basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

GEOGRAPHY P2

NOVEMBER 2016

NATIONAL
SENIOR CERTIFICATE

GRADE 12

MARKS: 75

TIME: 1½ hours

EXAMINATION NUMBER:														
CENTRE NUMBER:														

	M	In	SM	In	DM	In	CM	In	IM	In	MC	EA	EX	RM	In
Q1															
Q2															
Q3															
Q4															
TOT															

This question paper consists of 14 pages and
1 page for rough work.

KWAZULU-NATAL

RESOURCE MATERIAL

1. An extract from topographical map 2729BD VOLKSRUST.

2. Orthophoto map 2729 BD 13 VOLKSRUST

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

INSTRUCTIONS AND INFORMATION

1. Write your EXAMINATION NUMBER and CENTRE NUMBER 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 (2729BD VOLKSRUST) and an orthophoto map (2729 BD 13 VOLKSRUST) 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 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 formulae, where applicable. Marks will be allocated for these.

7. Indicate the unit of measurement in the final answer of calculations.

8. You may use a non-programmable calculator.

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

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

ENGLISH	AFRIKAANS
Aerodrome	Vliegveld
Diggings	Uitgrawings
Furrow	Voor
Golf Course	Gholfbaan
Rifle Range	Skietbaan
River	Rivier
Sawmills	Saagmeule
Sewerage Works	Rioolwerke
Silos	Graansuiers

GENERAL INFORMATION ON VOLKSRUST

Volksrust is a town in Mpumalanga on the border of KwaZulu-Natal. It is located 240 km southeast of Johannesburg. The town has important beef, dairy, maize, sorghum, wool and sunflower seed industries. Volksrust has an average annual rainfall of 648 mm, with the lowest rainfall (1 mm) in July and the highest rainfall (117 mm) in January. Most of the rain falls in the summer. The average midday temperatures for Volksrust range from 15,9 °C in June to 24,3 °C in January. June is the coldest period when the mercury can drop to an average of 0,5 °C during the night.
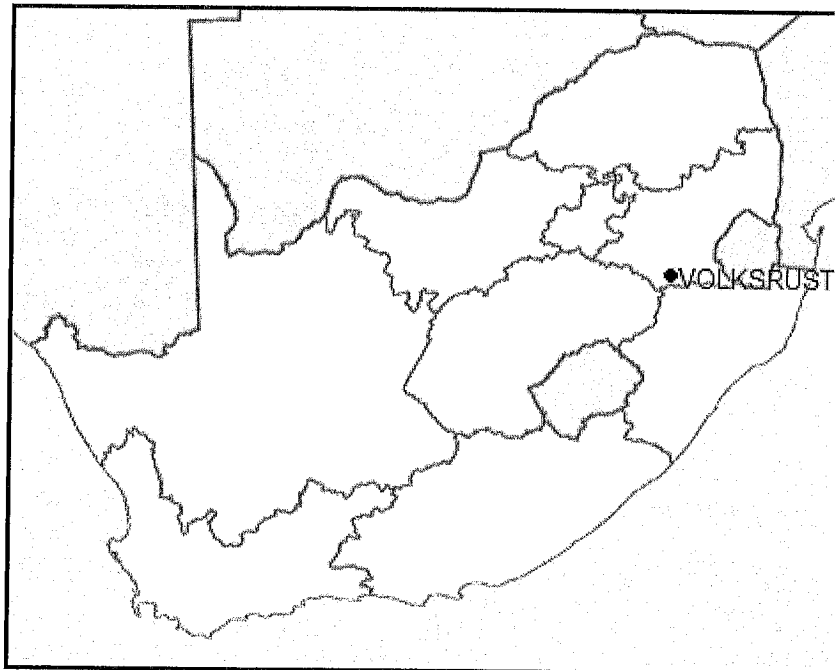
[Source: Examiner's map]

FIGURE 1

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographical map (2729BD VOLKSRUST) 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   The map index/reference of the orthophoto map to the south of Volksrust is ...

