

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2014

GEOGRAPHY P2

MARKS: 75

TIME: 1½ hours

NAME: _____

		MARKS	MOD
Q1	15		
Q2	20		
Q3	25		
Q4	15		

TOTAL MARKS	MOD
75	75



This question paper consists of 13 pages including
1 page for rough work and calculations.

RESOURCE MATERIAL

1. An extract from topographical map 2930 AC HOWICK.
2. Orthophoto map 2930 AC 25 HOWICK.
3. **NOTE:** The resource material must be collected by the schools for their own use.

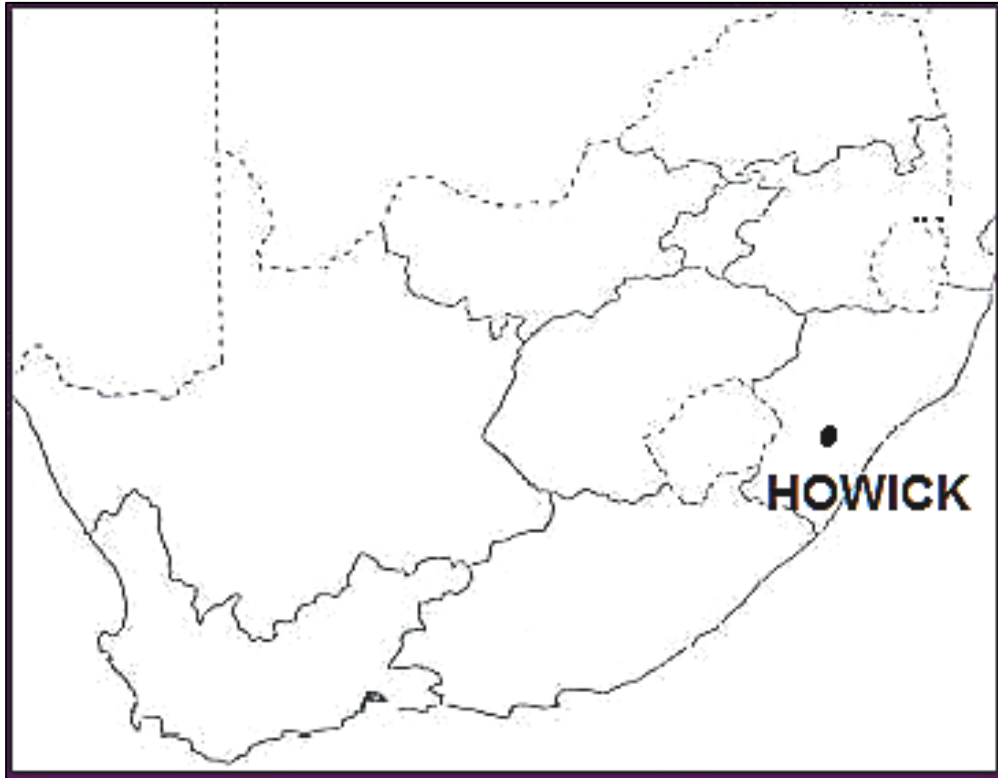
INSTRUCTIONS AND INFORMATION

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 supplied with a 1 : 50 000 topographical map 2930 AC of HOWICK and an orthophoto map 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 must use the blank page at the back of this 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 this.
7. You may use a non-programmable calculator.
8. A glossary of some of the English and Afrikaans words and their translations appears on the following page.

GLOSSARY
(SOME OF THESE TERMS MAY APPEAR ON THE MAPS)

ENGLISH	AFRIKAANS
Aerodrome	Vliegveld
Golf Course	Gholfbaan
Landing strip	Landingstrook
Nature reserve	Natuurreservaat

POSITION OF HOWICK WITHIN SOUTH AFRICA



SECTION A**QUESTION 1: MULTIPLE-CHOICE QUESTIONS**

The following statements are based on the 1 : 50 000 topographical map 2930 AC HOWICK, as well as the orthophoto map of a part of the mapped area. Various options are provided as possible answers to the following statements. Choose the correct answer and write only the letter (A–D) in the block next to the statement.

1.1 The topographical map reference number represents ...

- A 29°N 30°W.
- B 29°S 30°E.
- C 29°W 30°N.
- D 29°E 30°S.

1.2 The primary economic activity found at **L** (block **J13**) on the topographical map is ...

- A mining.
- B farming.
- C forestry.
- D quarrying.

1.3 The exact distance between point **O** and **T** on the topographical map is ...

- A 31,0 km.
- B 310 km.
- C 3 100 km.
- D 3,10 km.

