



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2013

**GEOGRAPHY P2
MEMORANDUM**

MARKS: 75

This memorandum consists of 8 pages.

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

The following statements are based on the 1 : 50 000 topographical map 2730DD VRYHEID, as well as the orthophoto 2730DD 2 VRYHEID EAST 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 (title) to the east of 2730DD map of Vryheid is ...

- A 2731CC.
- B 2831AA.
- C 2731CA.
- D 2730DC.

A

1.2 The man-made feature labelled **6** on the orthophoto map is a/an ...

- A main road.
- B pipe line.
- C power line.
- D national road.

C

1.3 The height of the index contour line marked **F** in block E4 is...

- A 1 200 m.
- B 1 120 m.
- C 1 100 m.
- D 1 150 m.

C

1.4 The physical feature marked **E** in block C6 on the topographical map is a ...

- A mesa.
- B ridge.
- C valley.
- D plateau.

C

1.5 The exact location (co-ordinates) of the reservoir in block C3 is ...

- A 27°47'35"S 30°47'20"E.
- B 30°46'20"E 27°48'25"S.
- C 27°48'25"S 30°47'55"E.
- D 30°45'10"E 27°45'05"S.

A

1.6 The direction in which the Besterspruit flows in block E4 on the topographical map is ...

- A westwards.
- B southwards.
- C northwards.
- D eastwards.

B

1.7 The scale of the orthophoto is ...

- A the same as the topographical map.
- B smaller than that of the topographical map.
- C larger than that of the topographical map.
- D impossible to tell from the information available.

C

1.8 The orthophoto map only depicts the ... part of the topographical map.

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

D

1.9 The direction of spot height 1168 (block C6) from spot height 1165 (block E5) is ...

- A south-west.
- B north-west.
- C south-east.
- D south.

A

1.10 The contour interval of the topographical map is ...

- A 5 m.
- B 20 m.
- C 10 m.
- D 25 m.

B

1.11 The map projection used on the orthophoto map is ...

- A Mercator.
- B Lambert.
- C Gauss conform.
- D universal transverse.

C

1.12 At 7 on the orthophoto map the land use is a/an ...

- A park.
- B hospital.
- C school.
- D industry.

C

1.13 Altitude in block B2 is represented by a ...

- A benchmark and contour lines.
- B spot height and a bench mark.
- C trigonometrical station and spot height.
- D contour lines and spot height.

A

1.14 The orthophoto was taken ...

- A in the morning between 10:00 and 11:00.
- B midday between 12:00 and 13:00.
- C in the afternoon between 16:00 and 17:00.
- D None of the above

C

1.15 The word scale of the orthophoto map is:

- A 1 cm represents 10 000 cm in reality
- B 1 cm represents 1 000 cm in reality
- C 1 cm represents 100 cm in reality
- D 1 cm represents 10 cm in reality

C

(15 x 1) (15)

TOTAL SECTION A: 15

SECTION B

QUESTION 2: GEOGRAPHICAL TECHNIQUES AND CALCULATIONS

2.1 Calculate actual (real) distance in metres from point 1 to point 2 on the orthophoto map.

Show ALL the calculations. Express your answer in kilometres/metres.

Distance = distance in cm x scale/10 000

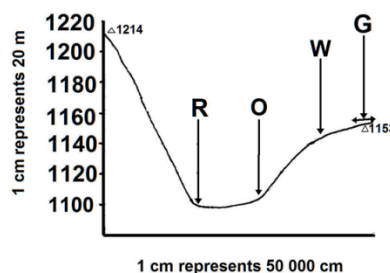
$$\begin{aligned}
 &= 3,4 \text{ cm} \checkmark \times 10\,000 \checkmark & \text{OR} &= 3,4 \checkmark \times 0,1 \text{ km} \checkmark \\
 &= \frac{34\,000}{100\,000} \text{ cm} = 0,34 \text{ km} \times 1\,000 & &= 0,34 \text{ km} \times 1\,000 \\
 &= 340 \text{ m} \checkmark \checkmark & &= 340 \text{ m} \checkmark \checkmark
 \end{aligned}$$

(Range: [3,3 cm] = 330 m – [3,5 cm] = 350 m) (4)

2.2 Study the cross-section between trigonometrical station $\Delta 381$ in block B5 and trigonometrical station $\Delta 370$ in block C2.

