

INSTRUCTIONS AND INFORMATION

RESOURCE MATERIAL

1. An extract from topographical map 2528DA CULLINAN.
2. Orthophoto map 2528DA16 CULLINAN.
3. **NOTE:** The resource material must be collected by schools for their own use.

INSTRUCTIONS AND INFORMATION

1. Write your **REGISTER NUMBER** and **NAME** in the spaces 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 2528DA of CULLINAN 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 may use the blank page at the back of this question paper for all rough work and calculations. Do **NOT** detach this page from the question paper.
6. Show **ALL** calculations, where applicable. Marks will be allocated for these.
7. You may use a non-programmable calculator.
8. The area demarcated in **RED** on the topographical map represents the area covered by the orthophoto map.
9. The following English terms and their Afrikaans translations are shown on the topographical map.

ENGLISH

Diggings
 Conveyor belt
 Golf course
 River
 Diamond mine
 Sewage works
 Waterworks
 Sewage disposal works
 Rifle range
 Landing strip
 Brickworks
 Furrow
 Refuse dump

AFRIKAANS

Uitgrawings
 Vervoerband
 Gholfbaan
 Rivier
 Diamantmyn
 Rioolwerke
 Waterwerke
 Rioolverwyderingswerke
 Skietbaan
 Landingstrook
 Steenwerke
 Voor
 Vullisstortingsterrein

GENERAL INFORMATION ON CULLINAN

Cullinan is situated in the Highveld region of South Africa. The town has an elevation of 1 476 m. The closest city is Pretoria, which is 40 km away, while Johannesburg is 100 km away. On 25 June 1905 the famed Cullinan Diamond, the largest in the world at 3 106 carats (621 g), was discovered by Frederick George Stanley Wells, a surface manager at the Premier Diamond Mining Company. The town of Cullinan owes its existence to diamond mining in the area. Cullinan's opencast mine is among the biggest in the world, three times the size of the more famous Kimberley Diamond Mine.

