



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

SEPTEMBER 2015

**GEOGRAPHY P2
MEMORANDUM**

MARKS: 75

This memorandum consists of 11 pages.

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

The following statements are based on the 1 : 50 000 topographic map 2726 DC ODENDAALSRUS, 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 each statement.

1.1 The orthophoto map only depicts the ... part of the topographic map.

- A south-eastern
- B northern
- C north-eastern
- D south-western

B

1.2 The rows of trees, in block **A1**, found close to the mines are used as ...

- A demarcations of farmland.
- B protection for the riverbanks.
- C plantations.
- D windbreaks.

D

1.3 An orthophoto map is a ... aerial photograph which has contour lines and other labelled features drawn on it.

- A high oblique
- B low oblique
- C horizontal
- D vertical

D

1.4 When travelling in a southerly direction on the **R30** from Odendaalsrus, in block **B2**, the next central place settlement will be ...

- A Theunissen.
- B Virginia.
- C Welkom.
- D Bloemfontein.

A

1.5 The mean annual change of the magnetic declination from 1995 to 2000 was ...

- A 14' west.
- B 4' east.
- C 5' west.
- D 5' east.

C

1.6 The true bearing from trigonometrical station **345**, in block **F1**, to the Yacht Club, in block **I2** is ...

- A 163°.
- B 74°.
- C 343°.
- D 170°.

A

1.7 The main means of transporting water, in block **H3/D2**, from the mines to the dams on the topographic map is by ...

- A furrows and windpumps.
- B canals and windpumps.
- C pipelines and furrows.
- D windpumps.

C

1.8 The area marked **1** on the orthophoto map is ...

- A mining area.
- B non-perennial water.
- C mine dump.
- D recreational area.

B

1.9 The aerodrome in block **I2** on the topographic map is found in the ...

- A CBD.
- B rural-urban fringe.
- C residential area.
- D recreational area.

B

1.10 The feature marked **2** on the orthophoto map is a/an ...

- A minedump.
- B embankment.
- C cemetery.
- D holiday resort.

A

1.11 The settlement of Odendaalsrus, in block **B3**, originally developed as a ... settlement.

- A mining.
- B farming.
- C resort.
- D junction.

A

1.12 The residential area marked **A** on the topographic map shows a ... street pattern.

- A grid-iron
- B radial
- C concentric
- D irregular

D

1.13 The natural feature marked **B** on the topographic map in block **G2** is a ...

- A dry pan.
- B perennial river.
- C non-perennial river.
- D marsh and vlei.

D

1.14 The road connecting Odendaalsrus with Virginia, via Welkom, is a ...

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

C

1.15 What recreational facility is found at the co-ordinates 27°54'10"S 26°42'45"E/27°54,2'S 26°42,8'E on the topographic map?

- A Diggings
- B Horse riding club
- C Caravan park
- D Phakisa motor racing track

D

(15 x 1) (15)

TOTAL SECTION A: 15

SECTION B

QUESTION 2: MAPWORK TECHNIQUES AND CALCULATIONS

- 2.1 If you were travelling SSE (south south east) on a train (**5** on orthophoto map), would Oudensdaal be to your east or west?

West ✓

(1 x 1) (1)

- 2.2 Are points **4** to **5** on the orthophoto map intervisible?
Give a reason for your answer.

No./Points are not intervisible ✓

There are buildings/vegetation (trees) in-between. ✓

(2 x 1) (2)

- 2.3 Calculate the area of the demarcated (marked off) region on the topographical map, which illustrates the area covered by the orthophoto map, in square kilometres (km²).
Show ALL calculations. Marks will be awarded for calculations.

AREA = L x B ✓

[Allow for 2 mm]

$$L = \frac{11,0}{2} \text{ (or } 11,0 \checkmark \times 0,5)$$

(10,8 – 11,2)

$$B = \frac{5,6}{2} \text{ (or } 5,6 \checkmark \times 0,5)$$

(5,4 – 5,8)

$$= 5,5 \text{ km } \checkmark \times 2,8 \text{ km } \checkmark$$

$$= 15,4 \text{ km}^2 \checkmark \quad (\text{Range} = 14,58 - 16,24 \text{ km}^2)$$

[No units in final answer – no marks.]

(6 x 1) (6)

- 2.4 Calculate the average gradient from spot height **1341**, in block **C4**, to spot height **1357**, in **D6**. Use the straight-line distance between the two spot heights.

Show ALL the calculations. Marks will be awarded for calculations.