1.4 The location (coordinates) of the trigonometrical station number **115** in block **I1** is ...

- A 29°27'43"E 30°00'38"S.
- B 30°00'38"S 29°27'43"E.
- C 30°00'38"E 29°27'43"S.
- D 29°27'43"S 30°00'38"E.

1.5 The dams that are found in the rural areas of Howick are mainly used for ...

- A recreation.
- B agricultural purposes.
- C industrial purposes.
- D domestic purposes.

1.6 Identify the physical feature found at **17** on the orthophoto map.

- A Golf course.
- B Excavation.
- C Marsh and vlei.
- D Howick Falls.

1.7 The linear feature marked **18** on the orthophoto map is a ...

- A furrow.
- B telephone line.
- C power line.
- D canal.

1.8 Compared with the 1 : 50 000 map, the scale of the orthophoto photo is ...

- A 5 times smaller.
- B 5 times larger.
- C 10 times smaller.
- D 10 times larger.

1.9 Identify the main vegetation type found in block **F7**.

- A Woodland
- B Orchards and vineyards
- C Cultivated lands
- D Game and nature reserves

1.10 The type of road labelled **N** on the topographical map that links Howick and Harrismith is a/an ...

- A main road.
- B arterial route.
- C national freeway.
- D other road.

1.11 The approximate true bearing from trig. beacon **270** north of Greendale Park (block **J13**) to spot height **1018** (block **K15**) east of Greendale Park on the topographical map is ...

- A 70°.
- B 295°.
- C 90°.
- D 115°.

1.12 The phenomenon, The Dargle in block **K1**, is a ...

- A geomorphological feature.
- B farmhouse.
- C post office.
- D farm school.

1.13 The landform between **22** and **23** on the orthophoto map, is a/an ...

- A spur.
- B river valley.
- C saddle.
- D excavation.

1.14 The man-made feature marked **24** on the orthophoto map is a ...

- A dam wall.
- B river.
- C bridge.
- D silo.

1.15 The two types of scale shown on the topographical map are ...

- A a line scale and a word scale.
- B a line scale and a ratio scale.
- C a word scale and a ratio scale.
- D a line scale and a Richter scale.

(15 x 1) (15)

TOTAL SECTION A: 15

SECTION B

QUESTION 2: MAPWORK TECHNIQUES AND CALCULATIONS

Consult the topographical map and answer the following questions. You may use the orthophoto map.

2.1 Identify the following landforms (features) on the topographical map:

2.1.1 **V** (block **A / B15**):

_____ (1)

2.1.2 **W** (block **K15**):

_____ (1)

2.2 The Howick Mountain Climbing Club intends to host a mountain climbing expedition to Beacon Hill (**20** on the orthophoto map). They will start the climb at **19** on the orthophoto map (at contour reading **1090**) and proceed to trigonometrical station Δ **270** (**20** on the orthophoto map) where they will complete the climb.

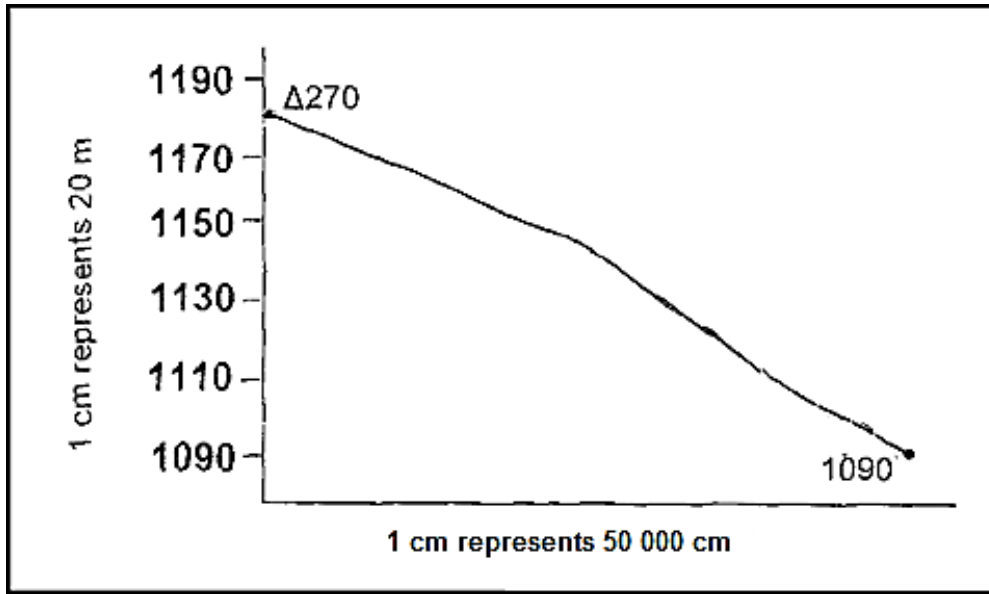
2.2.1 Calculate the average gradient of their climb.