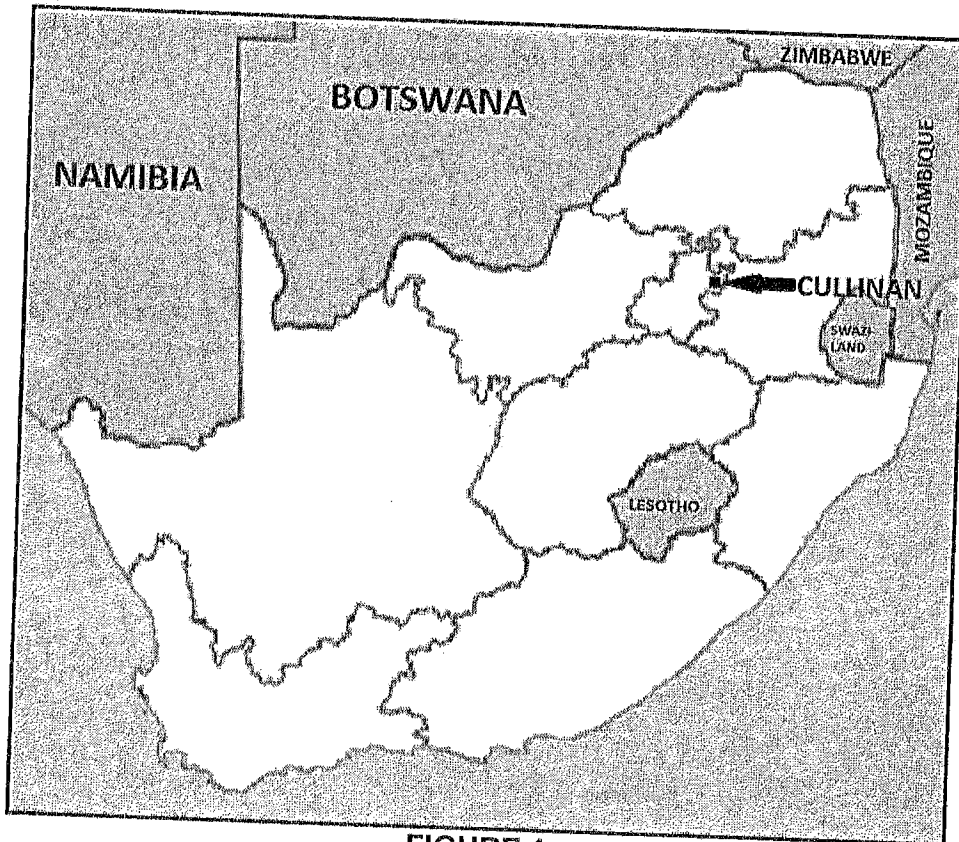


FIGURE 1

QUESTION ONE

MULTIPLE CHOICE QUESTIONS

The following questions are based on the 1:50 000 topographical map, as well as the orthophoto map. Various options are provided as possible answers to the following questions. Choose the answer and circle only the letter (A – D) of the correct answer.

1.1. The contour interval of the TOPOGRAPHIC map is ...

- A) 5M
- B) 10M
- C) 20M
- D) 15M

1.2. The map projection used on the topographical map is ...

- A) Gauss Conform Projection
- B) Lamberts Projection
- C) Mercator
- D) Universal Transverse.

1.3. The scale of the orthophoto map means that 1 cm on the map represents ..

- A) 0,1 Km
- B) 10 Km
- C) 0,5 Km
- D) 50 Km

1.4. The height of M in block B5 is metres

- A) 1080
- B) 1100
- C) 1120
- D) 1400

1.5. Slope at S on the topographic map is

- A) Steep
- B) Concave
- C) Convex
- D) Gentle

1.6. The man-made feature P on the topographic map map is a ...

- A) main road
 - B) Secondary road
 - C) other road
 - D) national road
-

1.7. Feature 5 on the orthophoto map is

- A) mountain pass
 - B) Row of trees
 - C) a firebreak
 - D) saddle
-

1.8. The orthophoto map is ... the topographic map

- A) 5 times smaller
 - B) 5 times larger
 - C) 50 times smaller
 - D) 10 times larger
-

1.9. The orthophoto map is an example of a/an ... photograph

- A) Vertical
 - C) Oblique
 - C) High oblique
 - D) Low oblique
-

1.10. The magnetic declination in 2016 will be ... than the one for 2002

- A) Smaller
 - B) Bigger
 - C) Same
 - D) None of the above .
-

1.11. The magnetic bearing compared to the true bearing will be ..

- A) Greater
 - B) Smaller
 - C) Same
 - D) None of the above
-

1.12. The direction of O from P is ...

- A) SW
 - B) NE
 - C) NW
 - D) SE
-

1.13. The main primary activity at Q is ...

- A) Farming
- B) Forestry
- C) Mining
- D) Orchards

1.14. The latitudinal position in the reference 2528DA is ..

- A) 25° S
- B) 25° E
- C) 28° S
- D) 28° E

1.15. Cullinan is found in

- A) Eastern Cape
- B) Gauteng
- C) Western Cape
- D) Mpumulanga

(15 x 1) [15]

QUESTION TWO

MAP CALCULATIONS

2.1. Calculate the distance in metres, of feature 5 on the orthophoto map..

_____ (3)

2.2. Calculate the average gradient between M and trig beacon 53 in C2 on the topographic map.

_____ (4)

2.3. Calculate the true bearing of the spot height at R from the spot height at Q. _____ (3)

2.4. Calculate the magnetic bearing of the points in question 2.3 for 2002

_____ (2)

2.5. Calculate the vertical exaggeration of a cross section drawn from the orthophoto map with A vertical of 2 cm represents 100m.

_____ (4)

2.6. Give one importance of calculating vertical exaggeration.

_____ (2)

() 2.7. Two methods are used to show height in E6. State two other methods that can be used to show height.