Gradient = VI/HE ✓

$$VI = 1\,357 - 1\,341 = 16 \text{ m } \checkmark$$

$$HE = 8,6 \text{ cm } \checkmark \times 50\,000 \div 100 \text{ [8,5 cm – 8,7 cm]}$$

$$= 4\,300 \text{ m [4\,250 m – 4\,350 m]} \checkmark$$

$$\text{Gradient} = 16 \text{ m } \div 4\,300 \text{ m } \checkmark$$

$$= 1 : 268,75 \checkmark$$

[Range: 265,63 – 271,88]

(6 x 1) (6)

2.4.1 Is the gradient that you calculated in QUESTION 2.4 steep or gentle?

Gentle ✓

(1 x 1) (1)

2.4.2 Explain your answer to QUESTION 2.4.1.

For every 252,98 – 258,93 travelled along the ground, ✓ you rise by 1 m. ✓

[Wrong answer in QUESTION 2.4.1 – no mark for QUESTION 2.4.2]

(2 x 1) (2)

2.5 Explain why the Gert Combrink Dam in block **B/C 3** appears larger on the orthophoto map, marked **12**, than on the topographic map.

Orthophoto has a larger scale (1 : 10 000) as compared to the topographical map (1 : 50 000) – 5 times larger scale. ✓

OR

Topographical map has a smaller scale (1 : 50 000) as compared to the orthophoto map (1: 10 000). ✓

(1 x 1) (1)

2.6 State the contour interval of the orthophoto map.

5 m ✓

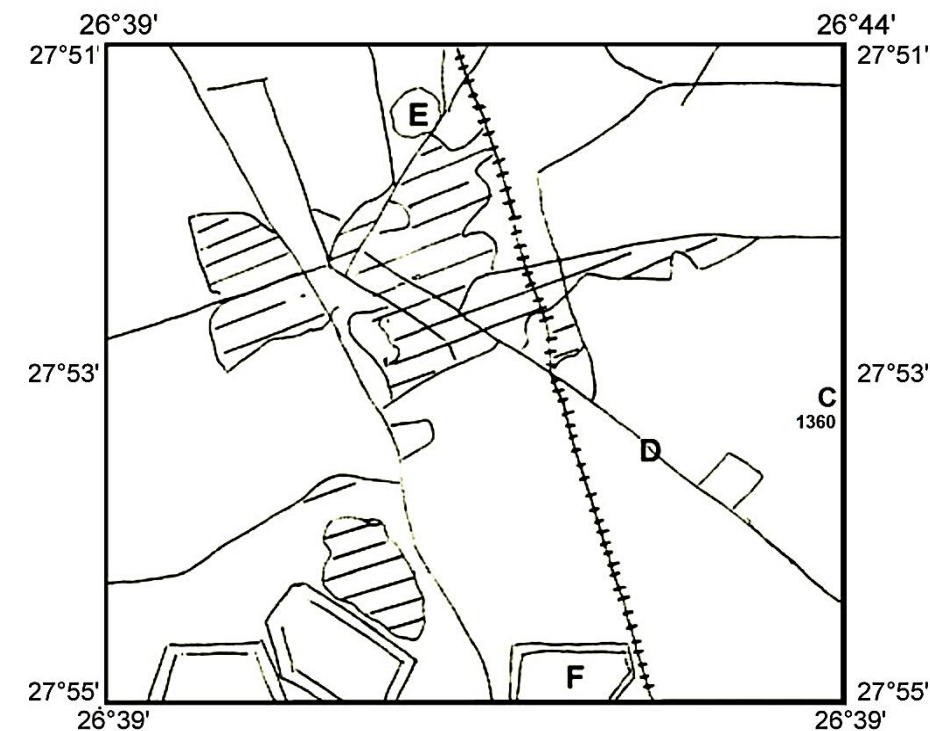
(1 x 1) (1)

TOTAL SECTION B: 20

SECTION C

QUESTION 3: MAP INTERPRETATION AND ANALYSIS

- 3.1 The sketch map below represents part of the area covered by the topographical map. Study the topographical map and then indicate the features, referred to in (3.1.1–3.1.4) as accurately as possible on the sketch map.

ReferenceVerwysing

River

Rivier

Roads

—————

Paaie

Railway

+ + + + +

Spoorweg

Built-up areas

▨ ▨ ▨ ▨ ▨

Beboude gebied

- 3.1.1 The reference number of the topographic map.

Reference no: 2726 DC (ODENDAALSRUS) ✓

(1 x 1) (1)

- 3.1.2 Indicate on the sketch trigonometrical station **Δ286** (block **C5**) with the letter **C** and give its height.