Indicate the positions of the following features on the cross-section. Use the letters in brackets to indicate the position of these features.

- River (R)
- Main Road (O)
- Runway (W)
- Golf Course (G)



(4)

- 2.3 Calculate the vertical exaggeration of the cross-section in QUESTION 2.2 above. Show ALL your calculations.

$$VE = \frac{VS}{HS}$$

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

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

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

$$\begin{aligned} VS &= 1 \text{ cm} : 20 \text{ m } \checkmark \\ HS &= 1 \text{ cm} : 500 \text{ m} \end{aligned}$$

OR

$$VE = \frac{VS}{HS}$$

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

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

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

$$\begin{aligned} VS &= 1 \text{ cm} : 20 \text{ m (1 cm : 2\ 000 cm)} \checkmark \\ HS &= 1 \text{ cm} : 50\ 000 \text{ cm} \end{aligned}$$

(5)

- 2.4 Determine the geographic or true bearing of the trigonometrical station $\Delta 381$ in block B5 to trigonometrical station $\Delta 370$ in block C2.

$$19^\circ \checkmark\checkmark$$

(Range 18° to 20°)

(2)

- 2.5 Calculate the magnetic declination for the year 2013. Show ALL calculations.

$$\begin{aligned} \text{Difference in years:} &= 2013 - 1997 \\ &= 16 \text{ years } \checkmark \end{aligned}$$

$$\begin{aligned} \text{Mean annual change:} &= 16 \times 6' \text{ W} \\ &= (96' \text{ W}) 1^\circ 36' \checkmark \end{aligned}$$

$$\begin{aligned} \text{MD for 2013:} &= 19^\circ 38' \\ &+ \checkmark 1^\circ 36' \\ &21^\circ 14' \text{ W } \checkmark\checkmark \end{aligned}$$

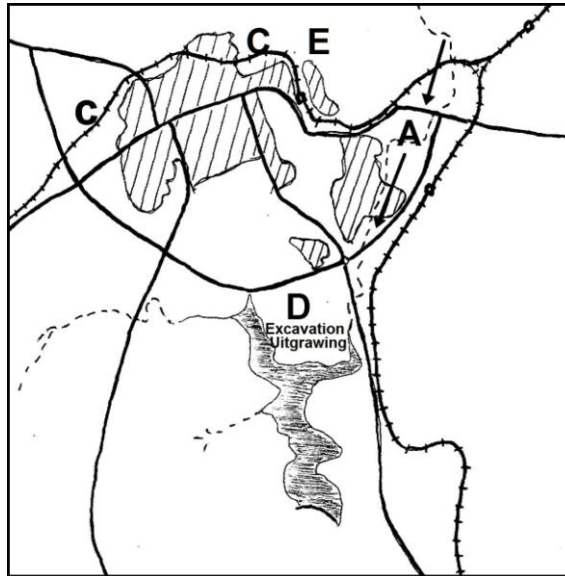
(5)

TOTAL SECTION B: 20

SECTION C

QUESTION 3: MAP INTERPRETATION AND ANALYSIS

- 3.1 The sketch map below represents the area covered by the topographical map. Study the topographical map and then indicate the features, referred to in QUESTIONS 3.1.1, 3.1.3 and 3.1.5, as accurately as possible on this sketch map.

ReferenceVerwysing

River



Rivier

Roads



Paaie

Railway



Spoorweg

Built-up areas



Beboude gebied

- 3.1.1 Use arrows (→→→) to show the direction of flow of the river at **A**.

On sketch (→ **A** →) ✓

(1)

- 3.1.2 Give TWO reasons why you have indicated that direction.