_____ (2)
[20]

QUESTION 3

MAP AND PHOTO INTERPRETATION

3.1.1. Quote two pieces of evidence from the topographic map which suggests that Cullinan receives seasonal rainfall.
a) _____
b) _____ (4)

3.2. Refer to the topographic map and orthophoto map:

3.2.1. What is Cullinan famous for

(3)

3.2.2. Name two uses of the dam around the letter S.

(2)

3.2.3. Name the following land uses

N _____

Y _____

Z _____

U _____

(8)

3.3.1. State two problems that can occur as a result of the diamond mine in D1

(4)

3.3.2. State the distance of the nearest town using rail transport in a southerly direction.

(2)

3.3.3. State two importance of the large feature at 10 on the orthophoto map, to the community of Cullinan.

(2)

[25]

QUESTION 4

GEOGRAPHICAL INFORMATION SYSTEM

- 4.1. What is Geographical Information system? _____ (2)
- 4.2. State two uses of GIS for conducting a population census.
a) _____
_____ (2)
b) _____
_____ (4)
- 4.3. Define the following:
Spectral resolution _____ (2)
_____ (2)
Active remote sensing _____ (2)
_____ (2)
- 4.3. State the type of data represented by the following.
Topographic map: _____ (2)
Orthophoto map: _____ (2)
- 4.4. Name one electronic device that can be used by motorists to find places.
_____ (1)

[15]

TOTAL = 75

GOOD LUCK

ROUGH WORK

GREENBURY SECONDARY SCHOOL



DEPARTMENT OF HSS
H.O.D. MR D RAMASAMI

D. Ramasami

03/06/16

KZN - DEPARTMENT OF EDUCATION

GREENBURY SECONDARY SCHOOL

JUNE EXAMINATION 2016

GEOGRAPHY P2

pp10

GRADE: 11 DATE: 10/06/16
EXAMINER: D. RAMASAMI TIME: 1.5 HOURS
MODERATOR: R. RANGANATHAN MARKS: 75

NAME:

Memo

GRADE/
DIV:

11

EDUCATOR

QUESTION	CONTENT	MARKS
ONE	Multiple choice questions	15
TWO	Map calculations	20
THREE	Map and photo interpretation	25
FOUR	Geographical Information System	15

MARKS:

75

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AFRIKAANS

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 Rioolwerke
 Waterwerke
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 Skietbaan
 Landingstrook
 Steenwerke
 Voor
 Vullisstortingsterrein

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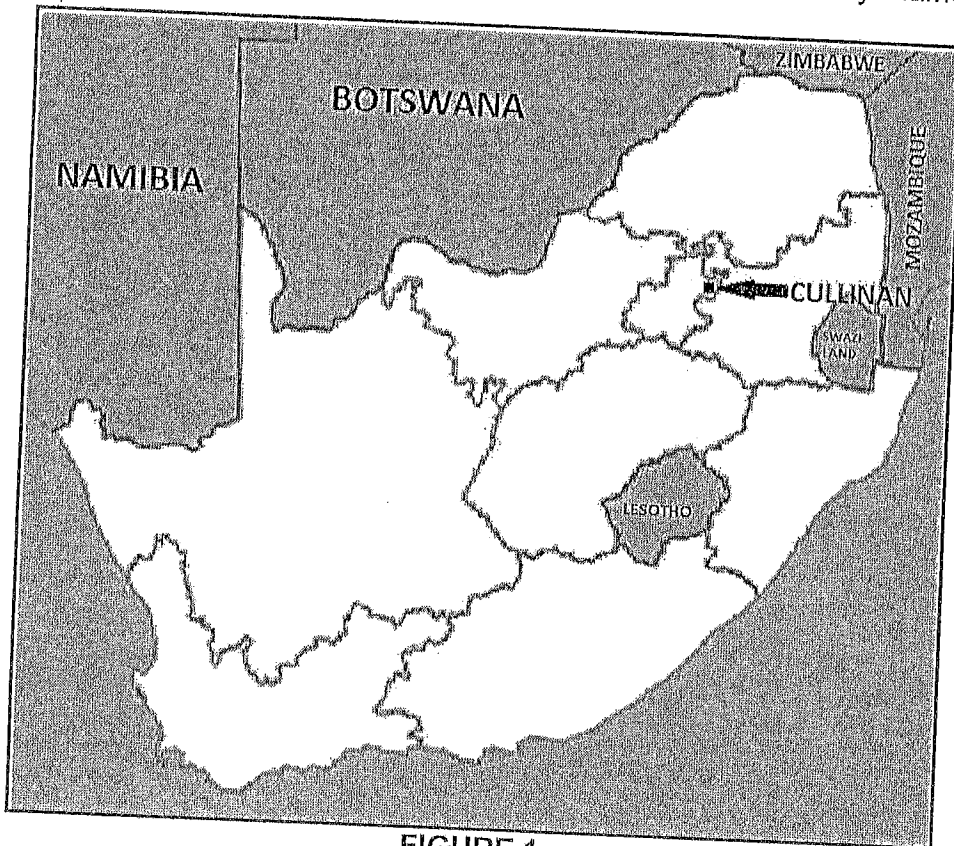