_____ (6)

2.2.2 Interpret your answer to QUESTION 2.2.1 and give an idea of how strenuous (difficult) the climb will be.

_____ (2)

2.3 Study the cross-section of the climb between **19** (at contour reading **1090**) and **20** (trigonometrical station $\Delta 270$).



2.3.1 Calculate the vertical exaggeration of the cross-section.
Show all your calculations.

(5)

2.4 Calculate the area of blocks **I**, **J** and **K1**, **2** and **3** in km^2 on the topographical map.

(5)

TOTAL SECTION B: 20

SECTION C

QUESTION 3: MAP INTERPRETATION AND ANALYSIS

3.1 The hilly landscape of the Kwa-Zulu Natal Midlands (Howick), provides a good example of hilly topography associated with horizontal layered rocks.

3.1.1 Identify the landform feature marked **M** in block **G9** on the topographical map.

_____ (1 x 1) (1)

3.1.2 These features can be of considerable value to human beings. What are the slopes used for between **20** and **19** on the orthophoto map?

_____ (1 x 1) (1)

3.2 Mass wasting occurs in this hilly landscape of Howick. Describe TWO factors that increase a slope's potential for mass movement.

_____ (2 x 2) (4)

3.3 Identify the following features labelled **Q** and **T** on the topographical map.

Q = _____

T = _____

(1 + 1) (2)

3.4 Management strategies on the farm labelled **R** found at Mac Leay in block **J11** on the topographical map have been carried out. State **THREE** ways in which these strategies have prevented and controlled soil erosion.

(3 x 2) (6)

3.5 The power supply of many towns/cities comes from the main electricity grid.

3.5.1 How many power lines feed the town of Howick to the south on the orthophoto map?

(1 x 1) (1)

3.5.2 What is the non-renewable source of energy from which Howick's electricity comes?

(1 x 2) (2)

3.6 The town of Howick has a huge potential for development and sustainability in the area. Identify any **THREE** features found on the topographical map that will attract tourists to the area.

(3 x 2) (6)

3.7 Give **ONE** piece of evidence from the topographical map which indicates that environmental conservation is practised in Howick by the inhabitants.

(1 x 2) (2)

TOTAL SECTION C: 25

SECTION D

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 Which data storage model, Vector or Raster, comes closest to the topographical map as we know it?

_____ (1 x 1) (1)

4.2 Answer the following on spatial resolution.

4.2.1 Define the term *spatial resolution*.

_____ (1 x 1) (1)

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

_____ (1 x 1) (1)

4.3 Data integration is combining different types of data for the purpose of decision-making. Discuss TWO types of data that a farmer in block **I2** will consider before cultivation.

_____ (2 x 2) (4)

4.4 GIS is useful in disaster management. Explain how it would have assisted the local authorities with planning after flooding in the Howick area.

_____ (3 x 2) (6)

- 4.5 Give TWO examples of spatial data found on the topographical map and orthophoto map.

(2 x 1) (2)

TOTAL SECTION D: 15
GRAND TOTAL: 75

ROUGH WORK

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2014

**GEOGRAPHY P2
MEMORANDUM**

MARKS: 75

This memorandum consists of 11 pages.

SECTION A**QUESTION 1: MULTIPLE-CHOICE QUESTIONS**

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- A recreation.
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- D domestic purposes.

- 1.6 Identify the physical feature found at **17** on the orthophoto map.
- A Golf course.
 - B Excavation.
 - C Marsh and vlei.
 - D Howick Falls.
- D**
- 1.7 The linear feature marked **18** on the orthophoto map is a ...
- A furrow.
 - B telephone line.
 - C power line.
 - D canal.
- C**
- 1.8 Compared with the 1 : 50 000 map, the scale of the orthophoto photo is ...
- A 5 times smaller.
 - B 5 times larger.
 - C 10 times smaller.
 - D 10 times larger.
- B**
- 1.9 Identify the main vegetation type found in block **F7**.
- A Woodland
 - B Orchards and vineyards
 - C Cultivated lands
 - D Game and nature reserves
- A**
- 1.10 The type of road labelled **N** on the topographical map that links Howick and Harrismith is a/an ...
- A main road.
 - B arterial route.
 - C national freeway.
 - D other road.
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- A 70°.
 - B 295°.
 - C 90°.
 - D 115°.
- D**
- 1.12 The phenomenon, The Dargle in block **K1**, is a ...
- A geomorphological feature.
 - B farmhouse.
 - C post office.
 - D farm school.
- B**

1.13 The landform between **22** and **23** on the orthophoto map, is a/an ...

- A spur.
- B river valley.
- C saddle.
- D excavation.