     A   2729 BD 18 in Mpumalanga.
     B   2729 BD 18 in KwaZulu-Natal.
     C   2729 BD 8 in Mpumalanga.
     D   2729 BD 8 in KwaZulu-Natal.

1.2   The true bearing of **2** in the centre of the sewerage works from trigonometrical station 152 at point **1** on the orthophoto map is ...

     A   127°
     B   242°
     C   50°
     D   66°

1.3   The feature causing environmental problems at **3** on the orthophoto map:

     A   Agriculture
     B   River erosion
     C   Excavations
     D   Industrialisation

1.4   The feature at **4** on the orthophoto map is a/an ...

     A   rugby field.
     B   tennis court.
     C   purification plant.
     D   open parking area.

1.5   The stream order of the river at **K** in block **A6** on the topographical map is ...

     A   1
     B   2
     C   3
     D   4

1.6   If you follow the N11 in a southerly direction, you will cross the provincial
        border into …

        A   KwaZulu-Natal.
        B   Limpopo.
        C   Gauteng.
        D   the Free State.

1.7   The stream pattern that dominates the area covered by blocks **A9/10** and
        B9/10 is …

        A   centripetal.
        B   radial.
        C   rectangular.
        D   trellis.

1.8   The dominant street pattern at **L** in blocks **D3/4** on the topographical map is
        a … pattern.

        A   radial
        B   unplanned irregular
        C   gridiron
        D   planned irregular

1.9   The type of farming at 27°24'30"S 29°53'30"E / 27°24,5'S 29°53,5'E is …
        farming.

        A   plantation
        B   crop
        C   dairy
        D   fruit

1.10   The slope from spot height 1606, **M** in block **I6**, to **N** in block **I7** on the
        topographical map is a … slope.

        A   convex
        B   terrace
        C   gentle
        D   concave

1.11   The fluvial landform at **Y** in block **F6** is an indication that … has taken place.

        A   river grading
        B   rejuvenation
        C   deposition
        D   lateral erosion

1.12 A factor responsible for the location of the industrial area at **O** in block **D4** on the topographical map is …

    A   raw material.
    B   climate.
    C   transport.
    D   stable ground.

1.13 The land-use zone in block **D2** on the topographical map in which Jubapark is situated, is known as the …

    A   zone of decay.
    B   commercial zone.
    C   industrial zone.
    D   rural-urban fringe.

1.14 Which natural feature assists in purifying the water before it reaches the dam in block **D9**?

    A   Cultivated lands
    B   Marsh and vlei
    C   Trees
    D   Flat land

1.15 Volksrust is an example of a … town.

    A   mining
    B   bridge
    C   gap/gateway
    D   recreational

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

QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1   The magnetic bearing between two points on the topographical map was 326°37' for the year 2010.

        2.1.1   Will the magnetic bearing for 2016 between the same two points be larger or smaller?

                                                                                (1 x 1)   (1)

        2.1.2   Give a reason for your answer to QUESTION 2.1.1.

                                                                                    (1 x 1)   (1)

2.2   Calculate the area of the cultivated lands, area **P** in block **F4** on the topographical map, in km². Show ALL calculations. Marks will be awarded for calculations. Clearly indicate the unit of measurement in your answer.

        Formula: **area = length (L) × breadth (B)**

                                                                                               (5 x 1)   (5)

2.3   Two gradients, 1 : 24 and 1 : 58, represent slopes **5** and **6** respectively on the orthophoto map.

2.3.1   Match the gradients 1 : 24 and 1 : 58 with slopes **5** and **6** on the orthophoto map.

Slope **5**: _____

Slope **6**: _____
(2 x 1)   (2)