C = (ON THE SKETCH) ✓ 1 360 m ✓

(2 x 1) (2)

- 3.1.3 Give the destination of the main arterial road leading south east marked **D**.

D = Welkom ✓

(1 x 1) (1)

3.1.4 Identify the human activity at the following places:

E = Golf course/Recreation ✓

F = Slimes dam ✓

(2 x 1) (2)

3.2 Give ONE piece of evidence, in block **A2**, from the topographical map that supports the fact that gold mining takes place in the area.

Freddies Gold Mine (A2) ✓✓

[Any ONE – Accept other – must name mining.]

(1 x 2) (2)

3.3 Locate Free State Geduld Mine, in blocks **E3** and **E4**.

3.3.1 List THREE services or facilities that support this mine.

Roads ✓

Railways/Service rail ✓

Slime dams ✓

Settlements ✓

Hostels ✓

Sewerage works ✓

Recreational areas ✓

Shops ✓

Cemetery ✓

[Any THREE]

(3 x 1) (3)

3.3.2 Over recent decades, gold has declined in importance. What impact has this had on the economy of Odendaalsrus?

The town may suffer economically. ✓✓

People lose their jobs. ✓✓

Less money to spend in the town. ✓✓

[Any ONE – Accept other reasonable answers.]

(1 x 2) (2)

3.4 Explain TWO environmental impacts of gold mining in the area.

Environmental damage – scarring of the landscape ✓✓

Disruption of ecosystems ✓✓

Air/water pollution ✓✓

[Any TWO – But not health related responses]

(2 x 2) (4)

- 3.5 Identify the types of rural/urban land uses at **9**, **10** and **11** on the orthophoto map. Give a reason for the choice of the original site in each case.

SITE	TYPE	CHOICE OF SITE
9	CBD ✓	Flat/Accessible ✓
10	Recreation ✓	Rural urban fringe / cheap land ✓
11	Industry ✓	Close to railway + roads / Flat land ✓

(6 x 1) (6)

- 3.6 Refer to the **R30** arterial road, in block **H3**, on the topographic map. State ONE advantage of the **R30** bypassing the town of Welkom.

Reduces traffic congestion ✓✓
 Reduces overcrowding ✓✓
 Reduces air/noise pollution ✓✓
 Reduces accidents ✓✓

[Any ONE]

(1 x 2) (2)

TOTAL SECTION C: 25

SECTION D**QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)**

4.1 State THREE processes when working with GIS.

Data input ✓
Data storing ✓
Data manipulation ✓
Data analysis ✓
Data information ✓
Data management ✓
Data application ✓
[ANY THREE – Accept other]

(3 x 1) (3)

4.2 Data storage in GIS should be in a form of ...

1. vector. ✓
2. raster. ✓

(2 x 1) (2)

4.3 There are hundreds of data-collecting satellites orbiting earth.

4.3.1 Define the term *remote sensing*.

Refers to the observation of the earth from a distance using
satellites to gather information without having direct contact with
the area. ✓
[CONCEPT]

(1 x 1) (1)

4.3.2 Satellites gather data by using a/an (active/passive) system.
(Choose the correct word.)

passive ✓

(1 x 1) (1)

- 4.4 Another new mining development is planned for the Odendaalsrus. A GIS specialist has been called in to assist the mining developers with conducting an **EIA** (Environmental Impact Assessment) for the project.

4.4.1 Evaluate why a GIS analysis would be beneficial.

Need spacial queries:

Direction questions – Where on the map?

Position in relationship to town ✓✓

Distance questions – Mine not too close to nature reserves ✓✓

Marsh and wetland

Topography questions – Pollution in the area ✓✓

Rock type/drainage of area ✓✓

[ANY TWO – Accept other reasonable answers applicable to the answer.]

(2 x 2) (4)

4.4.2 Identify the TWO layers that a specialist would use for this study.

Geological rock structure/Ground ✓

Undergroundwater/Rivers/Drainage ✓

Relief layers/Mine dump/Relief altered ✓

Infrastructure – Roads/Railway layers/Degradation ✓

Economic activities ✓

Power lines ✓

[ANY TWO – Accept other answer related to negative impact of mining.]

(2 x 1) (2)

4.4.3 Motivate each of the answers given in QUESTION 4.4.2.

Geological rock structure – Sinkholes ✓

Undergroundwater/Rivers – Groundwater and rivers polluted ✓

Relief layers – Relief altered/environmental despolation/
landscape scarred ✓

Infrastructure – Roads/railway layers – altered routes ✓

(2 x 1) (2)

TOTAL SECTION D: 15

GRAND TOTAL: 75

