



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

GEOG.2

GEOGRAPHY P2

NOVEMBER 2014

MARKS: 75

TIME: 1½ hours

EXAMINATION NUMBER:																				
CENTRE NUMBER:																				

QUESTION NUMBER	Q1	Q2	Q3	Q4	TOT
MARKER					
MODERATOR					
MARK SCORED					
TOTAL	15	20	25	15	75

This question paper consists of 14 pages and
1 page for rough work and calculations.

AFTERNOON SESSION



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 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 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
Golfbaan
Rivier
Diamantmyn
Rioolwerke
Waterwerke
Riolverwyderingswerke
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.

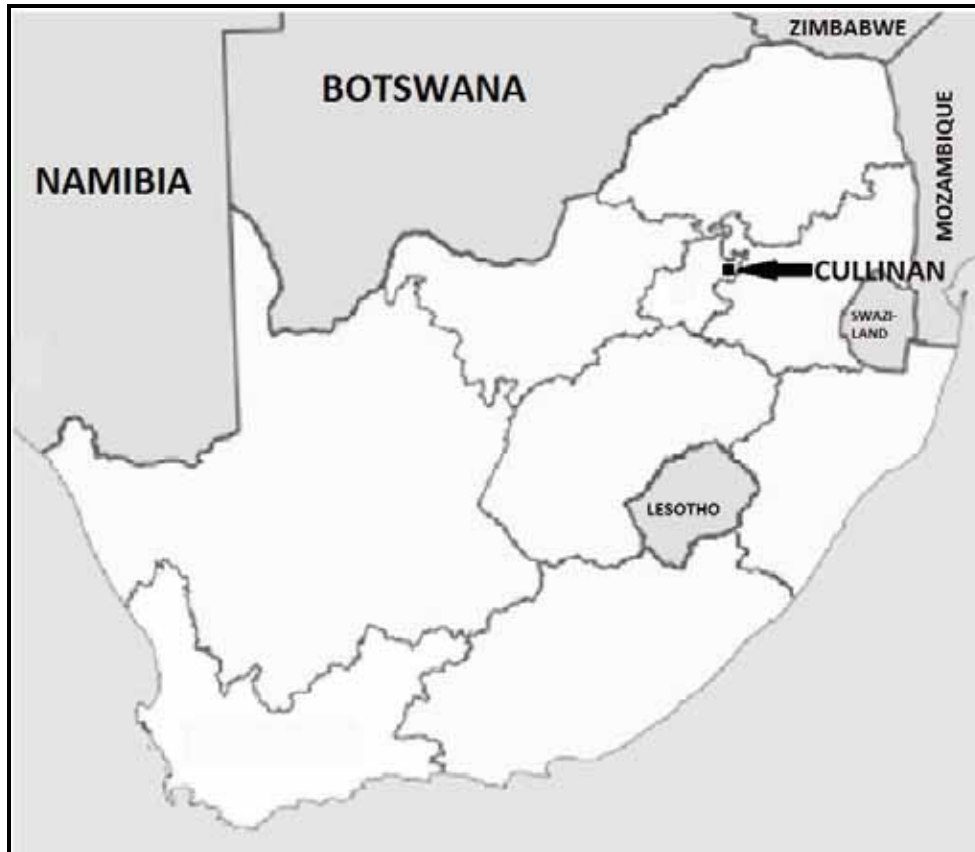


FIGURE 1



QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographical map 2528DA CULLINAN, 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 The map index/reference of the topographical map to the south-east of Cullinan is ...

- A 2528BD.
- B 2528AD.
- C 2528DD.
- D 2528DB.

1.2 The direction of **P** in block **B8** from **O** in block **C6** is ...

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

1.3 Cullinan is a/an ... town.

- A industrial
- B recreational
- C dormitory
- D mining

1.4 The street pattern at Refilwe in block **B2** is ...

- A unplanned.
- B irregular.
- C radial.
- D a gridiron.

1.5 The contour interval on the orthophoto map is ... metres.

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

1.6 The orthophoto map is an example of a ... photograph.

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



1.7 The dam wall (**Y**) in block **F8** is ... metres above sea level.

- A 1 500
- B 20
- C 150
- D 1 400

1.8 The human-made feature at **4** on the orthophoto map is a ...

- A park.
- B cemetery.
- C golf course.
- D conservation area.

1.9 The natural feature at **7** on the orthophoto map is a ...

- A valley.
- B spur.
- C gorge.
- D gap.

1.10 The row of trees in block **H5** is used as a ...

- A firebreak.
- B farm boundary.
- C plantation.
- D windbreak.

1.11 The true bearing of spot height 1452 (**K**) in block **F1** from trigonometrical station 44 (**J**) in block **E2** is ...

- A 24°.
- B 294°.
- C 204°.
- D 94°.

