contribute to raising dam levels during winter
   months ✓✓
   Narrow gorge resulted in construction of shorter dam walls
   thus saving construction costs.
   Deep gorge ✓✓
   Dam is on a perennial river ✓✓
   High rainfall area ✓✓
                                                                 (Any 2) (2x2)   (4)

   3.1.4   Identify the stream pattern in block K15.

   Dendritic ✓✓   (1x2)   (2)

3.2   Rainfall in the mapped area is seasonal. Give ONE piece of evidence from the map to support this statement.

   Non-perennial rivers ✓
   Numerous farm dams ✓   (1x1)   (1)

3.3 Choose the correct answer:

Caledon is situated at the foot of the
(Swartberge/Riviersonderenberge/Drakensberge).

Swartberge ✓   (1x1)   (1)

3.4 Commercial farming occurs in the vicinity of the Theewaterskloof Dam on the topographical map.

     3.4.1 Apart from cultivated farming, name TWO other primary activities practised in the mapped area.

           Orchards ✓✓
           Fruit farming ✓✓
           Vineyards/Winery ✓✓
           Excavations/diggings ✓✓
           Forestry ✓✓

                                           (Any 2) (2x2)   (4)

     3.4.2 Explain any THREE factors (besides those related to water supply), that favoured this type of farming.

           Fertile soil ✓✓
           Extensive flat land ✓✓
           Machinery ✓✓
           Good network of roads ✓✓
           Good supply of electricity ✓✓

                                           (Any 3) (3x2)   (6)

3.5 The letter F on the topographical map indicates the CBD of Caledon. Name TWO characteristic features visible on the map and orthophoto, which indicate that this is the CBD.

The town hall is situated there ✓✓
According to the street pattern (gridiron) it is the oldest part of the town ✓✓
Tallest buildings are there (refer to orthophoto map) ✓✓
Transport routes focus on the CBD
Central location ✓✓
High building density ✓✓

                                           (Any 2) (2x2)   (4)

3.6 Why will land prices be relatively high in Tuinsig area? Give TWO reasons from the orthophoto map to support this statement.

Big plots and houses ✓✓
Near hot springs ✓✓
Away from the CBD ✓✓
Located on a slope with good view-site ✓✓
Golf estate /course ✓✓
Adjacent to the Caledon Nature Reserve/Wild Flower Garden ✓✓
Low building density ✓✓
The area is close to nature with good scenery/woodlands ✓✓

                                           (Any 2) (2x2)   (4)

3.7 3.7.1 Identify the urban functional zone, on the topographical map, where the sewage works (block E8) is situated.

Rural-urban fringe ✓✓

(1x2) (2)

3.7.2 The sewage works in block E8 has a good location. State TWO advantages of its location.

Away from the CBD and residential area ✓✓
Flat land ✓✓
Downstream from the residential area ✓✓
Cheaper land ✓✓

(2x2) (4)

TOTAL SECTION C: 40

SECTION D

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 Match the statement in COLUMN A with a term chosen from COLUMN B.
Write only the letter of the CORRECT term in the space below.
Example 4.1.1   M.

4.1.1 | M |

COLUMN A		COLUMN B	
4.1.1	Location and shape of a feature	A	Raster method
4.1.2	Geographical Positioning System.	B	Spatial data
4.1.3	The observation of the earth from a distance using satellites to gather information	C	Spatial resolution
4.1.4	A method of storing GIS data as rectangular grid cells/pixels	D	Database
4.1.5	The detail with which a map depicts the location and shape of the feature	E	Remote sensing
4.1.6	A collection of data organized to use in computers	F	GPS

(6x1) (6)

ANSWERS FOR 4.1.1 – 4.1.6:

4.1.1 | **B** | Spatial data ✓   4.1.4 | **A** | Raster ✓

4.1.2 | **F** | GPS ✓   4.1.5 | **C** | Spatial resolution ✓

4.1.3 | **E** | Remote sensing ✓   4.1.6 | **D** | Database ✓

4.2   Name any TWO components of GIS.

People/users ✓
Software/computer programmes ✓
Data/information/maps/photos ✓
Applications ✓
Hardware/computer ✓
Procedure ✓

(Any 2) (2x1)   (2)

4.3   Your friend lives in Caledon and he/she would like to open a business in the
area. How could you make use of GIS in order to ensure the success of his
business?

Find information about other existing businesses (competition) ✓✓
Find the total population in order to analyse the potential market ✓✓
Find financial statistics that show growth ✓✓
Determine income of people in order to establish whether business will be
feasible ✓✓
Determine demand for business ✓✓
Work out routes for deliveries ✓✓
Find ideal location for business ✓✓
Determine crime hotspot areas ✓✓

(Any 2) (ANY REASONABLE ANSWER) (2x2)   (4)

4.4   Give TWO examples of possible spatial data found in or around the Caledon
Casino Spa Casino (block N12) on the topographical map.

Area of Casino ✓✓
Passage/corridors ✓✓
Grounds ✓✓
Walkways ✓✓
Point of entrance ✓✓

(2x2)   (4)

4.5   Does the orthophoto map or the topographical map have a higher spatial
resolution?

Orthophoto map ✓✓   (1x2)   (2)

4.6   What is 'a layer of data'?

A layer of the same type of data, i.e. vegetation, soil type, temperature, etc.
each stored as a separate file in a GIS. ✓✓ [Concept]   (1x2)   (2)

TOTAL SECTION D: 20

GRAND TOTAL: 100