education

Department:
Education
PROVINCE OF KWAZULU-NATAL

75

NATIONAL
SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P2

PREPARATORY EXAMINATION

SEPTEMBER 2019

MARKS: 75

TIME: 1½ hours

This question paper consists of 12 pages and 1 page for rough work.

NAME: _____

DIVISION: _____

RESOURCE MATERIAL

1.   An extract from topographical map 2930 CB PIETERMARITZBURG.

2.   Orthophoto map 2930 CB 8 PIETERMARITZBURG.

3.   **NOTE:** The resource material must be collected by schools for their own use.

INSTRUCTIONS AND INFORMATION

1.   Write your NAME and DIVISION in the spaces 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 topographical map (2930 CB PIETERMARITZBURG) and an orthophoto map (2930 CB 8 PIETERMARITZBURG) of a part of the mapped area.

4.   You must hand the topographical map and the orthophoto map to the invigilator at the end of this test session.

5.   You may use the blank page at the back of this question paper for all rough work and calculations. Do NOT detach this page from the question paper.

6.   Show ALL calculations and formulae, where applicable. Marks will be allocated for these.

7.   Indicate the unit of measurement in the final answer of calculations, e.g. 10km; 2.1cm.

8.   You may use a non-programmable calculator.

9.   You may use a magnifying glass.

10.   The area demarcated in RED on the topographical map represents the area covered by the orthophoto map.

11.   The following English terms and their Afrikaans translations are shown on the topographical map:

ENGLISH	**AFRIKAANS**
Aerodome	Vliegveld
Diggings	Uitgrawings
Canal	Kanaal
Firebreak	Brandgordel
Hiking Trail	Staproete
Golf Course	Gholfbaan
Hospital	Hospitaal
River	Rivier
Sewage Works	Rioolwerke
Waterworks	Waterwerke
Store/Shopping centre/Mall	Winkel(W)

GENERAL INFORMATION ON PIETERMARITZBURG
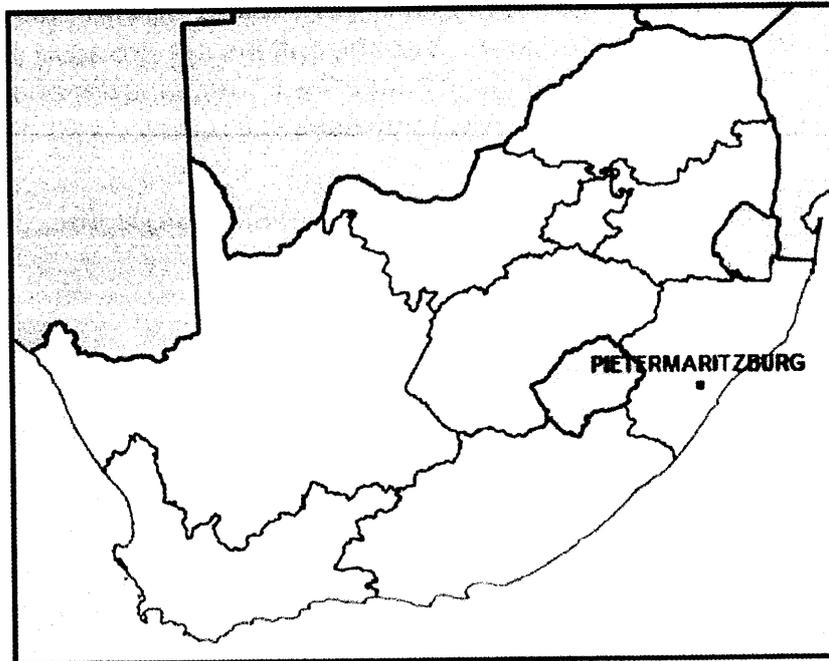
Pietermaritzburg (umGungundlovu) is the capital city of KwaZulu-Natal. This second-largest city in the province was founded in 1838. It is a regionally important industrial hub, well-known for processing aluminium, timber and dairy products. It has an estimated population of around 500 000 (including neighbouring townships). Pietermaritzburg is situated along the N3 national road, the main route between the Pretoria-Witwatersrand-Vereeniging conurbation and the harbour city of Durban, some 90 kilometres from Pietermaritzburg. The Pietermaritzburg airport is situated just outside the city and has a regular scheduled service to OR Tambo International Airport in Johannesburg.

