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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P2

NOVEMBER 2019

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 and calculations.**

RESOURCE MATERIAL

1. An extract from topographic map 2731BC PONGOLA.
2. Orthophoto map 2731 BC 13 PONGOLA.
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 topographic map (2731BC PONGOLA) and an orthophoto map (2731 BC 13 PONGOLA) 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 formulae, 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.
9. You may use a magnifying glass.
10. The area demarcated in BLACK AND RED on the topographic map represents the area covered by the orthophoto map.
11. The following English terms and their Afrikaans translations are shown on the topographic map:

ENGLISH

Aerodrome
Diggings
Canal
Golf Course
Hospital
River
Sewerage Works
Sugar Mill
Waterfall

AFRIKAANS

Vliegveld
Uitgrawings
Kanaal
Gholfbaan
Hospitaal
Rivier
Rioolwerke
Suikermeule
Waterval

GENERAL INFORMATION ON PONGOLA

Pongola (also known in isiZulu as uPhongolo) is a small town located in northern KwaZulu-Natal, only 10 km from the Swaziland border. Pongola is surrounded by 50 km² of sugar cane and subtropical fruit plantations. The town thrived as a result of the irrigation (canal) system and a sugar mill. Pongola is situated in a tranquil subtropical environment and normally receives about 519 mm of rain per year, with most rainfall in summer.



[Source: <http://en.wikipedia.org/wiki/pongola>]

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographic map (2731BC PONGOLA), 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 Pongola is situated in ...

- A the Eastern Cape.
- B the Western Cape.
- C Gauteng.
- D KwaZulu-Natal.

1.2 The international boundary north on the topographic map separates South Africa (Pongola) from ...

- A Lesotho.
- B Swaziland.
- C Zimbabwe.
- D Namibia.

1.3 The contour interval of the orthophoto map is ... metres.

- A 2
- B 5
- C 10
- D 20

1.4 The index sheet south-east on the orthophoto map 2731 BC 13 Pongola is ...

- A 2731 BC 17.
- B 2731 CB 17.
- C 2731 DB 16.
- D 2731 BC 19.

1.5 The feature at 27°23'21"S 31°35'55"E on the topographic map is a/an ...

- A farmstead.
- B excavation.
- C reservoir.
- D dam.

1.6 The Mzinyane River at **K** flowing in blocks **F3** and **F4** on the topographic map flows in a ... direction.

- A north-easterly
- B south-westerly
- C south-easterly
- D north-westerly

1.7 The difference in height between trigonometrical station 89 in block **C7** and trigonometrical station 83 in block **B9** on the topographic map is ... metres.

- A 6
- B 24,4
- C 24,5
- D 4

1.8 The land-use at **1** on the orthophoto map is ...

- A industries.
- B cultivation.
- C recreation.
- D forestry.

1.9 The fluvial landform at **L** in block **B4** on the topographic map is a ... base level of erosion.

- A temporary
- B permanent
- C ultimate
- D lowest

1.10 The human-made feature that has influenced the shape of the settlement from **M** in block **E3** to **N** in block **D1** on the topographic map is a ...

- A route.
- B mountain.
- C railway.
- D river.

1.11 Pongola can be classified as a ... settlement according to its dominant urban function.

- A gap
- B specialised
- C central place
- D gateway

1.12 The dominant street plan (pattern) of the Ncotshane residential area at **O** on the topographic map is ...

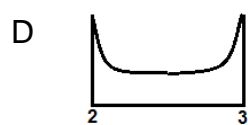
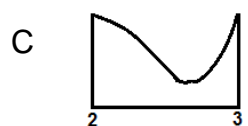
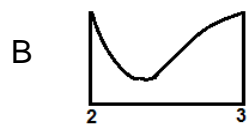
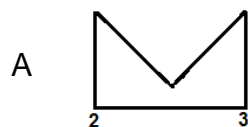
- A irregular.
- B radial.
- C linear.
- D grid.

1.13 The underlying rock structure of the drainage pattern encircled by **P** on the topographic map is/are ...

- A alternate layers of hard rock and soft rock.
- B uniform in resistance to erosion.
- C igneous rocks with joints.
- D folded mountains.



1.14 Which diagram below would represent the shape of the rough cross-profile of the meander from **2** to **3** on the orthophoto map?



1.15 The landform at **4** on the orthophoto map is a ...

- A butte.
- B conical hill.
- C mesa.
- D plateau.



(15 x 1)

[15]

QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 Refer to the orthophoto map.

- 2.1.1 Calculate, in m², the average area of the Pongola aerodrome demarcated by **9** on the orthophoto map. Show ALL calculations. Marks will be awarded for calculations. Clearly indicate the unit of measurement in your final answer.

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

(5 x 1) (5)

- 2.1.2 Why does the size of the Pongola aerodrome appear different on the topographic map in comparison to the orthophoto map?

(1 x 1) (1)

2.2 Refer to the information on the topographic map.

- 2.2.1 Calculate the magnetic declination for 2019 using the information on the topographic map. Show ALL calculations. Marks will be awarded for calculations. Clearly indicate the direction in relation to true north in your final answer.