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D) 15M
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- A) Gauss Conform Projection
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C) Mercator
D) Universal Transverse.
- A
- 1.3. The scale of the orthophoto map means that 1 cm on the map represents ..
- A) 0,1 Km
B) 10 Km
C) 0,5 Km
D) 50 Km
- A
- 1.4. The height of M in block B5 is metres
- A) 1080
B) 1100
C) 1120
D) 1200
- b
- 1.5. Slope at S on the topographic map is
- A) Steep
B) Concave
C) Convex
D) Gentle
- A

1.6. The man-made feature P on the topographic map map is a ...

- A) main road
- B) Secondary road
- C) other road
- D) national road

B

1.7. Feature 5 on the orthophoto map is

- A) ~~forest~~ Mountain Pass
- B) Row of trees
- C) a firebreak
- D) ~~a fence~~ Saddle

D

1.8. The orthophoto map is ... the topographic map

- A) 5 times smaller
- B) 5 times larger
- C) 50 times smaller
- D) 10 times larger

B

1.9. The orthophoto map is an example of a/an ... photograph

- A) Vertical
- B) Oblique
- C) High oblique
- D) Low oblique

A

1.10. The magnetic declination in 2016 will be ... than the one for 2002

- A) Smaller
- B) Bigger
- C) Same
- D) None of the above .

B

1.11. The magnetic bearing compared to the true bearing will be ..

- A) Greater
- B) Smaller
- C) Same
- D) None of the above

A

1.12. The direction of O from P is ...

- A) SW
- B) NE
- C) NW
- D) SE

A

1.13. The main primary activity at Q is ...

- A) Farming
- B) Forestry
- C) Mining
- D) Orchards

A

1.14. The latitudinal position in the reference 2930 is ..

- A) 29° S
- B) 29° E
- C) 30° S
- D) 30° E

A

1.15. Cullinan is found in

- A) Eastern Cape
- B) Gauteng
- C) Western Cape
- D) Mpumulanga

B

(15 x 1) [15]

QUESTION TWO

MAP CALCULATIONS

2.1. Calculate the distance in metres, of feature 5 on the orthophoto map..

$$\begin{aligned}
 MD &= 34 \text{ mm} = 3,4 \text{ cm} \quad \checkmark \quad (3,2-3,6) \\
 GD &= 3,4 \times 0,1 \text{ km} \\
 &= 0,34 \text{ km} \quad \checkmark \\
 &= 340 \text{ m} \quad \checkmark \quad (320-360) \quad (3)
 \end{aligned}$$