1.12 The major land-use zone in block **E4** is the ...

- A rural-urban fringe.
- B heavy industrial area.
- C residential area.
- D light industrial area.

1.13 Feature **6** on the orthophoto map is a ...

- A mine.
- B dam.
- C excavation.
- D mine dump.



1.14 The stream order at **X** in block **C5** is ...

- A 4.
- B 3.
- C 1.
- D 2.

1.15 The grid reference/coordinates/position of the dam in block **F7** is ...

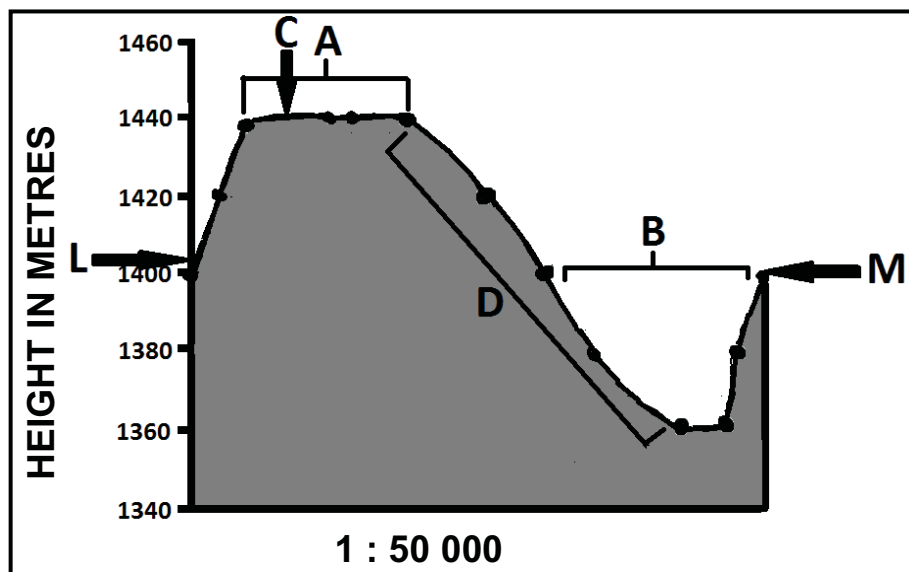
- A 25°42'48"S 28°36'30"E/25°42,8'S 28°36,5'E.
- B 28°42'30"S 25°36'48"E/28°42,5'S 25°36,8'E.
- C 25°42'30"E 28°36'48"S/25°42,5'E 28°36,8'S.
- D 25°42'30"S 28°36'48"E/25°42,5'S 28°36,8'E.

(15 x 1)

[15]

QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 Refer to the cross-section below from **L** in block **A2** to **M** in block **B5** on the topographical map and answer the questions that follow. The vertical scale for the cross-section is 1 cm represents 20 m.



2.1.1 Identify landforms **A** and **B** on the cross-section above.

A: _____

B: _____

(2 x 1)

(2)



2.1.2 (a) Identify the conventional sign at **C** that shows height.

_____ (1 x 1) (1)

(b) State the height of the conventional sign at **C**.

_____ (1 x 1) (1)

2.1.3 (a) Which average gradient will apply to slope **D** on the cross-section? Circle the correct answer (**A** or **B**) below.

A 1 : 22

B 1 : 122 (1 x 1) (1)

(b) Give a reason for your answer to QUESTION 2.1.3(a).

_____ (1 x 1) (1)

2.1.4 Calculate the vertical exaggeration of the cross-section. Show ALL calculations. Marks will be awarded for calculations.

Vertical exaggeration = $\frac{\text{vertical scale}}{\text{horizontal scale}}$

_____ (4 x 1) (4)



2.2 Calculate the magnetic declination of topographical map 2528DA CULLINAN for 2014. Show ALL calculations. Marks will be awarded for calculations.

(5 x 1) (5)

2.3 Refer to the demarcated area in RED on the topographical map which represents the orthophoto map. Use the demarcated area to calculate the surface area of the orthophoto map in km². Show ALL calculations. Marks will be awarded for calculations.