Contour values higher in N ✓

Dam wall/River flows towards the dam ✓

Contours make a V pointing upstream ✓

(Any 2 x 1)

(2)

- 3.1.3 Use the letter **C** to indicate the railway line linking Vryheid to Kingsley.

On sketch C ✓

(1)

- 3.1.4 What primary economic activity is situated at **D**?

Excavation ✓✓

(2)

- 3.1.5 Indicate the situation of the Vryheid Rifle Range, north of the railway line, with the letter **E**.

On sketch E ✓

(1)

3.2 Explain the location of the aerodrome (block C3) on the topographical map.

- Far from the CBD ✓✓
- Cheap land ✓✓
- Close to the road ✓✓
- Flat Land ✓✓
- Need a large piece of land ✓✓
- Away from residential areas ✓✓

(Any 2 x 2) (4)

3.3 Bhekuzulu is growing towards the east. Give ONE reason that is visible on the orthophoto map, why would it be very difficult for this township to extend to the north west.

- Industrial area ✓✓

(1 x 2) (2)

3.4 Refer to both the orthophoto map and the topographical map and identify the name of the recreational ground (block D1).

- Cecil Emmat Park ✓✓

(1 x 2) (2)

3.5 There are several “green areas” like the Vryheid Nature Reserve, (3 on the orthophoto map) that are important to the town. Provide the geographical term to name these green areas.

- Greenbelt ✓✓

(1 x 2) (2)

3.6 Explain why these green areas are important to the urban environment.

- Absorb CO₂ ✓✓
- They stop expansion of urban areas ✓✓
- They supply O₂ ✓✓
- For beauty ✓✓
- Provide habitat for certain wild life species ✓✓
- Beautify environment ✓✓
- Reduce erosion ✓✓
- Protect buildings against strong winds ✓✓
- Reduce urban temperatures ✓✓
- Provide people with shade ✓✓
- Recreation area ✓✓

(Any 2 x 2) (4)

3.7 The railway line has a very winding course because of uneven topography. Give ONE technique used by engineers in the construction of the railway line.

- Tunnels ✓✓
- Embankments/cuttings ✓✓
- Railway line detours to follow gentle gradient ✓✓

(Any 1 x 2) (2)

3.8 Agriculture in the mapped area is limited and difficult. Explain ONE reason for the limited agriculture in the area.

- Limited flat land – hard to use machinery ✓✓
- Limited rainfall – irrigation has to be used ✓✓
- Little grass and vegetation for pastures – stock farming ✓✓
- Mostly non-perennial streams ✓✓

(Any 1 x 2) (2)

TOTAL SECTION C: 25

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

4.1 Differentiate between spatial and attribute data.

Spatial: Data that is linked to a specific location ✓✓

Attribute: Data that expresses a number of qualities and characteristics of spatial data ✓✓ (2 x 2) (4)

4.2 Use the topographical map and provide a real example of the following:

Point:
Trigonometrical station Δ 103 ✓ (1)

Line:
Track and hiking trail ✓
Row of trees (windbreak) ✓
Other road/Secondary road/Arterial road ✓
Non-perennial rivers ✓
Power line ✓ (Any 1 x 1) (1)

Polygon (Area):
Klipfontein Dam ✓
Cemetery ✓
Excavation ✓
Built up area/Buildings ✓
Rec ✓
School ✓ (Any 1 x 1) (1)

4.3 Locate the nature reserve in block B1/C1, which makes use of a GIS system to help manage the reserve sustainably.

Name THREE sets of data the reserve management would need to manage the land-use in the reserve sustainably.

Vegetation cover ✓✓
Relief of land ✓✓
Drainage (rivers and dams) ✓✓
Type of soil ✓✓ (Any 3 x 2) (6)

4.4 Name any ONE component of GIS.

People/users ✓✓
Software/computer programmes ✓✓
Data/information/maps/photos ✓✓
Applications ✓✓
Hardware/computer ✓✓
Procedure ✓✓ (Any 1 x 2) (2)

TOTAL SECTION D: 15
GRAND TOTAL: 75