A

1.14 The man-made feature marked **24** on the orthophoto map is a ...

- A dam wall.
- B river.
- C bridge.
- D silo.

A

1.15 The two types of scale shown on the topographical map are ...

- A a line scale and a word scale.
- B a line scale and a ratio scale.
- C a word scale and a ratio scale.
- D a line scale and a Richter scale.

B

(15 x 1) (15)

TOTAL SECTION A: 15

SECTION B

QUESTION 2: MAPWORK TECHNIQUES AND CALCULATIONS

Consult the topographical map and answer the following questions. You may use the orthophoto map.

2.1 Identify the following landforms (features) on the topographical map:

2.1.1 **V** (block **A / B15**): Ridge ✓ (1)

2.1.2 **W** (block **K15**): Gorge ✓ (1)

2.2 The Howick Mountain Climbing Club intends to host a mountain climbing expedition to Beacon Hill (**20** on the orthophoto map). They will start the climb at **19** on the orthophoto map (at contour reading **1090**) and proceed to trigonometrical station **Δ270** (**20** on the orthophoto map) where they will complete the climb.

2.2.1 Calculate the average gradient of their climb.

$$\begin{aligned} \text{Gradient} &= \frac{\text{VI}}{\text{HE}} \quad \checkmark \quad \frac{1\,182.3 - 1\,090}{8.2 \text{ cm}} \quad \checkmark \quad \times 100 \quad \text{OR} \quad \frac{\text{VI}}{\text{HE}} \quad \checkmark \quad \frac{1\,182.3 - 1\,090}{82 \text{ mm}} \quad \checkmark \quad \times 10\,000 \\ & \qquad \qquad \qquad (8.0 - 8.4 \text{ cm}) \qquad \qquad \qquad (80 - 84\text{mm}) \\ & \qquad \qquad \qquad \frac{92.3 \text{ m}}{820 \text{ m}} \quad \checkmark \qquad \qquad \qquad \frac{92.3 \text{ m}}{820 \text{ m}} \quad \checkmark \\ & \qquad \qquad \qquad = 1 : 8.88 \quad \checkmark \qquad \qquad \qquad = 1 : 8.88 \quad \checkmark \\ & \qquad \qquad \qquad \text{(Range: } 1 : 8.55 - 1 : 9.10) \end{aligned} \qquad (6)$$

2.2.2 Interpret your answer to QUESTION 2.2.1 and give an idea of how strenuous (difficult) the climb will be.

For every 8,88 m the hiker will walk the gradient will rise by one 1 m. ✓
This means that the hike would be strenuous ✓ – hence climbers have to be extremely fit.

Difficult hike. ✓
Uniformly steep – a fit climber can hike easily. ✓
(Any TWO) (2)

- 2.3 Study the cross-section of the climb between **19** (at contour reading **1090**) and **20** (trigonometrical station $\Delta 270$).

2.3.1 Calculate the vertical exaggeration of the cross-section.
Show all your calculations.

VS/HS ✓

OR

$$= 1/20 \checkmark \div 1 : 500 \checkmark$$

$$= 1/2\ 000 \checkmark \div 1/50\ 000 \checkmark$$

$$= 1/20 \times 500/1 \checkmark$$

$$= 1/2\ 000 \times 50\ 000/1 \checkmark$$

$$= 25 \text{ times } \checkmark$$

$$= 25 \text{ times } \checkmark$$

(5)

- 2.4 Calculate the area of blocks **I, J** and **K1, 2** and **3** in km² on the topographical map.

Measurement range: length – 11,3 cm to 9,6 cm

breath – 10,9 cm to 9,2 cm

Area = L x B ✓

$$= (11,1 \text{ cm} \times 0,5) \text{ km } \checkmark \times (9,6 \text{ cm} \times 0,5) \checkmark$$

$$= 5,55 \text{ km} \times 4,80 \text{ km } \checkmark$$

$$= 26,64 \text{ km}^2 \checkmark$$

(Range is 25,07 km² to 27,12 km²)

(5)

TOTAL SECTION B: 20

SECTION C

QUESTION 3: MAP INTERPRETATION AND ANALYSIS

3.1 The hilly landscape of the Kwa-Zulu Natal Midlands (Howick), provides a good example of hilly topography associated with horizontal layered rocks.