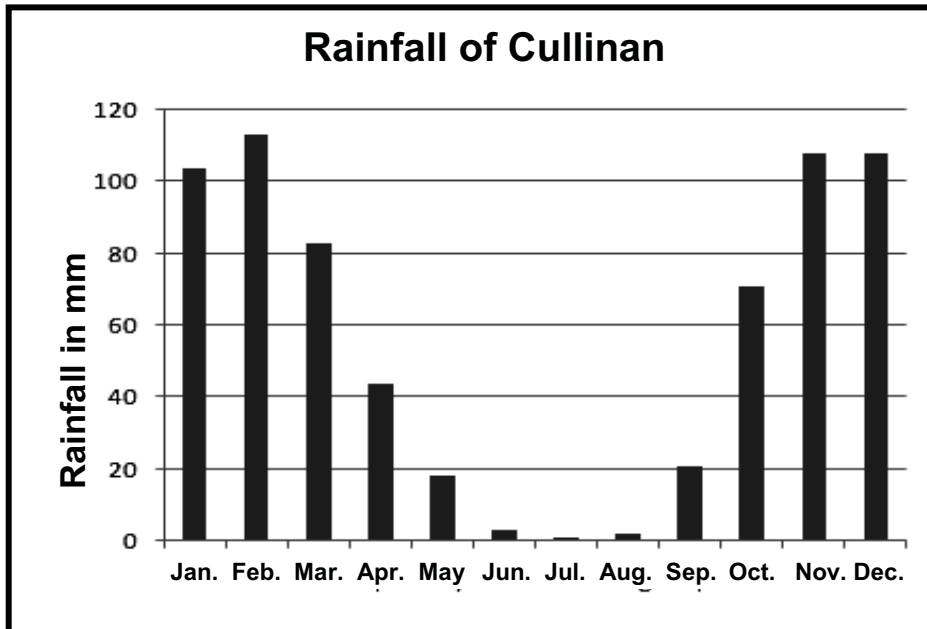
Area = length × breadth

(5 x 1) (5)
[20]



QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to the graph below, the information on page 3 and the topographical map to answer the questions that follow.



3.1.1 Does Cullinan receive seasonal rainfall or rainfall throughout the year?

_____ (1 x 1) (1)

3.1.2 Give ONE point of evidence from the graph and ONE point of evidence from the topographical map to support your answer to QUESTION 3.1.1.

Graph: _____

Topographical map: _____

_____ (2 x 1) (2)

3.1.3 Taking your answer to QUESTION 3.1.1 into account, was the orthophoto map taken in summer or winter? Give a reason for your answer.

Answer: _____

Reason: _____

_____ (1 + 2) (3)



- 3.2 3.2.1 State the general flow direction of the Masokololo River in block **C8**.
-
- (1 x 1) (1)
- 3.2.2 Give ONE reason from the topographical map for your answer to QUESTION 3.2.1.
-
-
- (1 x 2) (2)
- 3.3 Refer to the settlement at point **V** in block **D8** and answer the questions below.
- 3.3.1 Name the settlement pattern of the settlement at point **V**.
-
- (1 x 1) (1)
- 3.3.2 State ONE disadvantage for a farm labourer living in the settlement in QUESTION 3.3.1.
-
-
-
- (1 x 2) (2)
- 3.4 Refer to blocks **D1** and **D2** indicating the Premier Diamond Mine, an opencast mine situated on the outskirts of Cullinan. Study it together with the orthophoto map and answer the questions that follow.
- 3.4.1 State ONE environmental injustice that this type of mining caused in the area surrounding the Premier Diamond Mine.
-
- (1 x 1) (1)
- 3.4.2 Discuss TWO measures that mining companies can implement to restore the environmental balance.
-
-
-
-
-
- (2 x 2) (4)



3.4.3 Evaluate why mining companies choose not to restore the environmental balance you mentioned in QUESTION 3.4.2.

(2 x 2) (4)

3.5 Refer to the farm Uitzicht in block **E7** and answer the questions that follow.

3.5.1 Does the farm Uitzicht practise small-scale or large-scale farming?

(1 x 1) (1)

3.5.2 Give ONE reason from the topographical map to support your answer to QUESTION 3.5.1.

(1 x 2) (2)