Difference in years: _____

Mean annual change: _____

Total change: _____

Magnetic declination for 2019: _____

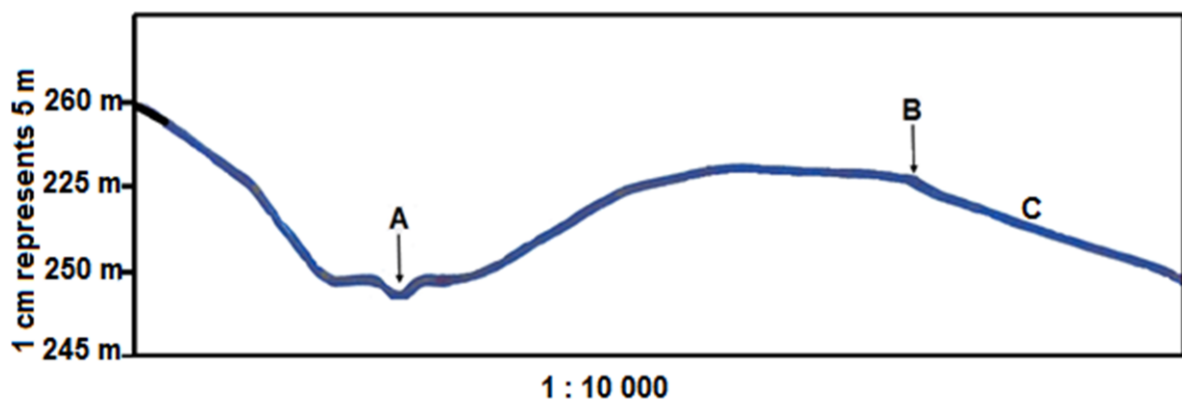
(5 x 1) (5)

- 2.2.2 Determine the magnetic bearing for 2019 from trigonometrical station 89 in block **C7** to trigonometrical station 83 in block **B9**.

Formula: **Magnetic bearing = True bearing + Magnetic declination**

(2 x 1) (2)

- 2.3 Below is a cross-section drawn from **7** to **8** on the orthophoto map.



- 2.3.1 Use the orthophoto map to identify feature **A** and feature **B** on the cross-section.

A: _____

B: _____

(2 x 1) (2)

- 2.3.2 Refer to intervisibility.

- (a) Is there intervisibility between **A** and **B**?

(1 x 1) (1)

- (b) Give TWO reasons for your answer.

(2 x 1) (2)

2.3.3 The horizontal scale of the cross-section is 1 : 10 000.

- (a) Convert the vertical scale of the cross-section to a ratio scale.

(1 x 1)

(1)

- (b) Which gradient, 1 : 23 or 1 : 66, is likely to match slope **C**?

(1 x 1)

(1)

[20]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to the Phongola River on the topographic map.

3.1.1 What type of river is the Phongola River?

_____ (1 x 1) (1)

3.1.2 Will an oxbow lake be more likely to form first at meander loop **R** or meander loop **S**? Give a reason for your answer.

R or S: _____

Reason: _____

_____ (1 + 2) (3)

3.2 Refer to the settlement at **10** on the orthophoto map.

3.2.1 Name the settlement pattern at **10**.

_____ (1 x 1) (1)

3.2.2 State ONE physical (natural) factor that would have determined the type of settlement pattern identified in QUESTION 3.2.1.