2.3.2   (a)   Which ONE of the two gradients, 1 : 24 or 1 : 58, is the steeper?
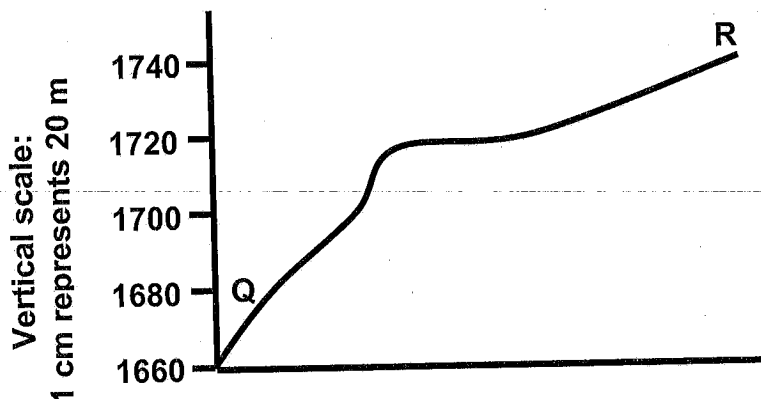
_____
(1 x 1)   (1)

(b)   Interpret the ratio of the gradient selected in QUESTION 2.3.2(a).

_____

_____
(1 x 1)   (1)

2.4   Refer to the cross-section from **Q** in block **E7** to **R** in block **D9** on the topographical map.

2.4.1   Indicate the following features on the cross-section using the key indicated in brackets next to the feature:

(a)   Δ235 (**T**)

(b)   Secondary road (**S**)

(c)   Marsh and vlei (**M**)
(3 x 1)   (3)

2.4.2   Give ONE reason why a person standing at **Q** will NOT be visible to a person standing at **R**.

_____

_____

(1 x 1)   (1)

2.4.3   Vertical exaggeration (VE) is calculated to indicate relief differences of a cross-section.

(a)   Give the vertical scale of the cross-section as a ratio scale.

_____

(1 x 1)   (1)

(b)   Determine the vertical exaggeration (VE) of the cross-section. Show ALL calculations. Marks will be awarded for calculations.

Formula: $\text{vertical exaggeration} = \dfrac{\text{vertical scale}}{\text{horizontal scale}}$

_____

_____

_____

_____

_____

_____

(4 x 1)   (4)
[20]

M5

QUESTION 3: APPLICATION AND INTERPRETATION

3.1   Refer to the valley between spot height 1709 in block **H9** and trigonometrical
        station 241 in block **G10** on the topographical map.

        3.1.1   Why did the farmer select site **V** to grow his/her crops?

        _____
                                                            (1 x 1)   (1)

   3.1.2   Crops are stored in local silos. Is this a primary, secondary or
                  tertiary activity?

        _____
                                                            (1 x 1)   (1)

        3.1.3   The suitability of site **V** for cultivation may be reduced by flooding.
                  Explain this statement.

        _____

        _____
                                                            (1 x 2)   (2)

        3.1.4   The farmer at **V** noticed that early morning mist in winter starts to
                  clear from the bottom of the valley, as indicated in the sketches
                  below. Explain why this happens.

        07:00   09:00   11:00

        ▤ Mist
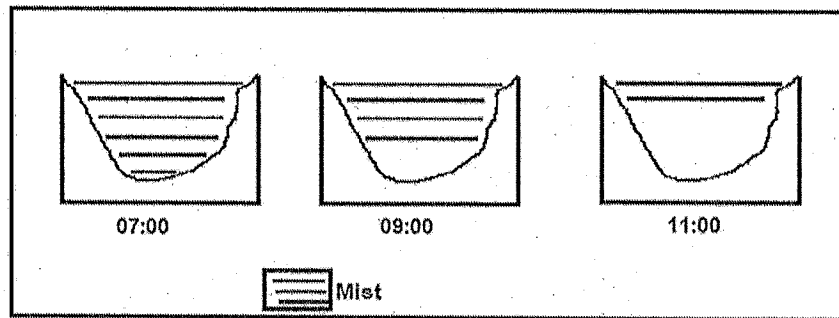
        **SKETCHES OF VALLEY BETWEEN Z IN BLOCK H9
        AND A IN BLOCK H9/10**

        _____

        _____

        _____

        _____

        _____
                                                            (2 x 2)   (4)

3.2   Refer to the perennial stream in block **B10** and state the general direction in
        which this perennial stream flows. Give TWO reasons for your answer.