2.2. Calculate the average gradient between M and trig beacon 53 in C2.

$$\begin{aligned}
 \text{Gradient} &= \frac{VI}{HE} \quad \text{or} \quad \frac{VI}{HE} \quad \checkmark \\
 &= \frac{1484,7 - 1400 \text{ m}}{9,7 \pm 2 \text{ km}} \\
 &= \frac{84,7 \text{ m}}{4,85 \text{ km}} \quad \checkmark \\
 &= \frac{84,7}{4,85} \quad \checkmark \\
 &= 17,36 \quad \checkmark \quad (16-18) \\
 &= 17,36 \quad \checkmark \quad (16-18) \quad (4)
 \end{aligned}$$

- 2.3. Calculate the true bearing of the spot height at R from the spot height at Q.

$$180^\circ + 95^\circ = 275^\circ \quad (273^\circ - 277^\circ) \quad \checkmark \checkmark \quad (3)$$

- 2.4. Calculate the magnetic bearing of the points in question 2.3 for 2002.

$$\begin{aligned} MB &= TB + MB \quad \checkmark \\ &= 275^\circ + 16^\circ 52' \\ &= 291^\circ 52' \quad \checkmark \quad (289^\circ 52' - 293^\circ 52') \end{aligned} \quad (2)$$

- 2.5. Calculate the vertical exaggeration of a cross section drawn from the orthophoto map with a vertical of 2 mm represents 100m.

$$\begin{aligned} VE &= VS / HS \quad \checkmark \\ &= \frac{2 \text{ cm rep } 100 \text{ m}}{1 : 10000} = \frac{10000}{5000} \quad \checkmark \\ &= 2 \text{ times} \quad \checkmark \\ &= \frac{1 \text{ cm rep } 50 \text{ m}}{1 : 10000} \quad \checkmark \\ &= \frac{1 : 5000}{1 : 10000} \end{aligned} \quad (4)$$

- 2.6. Give one importance of calculating vertical exaggeration.

Can enlarge features to see detail.

(2)

- 2.7. Two methods are used to show height in E6. State two other methods that can be used to show height.

Benchmark \checkmark

Trig beacon \checkmark

(2)

[20]

QUESTION 3

MAP AND PHOTO INTERPRETATION

- 3.1.1. Quote two pieces of evidence from the topographic map which suggests that Cullinan receives seasonal rainfall.

a) No perennial Rivers $\checkmark \checkmark$

b) Form dams $\checkmark \checkmark$

(4)

3.2. Refer to the topographic map and orthophoto map:

3.2.1. What is Cullinan famous for

Cullinan Diamond - largest in the world - 621 g (3)

3.2.2. Name two uses of the dam around the letter S.

Water
Recreation (2)

3.2.3. Name the following land uses

N Railway Station
Y Dam wall / Dam
Z Other road
U Residential / Built up area (8)

3.3.1. State two problems that can occur as a result of the diamond mine in D1

Degradation of land
Pollution (4)

3.3.2. State the distance of the nearest town using rail transport in a southerly direction.

Bronkhorstspuit - 22 km (2)

3.3.3. State two importance of the large feature at 10 on the orthophoto map, to the community of Cullinan.

Creates employment
Brings in income (2)

[25]

QUESTION 4

GEOGRAPHICAL INFORMATION SYSTEM

4.1. What is Geographical Information system?

Use of computer technology to analyse geographical info // (2)

4.2. State two uses of GIS for conducting a population census.

a) Use satellite images to identify and map regions. //

b) Use GPS to find direction //

(4)

4.3. Define the following and give an example of each:

Spectral resolution refers to the range of radiation that a remote sensing device is sensitive to // (2)

Active remote sensing Signals are sent out and the reflection is picked up by a remote sensing device // (2)

4.3. State the type of data represented by the following.

Topographic map: Vector // (2)

Orthophoto map: Raster // (2)

4.4. Name one electronic device that can be used by motorists to find places.

GPS // (1)

[15]

TOTAL = 75

GOOD LUCK

ROUGH WORK