[Source: http://en.wikipedia.org/wiki/pietermaritzburg]

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1:50 000 topographical map 2930CB of PIETERMARITZBURG as well as the 2930CB 8 PIETERMARITZBURG (North) orthophoto map as part of the mapped area. Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A – D) in the block next to each question.

1.1   The National Freeway that passes through Pietermaritzburg is the ...

A   N1.
B   N2.
C   N3.
D   N4.

1.2   The harbour that is situated closest to Pietermaritzburg is ...

A   Richards Bay.
B   East London.
C   Durban.
D   Port Elizabeth.

1.3   If you were travelling north on the R33 from Allandale (block **D10**), you would reach the town of …

A   New Hanover.
B   Harrismith.
C   Howick.
D   Merrivale.

1.4   The location of the woodlands at Sweet Waters in block **F1** was influenced by the …

A   radiation fog.
B   frost pocket.
C   thermal belt.
D   slope aspect.

1.5 The … in blocks **F/G 11** suggests that Pietermaritzburg is managing its water resources efficiently.

    A   purification plant.
    B   sewerage works.
    C   reservoir.
    D   perennial water.

1.6 The main purpose of the weir in block **H7** is to …

    A   prevent soil erosion.
    B   control veld fires.
    C   control water flow.
    D   control water usage.

1.7 The land-use zone in block **D9** on the topographical map is known as the … zone.

    A   residential
    B   transition
    C   industrial
    D   commercial

1.8 The human-made feature in block **D1** that suggests that the area is prone to fires.

    A   windpump
    B   firebreak
    C   power line
    D   perennial water

1.9 The grid reference of Gordan Falls in block **H2** is …

    A   29°37'28"S and 30°16'34"E / 29° 37,5'S and 30° 16,6'E
    B   29°37'28"E and 30°16'34"S / 29° 37,5'E and 30° 16,6'S
    C   30°16'34"S and 29°37'38"E / 30° 16,6'S and 29° 37,6'E
    D   30°16'34"E and 29°37'38"S / 30° 16,6'E and 29° 37,6'S

1.10 The human-made feature at **2** on the orthophoto is a …

    A   industrial park.
    B   office park.
    C   veterinary clinic.
    D   shopping mall.

1.11   Pietermaritzburg is situated along the National Freeway between the …
        core industrial area.

        A   Durban-Pinetown and South West Cape.
        B   Durban-Pinetown and PWV (Gauteng).
        C   PWV (Gauteng) and South West Cape.
        D   PWV (Gauteng) and Port Elizabeth Uitenhage.

1.12   The true bearing of the trigonometrical station **243** in block **C6** from spot
        height 1106 in block **C6** is …

        A   149°
        B   329°
        C   30°
        D   200°

1.13   The straight-line distance from benchmark **681.5** in block **H10** to
        trigonometrical station **250** in block **H11** on the topographical map is …

        A   1.55 m.
        B   3.1 km.
        C   310 m.
        D   1.55 km.

1.14   The economic activity at **U** in block **A12** is a … activity.

        A   primary
        B   secondary
        C   tertiary
        D   quaternary

1.15   The dominant street pattern in block **G8** is …

        A   cobweb.
        B   planned irregular.
        C   unplanned irregular.
        D   grid iron.

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

QUESTION 2: MAPWORK TECHNIQUES AND CALCULATIONS

2.1   Refer to the Index to sheets on the topographical map when answering
      the questions below.

      2.1.1   In the map index of 2930, the **30** represents …

              (a)   30° south of the equator or

              (b)   30° east of Greenwich Meridian

      _____   (1 x 1) (1)

      2.1.2   Give the map reference code of the topographical map to the
              south of the 2930 AC map.

      _____   (1 x 1) (1)

2.2   Calculate the magnetic declination for the current year (2019).

      Marks will be awarded for calculations.

      Difference in years   =   _____

      Annual change   =   _____

      Total annual change   =   _____

      Magnetic declination for 2019 =   _____

                                           _____

                                           _____

                                           _____   (5 x 1) (5)

2.3

    2.3.1 Refer to the demarcated area in RED on the topographical map which represents the area covered by the orthophoto map.
Use the demarcated area to calculate the surface area of the orthophoto map in km². Show ALL calculations.
Marks will be awarded for calculations.