        Direction: _____

        Reasons: _____

                       _____

                       _____
                                                                    (1 + 2)   (3)

3.3   Compare the settlements marked **S** in block **B7** and **T** in block **J3**, using the
        criteria below. Complete the table.

        3.3.1

	S	T
Settlement pattern	_____	_____
Dominating type of primary activity in the area	_____	_____

                                                                    (4 x 1)   (4)

        3.3.2   Give TWO points of evidence on the topographical map that
                suggests that the primary activity at **T** is practised extensively.

                _____

                _____
                                                                    (2 x 1)   (2)

3.4   Refer to blocks **F3** and **G3**.

        3.4.1   (a)   Give the general shape of the built-up areas Charlestown
                       and Clavis.

                       _____
                                                                    (1 x 1)   (1)

                (b)   Give ONE reason for this general shape.

                       _____
                                                                    (1 x 1)   (1)

3.4.2   State ONE factor that could have influenced the location of Charlestown and Clavis.

_____

_____

                                                            (1 x 2)   (2)

3.5   Volksrust serves as a central place town to the surrounding rural areas.

3.5.1   Give ONE point of evidence on the topographical map that indicates that Volksrust is a central place town.

_____

_____

                                                            (1 x 1)   (1)

3.5.2   How may the many roads passing through Volksrust impact on the sphere of influence of the town?

_____

                                                            (1 x 1)   (1)

3.5.3   Explain your answer to QUESTION 3.5.2.

_____

_____

_____

                                                            (1 x 2)   (2)
                                                                       [25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1   Refer to the orthophoto map and answer the questions that follow.

4.1.1   Define the term *database*.

_____

_____

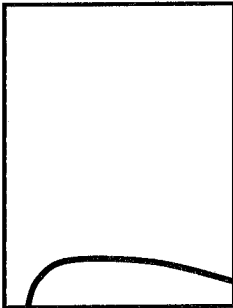   (1 x 1)   (1)

4.1.2   An urban and regional planner wants to examine the building density of Volksrust. He/She decides to use an orthophoto map in the local council's database. Give TWO reasons for his/her choice.

_____

_____

_____

_____
                                                                                    (2 x 2)   (4)
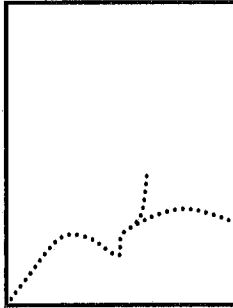
4.2   Refer to block **B5**, which consists of a number of data layers.

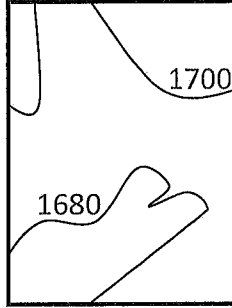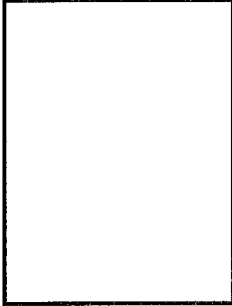4.2.1   Use the THREE data layers below to create a paper GIS in the block provided.

LAYER 1   **LAYER 2**   **LAYER 3**

                                                                                    (3 x 1)   (3)

4.2.2   Which GIS process was used to produce the paper GIS in QUESTION 4.2.1?

_____
                                                                                    (1 x 1)   (1)

4.2.3   Which data storage method (vector or raster) did you use to create
          the paper GIS in QUESTION 4.2.1? Give ONE reason for your
          answer.

          Storage method: _____

          Reason: _____

                                 _____
                                                          (1 + 2)   (3)

4.2.4   Use the letter **A** to indicate the most suitable site for a heavy
          industrial area on the paper GIS in the block (QUESTION 4.2.1).
          Give a reason for your choice of site.

          Site in block: Indicate the site on the paper GIS block
                                  (QUESTION 4.2.1).   (

          Reason: _____

                                 _____
                                                          (1 + 2)   (3)
                                                                        [15]

                                                          TOTAL: **75**

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

M5