_____ (1 x 1) (1)

3.2.3 State TWO economic advantages of the type of settlement pattern identified in QUESTION 3.2.1.

_____ (2 x 1) (2)

3.3 Refer to the aerodrome in block **D7** on the topographic map and **9** on the orthophoto map.

3.3.1 In which land-use zone is the aerodrome situated?

_____ (1 x 1) (1)

3.3.2 Why is this land-use zone a suitable location for the aerodrome?

_____ (2 x 2) (4)

3.4 Refer to the agricultural activities in the mapped area.

3.4.1 Is sugar cane farming, as shown on the map, an example of large- or small-scale farming?

_____ (1 x 1) (1)

3.4.2 Discuss how the irrigation network in the eastern part of the mapped area supports the growing of sugar cane.

_____ (2 x 2) (4)

3.4.3 Refer to the Pongola sugar mill in block **F10** on the topographical map.

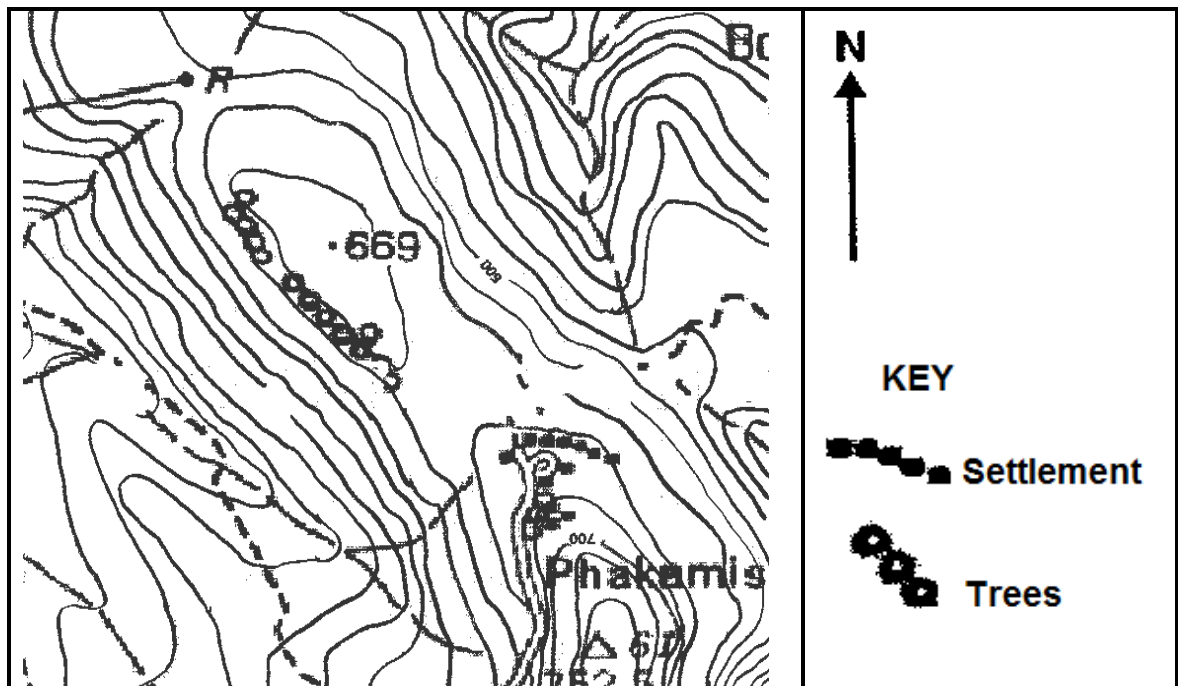
(a) Is the sugar mill a raw material or market-orientated industry?

_____ (1 x 1) (1)

(b) Give a reason for your answer to QUESTION 3.4.3(a).

_____ (1 x 2) (2)

- 3.5 Refer to the settlement, Phakamisa (enlarged below), situated in the valley in block **J4** on the topographical map.



- 3.5.1 In which direction does the settlement of Phakamisa face?

(1 x 1) (1)

- 3.5.2 Explain the climatological advantage of the location of the settlement of Phakamisa.

(1 x 2) (2)

- 3.5.3 Explain why the impact of katabatic winds will be minimal (low) on the settlement of Phakamisa.

(1 x 2) (2)
[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 Refer to the topographic map.

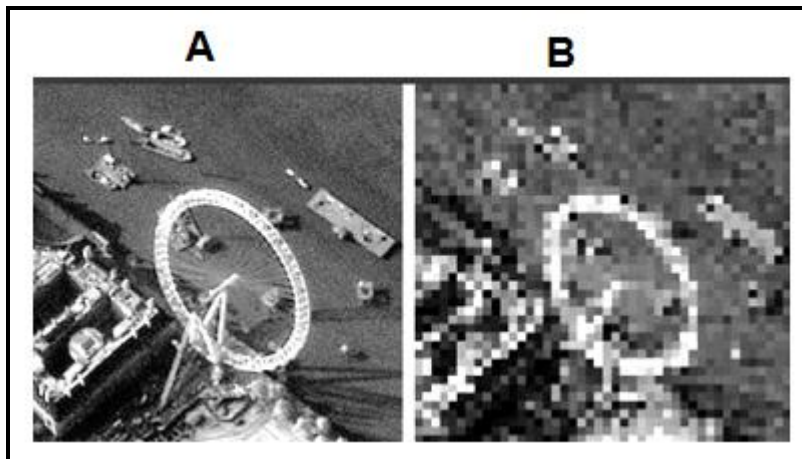
4.1.1 Is the topographic map an example of raster or vector data?

(1 x 1) (1)

4.1.2 What is the difference between *raster data* and *vector data*?

(1 x 2) (2)

4.2 Image **A** and image **B** were captured by a remote sensing device.



4.2.1 What is *remote sensing*?

(1 x 1) (1)

4.2.2 Name ONE factor in the remote sensing process that will affect the resolution of an image.

(1 x 1) (1)

4.2.3 Why does image **A** have a higher resolution than image **B**?

(1 x 2) (2)

4.3 Refer to buffering in block **H8** on the topographic map.

4.3.1 What is *buffering*?

(1 x 1) (1)

4.3.2 Why would the lack of buffering be considered poor river management in block **H8**?

(1 x 2) (2)

4.4 Refer to data integration in block **H10** on the topographic map.

4.4.1 What is *data integration*?

(1 x 1) (1)

4.4.2 A farmer in block **H10** wants to extend the size of his farm to block **I10**. Discuss TWO physical (natural) layers that the farmer would have to integrate in order to make a decision.

(2 x 2) (4)
[15]

TOTAL: 75

ROUGH WORK AND CALCULATIONS

(NOTE: Do NOT detach this page from the question paper.)