        Formula: Area = length x breadth

_____

_____

_____

_____

_____

_____ (5 x 1) (5)

    2.3.2 Why is the orthophoto map larger than the same area demarcated on the topographical map?

_____

_____ (1 x 1) (1)

2.4

    2.4.1 Calculate the average gradient between spot height 1106 (**R**) in block **C6** and the trigonometrical station **243** in block **C6** on the topographical map. Show ALL calculations.
Marks will be awarded for calculations.

        Formula: Average gradient = $\dfrac{\textbf{Vertical interval}}{\textbf{Horizontal equivalent}}$

_____

_____

_____

_____

_____

_____

_____ (5 x 1) (5)

    2.4.2 Explain your answer to QUESTION 2.4.1.

_____

_____ (1 x 1) (1)

    2.4.3 Classify the average gradient you calculated as steep or gentle.

_____ (1 x 1) (1)

[20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1   A motorist is travelling in a south-easterly direction on the N3 from Hilton Gardens in block **C4** on the topographical map. They recorded a temperature of 23° C on the dash board thermometer display at the start of the journey. A temperature of 27° C was recorded as they passed Willowton in blocks **F9** and **F10**.

     3.1.1   Calculate the difference in temperature between Hilton Gardens and Willowton.

         _____ (1 x 1) (1)

     3.1.2   Suggest **TWO** possible reasons for the difference in temperature mentioned in your answer to QUESTION 3.1.1.

         _____

         _____

         _____

         _____ (2 x 2) (4)

3.2   Pietermaritzburg is situated in a valley. Describe **ONE** climatological disadvantage for the people living in the valley of Pietermaritzburg.

     _____

     _____

     _____ (1 x 2) (2)

3.3   Refer to the demarcated area **M** in blocks **B10** and **B11** on the topographical map.

     3.3.1   Identify the drainage pattern that dominates the area.

         _____ (1 x 1) (1)

     3.3.2   Explain why the drainage pattern identified in QUESTION 3.3.1 developed in the area.

         _____

         _____ (1 x 2) (2)

3.3.3 Is the drainage density of the area high or low? Give a reason
for your answer.

Drainage density: _____

Reason: _____

_____ (1 + 2) (3)

3.4 Compare the settlement **L** in block **B9** and the settlement north of **S**
in block **D4** on the topographical map. Complete the table using
the criteria below.

Criteria	Settlement L	Settlement north of S
Settlement pattern		
Service provided		
Dominant primary activity carried out		

(6 x 1) (6)

3.5

3.5.1 Give **TWO** pieces of evidence from the topographical map to
suggest that Pietermaritzburg has a rich historical heritage.

_____

_____ (2 x 1) (2)

3.5.2 Explain the positive impact of this rich historical heritage
mentioned in QUESTION 3.5.1 on the local economy of the area.

_____

_____

_____

_____ (2 x 2) (4)

[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1   South Africa recently held an important election in May 2019.
        The Independent Electoral Commission (IEC) in Pietermaritzburg
        successfully made use of various data layers stored in their database
        to plan for this election

        4.1.1   Define the term *database*.

        _____

        _____

        _____ (1 x 1) (1)

        4.1.2   The IEC in Pietermaritzburg used the orthophoto maps stored in
                the council's database to examine the prospective voting stations.
                Give **TWO** reasons why the orthophoto map was chosen over the
                topographical map for this purpose.

        _____

        _____

        _____

        _____ (2 x 2) (4)

        4.1.3   To which component of GIS does the orthophoto map belong?

        _____ (1 x 1) (1)

4.2   The city council of Pietermaritzburg conducted a census prior to the
        elections to acquire necessary data for the elections. A census is an
        official survey of the population of a country that is carried out in order
        to find out how many people live there and to obtain details such as
        peoples ages and jobs.

        4.2.1   Is a census a primary or secondary data source?

        _____ (1 x 1) (1)

        4.2.2   Give a reason for your answer to QUESTION 4.2.1.

        _____ (1 x 2) (2)

4.2.3 Name the instrument used by the Census Enumerators (those who gather the information) to locate places that they were not familiar with in Pietermaritzburg.

_____ (1 x 1) (1)

4.3

4.3.1 Suggest **ONE** data layer found on a topographical map that could have been used in determining the location of voting stations in the area.

_____

_____ (1 x 1) (1)

4.3.2 Explain how the process of data security assisted in ensuring that information obtained during the elections was protected.

_____

_____

_____

_____

_____

_____

_____ (2 x 2) (4)

[15]

TOTAL MARKS: 75