3.1.1 Identify the landform feature marked **M** in block **G9** on the topographical map.

Conical hill ✓

(1 x 1) (1)

3.1.2 These features can be of considerable value to human beings. What are the slopes used for between **20** and **19** on the orthophoto map?

Agriculture ✓

(1 x 1) (1)

3.2 Mass wasting occurs in this hilly landscape of Howick. Describe TWO factors that increase a slopes potential for mass movement.

Gradient of a slope ✓ – steeper slope ✓
 Rock structure ✓ – less resistant rock ✓
 Vegetation ✓ – sparse vegetation ✓
 Soils ✓ – thin, sandy, non-porous soils ✓
 Climate ✓ – heavy rainfall ✓
 People ✓ – actions of people ✓
 Tremors ✓ – movement of ground ✓
 (Any TWO)

(2 x 2) (4)

3.3 Identify the following features labelled **Q** and **T** on the topographical map.

Q = Farm fences/Original farms ✓

T = Marshes and swamps ✓

(1 + 1) (2)

- 3.4 Management strategies on the farm labelled **R** found at Mac Leay in block **J11** on the topographical map have been carried out. State **THREE** ways in which these strategies have prevented and controlled soil erosion.

Contour ploughing ✓✓
 Strip cropping ✓✓
 Afforestation ✓✓
 Not ploughing on steep slopes ✓✓
 Crop rotation ✓✓
 Windbreaks ✓✓
 Fallowing ✓✓
 Filling in dongas ✓✓
 Avoid overgrazing ✓✓
 Fertilisers ✓✓
 Vegetation along rivers ✓✓
 Retain soil cover – dry season ✓
 [Any THREE]

(3 x 2) (6)

- 3.5 The power supply of many towns/cities comes from the main electricity grid.

- 3.5.1 How many power lines feed the town of Howick to the south on the orthophoto map?

3 ✓

(1 x 1) (1)

- 3.5.2 What is the non-renewable source of energy from which Howick's electricity comes?

Coal ✓✓

(1 x 2) (2)

- 3.6 The town of Howick has a huge potential for development and sustainability in the area. Identify any **THREE** features found on the topographical map that will attract tourists to the area.

Rivers ✓✓
 Waterfalls ✓✓
 Nature reserves ✓✓
 Woodlands ✓✓
 Golf courses ✓✓
 Dams ✓✓
 Mountains ✓✓
 (Any THREE)

(3 x 2) (6)

3.7 Give ONE piece of evidence from the topographical map which indicates that environmental conservation is practised in Howick by the inhabitants.

There are areas marked nature conservation e.g. Umgeni Nature Reserve. ✓✓

Marshes are protected. ✓✓

(Any ONE)

(1 x 2) (2)

TOTAL SECTION C: 25

SECTION D

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 Which data storage model, Vector or Raster, comes closest to the topographical map as we know it?

Vector ✓

(1 x 1) (1)

4.2 Answer the following on spatial resolution.

4.2.1 Define the term *spatial resolution*.

Refers to the detail with which a map depicts the location and shape of the feature. ✓

(CONCEPT)

(1 x 1) (1)

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

Orthophoto map ✓

(1 x 1) (1)

4.3 Data integration is combining different types of data for the purpose of decision-making. Discuss TWO types of data that a farmer in block **I2** will consider before cultivation.

Availability of water ✓✓

Fertility of soil ✓✓

Relief of the land (slope) ✓✓

Microclimate ✓✓

Access to infrastructure ✓✓

Access to transport ✓✓

(Any TWO. Accept other logical answers)

(2 x 2) (4)

4.4 GIS is useful in disaster management. Explain how it would have assisted the local authorities with planning after flooding in the Howick area.

Check service delivery shortfalls after a flood ✓✓

Route planning to supply relief ✓✓

Analyse the quality of service ✓✓

Relief coordination ✓✓

Prioritising relief ✓✓

Satellite pictures to assess the destruction ✓✓

(Any THREE. Accept others)

(3 x 2) (6)

4.5 Give TWO examples of spatial data found on the topographical map and orthophoto map.

- Roads ✓
- Rivers ✓
- Houses and buildings ✓
- Parks ✓
- Dams ✓
- (Any TWO. Accept others)

(2 x 1) (2)

TOTAL SECTION D: 15
GRAND TOTAL: 75