3.6 The residential area at point **9** on the orthophoto map is a high-income residential area.

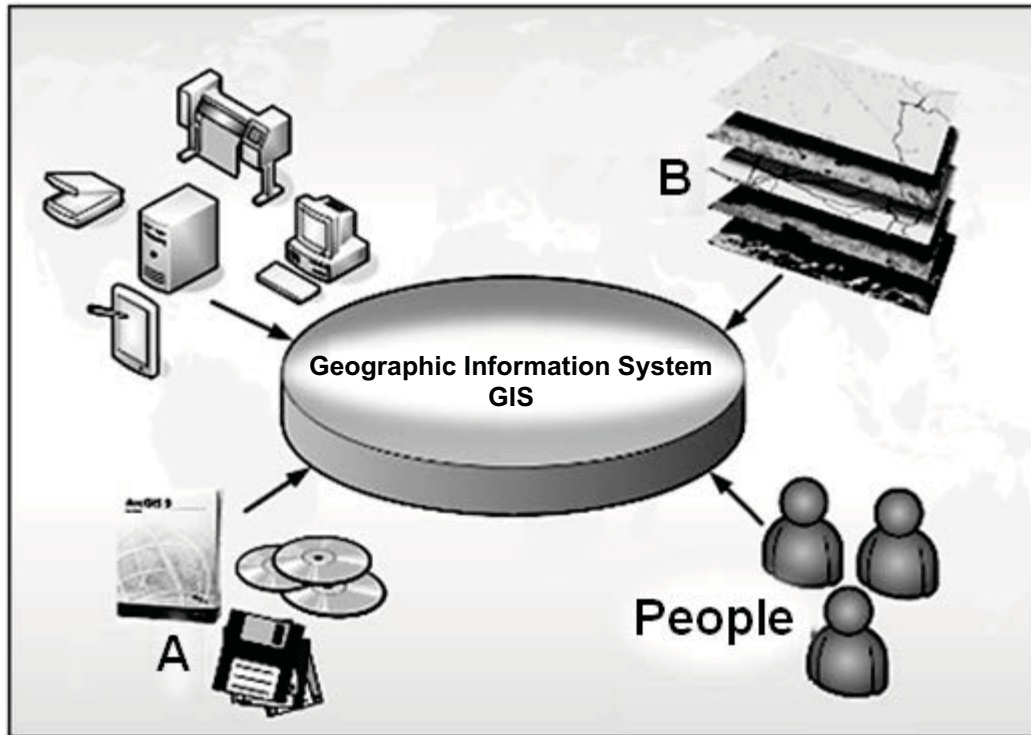
Give ONE piece of evidence from the orthophoto map to support this statement.

(1 x 1) (1)
[25]



QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 The diagram below shows the different components of a GIS. Study the diagram and answer the questions that follow.



[Adapted from Google Images]

4.1.1 Identify components **A** and **B**.

A: _____

B: _____

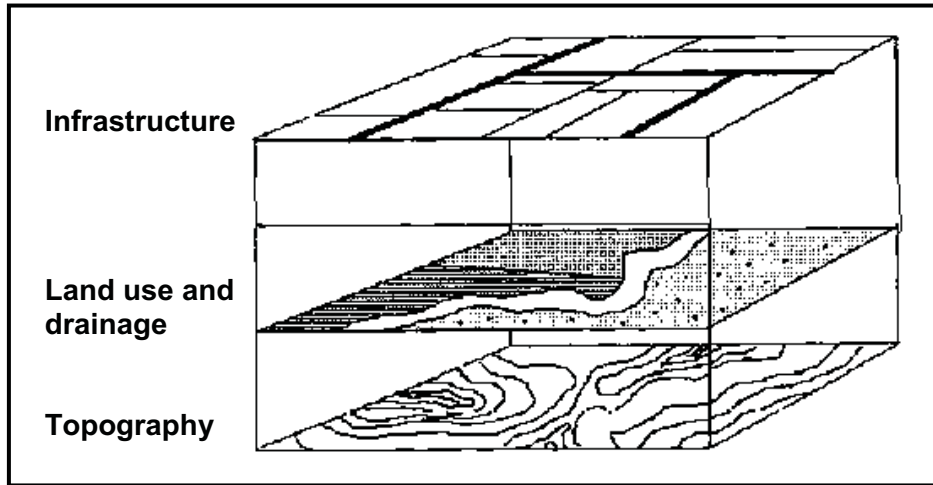
(2 x 1) (2)

4.1.2 Explain the role that people play in a GIS.

(1 x 2) (2)



4.2 In order to do a paper GIS it is important to familiarise oneself with the different layers of information. Refer to block **F6** on the topographical map and the diagram below to answer the questions that follow.



[Adapted from Google Images]

4.2.1 Give ONE example of each of the following layers in block **F6**:

Infrastructure: _____

Land use: _____

Drainage: _____

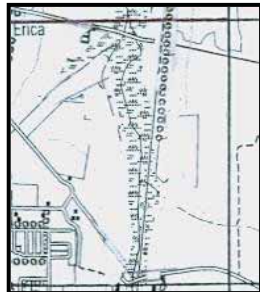
(3 x 1) (3)

4.2.2 Why is data layering (information layers) important in a GIS?




(1 x 2) (2)



4.3 The area around the marsh and vlei in block **E5** is a flood risk. Hydrologists have recommended that a buffer zone of 250 m be created around the marsh and vlei where no development may take place. Refer to the extract of block **E5** on the topographical map below and answer the questions that follow.



Scale 1 : 50 000

- Marsh and vlei 
- Perennial river 
- Non-perennial river 

- 4.3.1 Draw in the buffer zone recommended by the hydrologists on the above extract of block **E5**. (2 x 1) (2)
- 4.3.2 Identify ONE human-made buffer zone and ONE natural buffer zone in block **E5**.
- Human-made: _____
- Natural: _____ (2 x 1) (2)
- 4.3.3 State ONE site factor that determined the location of the settlement Erica in blocks **E4** and **E5**. _____ (1 x 2) (2)
- TOTAL: 75**

ROUGH WORK AND CALCULATIONS