Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

NOVEMBER 2019

GRADE 10

GEOGRAPHY P2

SURNAME: _____

NAME: _____

MARKS: 75

TIME: 1½ hours

* X G E O E 2 *

		MARKS	HOD	CLUSTER	PROVINCIAL
Q1	15				
Q2	20				
Q3	25				
Q4	15				

TOTAL MARKS	MOD.
75	75

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

RESOURCE MATERIAL

1. An extract from the topographical map 2730 DD VRYHEID.
2. Orthophoto map 2730DD 2 VRYHEID EAST.
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 provided with a 1 : 50 000 topographic map (2730DD VRYHEID) and a 1 : 10 000 orthophoto map (2730DD 2 VRYHEID EAST) of a part of the mapped area.
4. You must hand in the topographic 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. DO NOT detach this page from the question paper.
6. Show ALL calculations and formulae, where applicable. Marks will be awarded for these.
7. Indicate the unit of measurement in the final answer of calculations. Ensure that units are maintained throughout ALL your calculations and final answer.
8. You may use a non-programmable calculator.
9. The area demarcated in BLACK on the topographic map represents the area covered by the orthophoto map.
10. A glossary of some of the English and Afrikaans words and their translations appears below.

ENGLISH	AFRIKAANS
Landing strip	Vliegveld
Furrow	Voor
Caravan Park	Karavaanpark
Canal	Kanaal
Sewerage works	Rioolwerke
Golf Course	Gholfbaan
Excavation	Uitgrawing
Nature reserve	Natuurreservaat
Rifle Range	Skietbaan
Aerodrome	Vliegveld
Ravine	Kloof

GENERAL INFORMATION ON VRYHEID

The town of **Vryheid** in KwaZulu-Natal Province lies southward along the R33 in the valley at the foot of the Zungwini Mountain. It is the centre of coal mining and cattle farming in the district and being an old town with a historical past, there are a number of national monuments in the town. Decisive battles were fought in the vicinity during the Anglo Boer War.

Coordinates: 27° 46′ 3″ S, 30° 47′ 9″ E

[Source: https://www.google.co.za/images]

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographic map 2730DD VRYHEID, 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 correct answer and write only the letter (A–D) in the block next to each question (1.1–1.15).

1.1 The type of scale shown on the orthophoto map is a ...

A line scale.
B ratio scale.
C word scale.
D Richter scale.

1.2 The contour interval on the topographic map is …

A 20 m.
B 10 m.
C 15 m.
D 20 km.

1.3 The 1 : 50 000 scale of the topographic map is ... than that of the orthophoto map.

A 5 times smaller
B 5 times larger
C 50 times smaller
D 50 times larger

1.4 The index number of the map sheet southwest of Vryheid on the topographic map is …

A 2730 BB.
B 2731 CC.
C 2730 BA.
D 2731 AA.

1.5 The distance of the line labelled **D** on the topographical map is ...

A 2,1 km.
B 0,21 km.
C 21 km.
D 210 km.

1.6 The height of an index contour line labelled **Y**, in block **D6** on the topographic map is ...

A 1 120 m.
B 1 100 m.
C 1 200 m.
D 1 050 m.

1.7 The man-made feature found at grid reference 27°48′35″S / 30°47′40″E is a(n) ...

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

1.8 The evidence that mining has taken place in block **F1** is the presence of …

A a river.
B roads.
C mine dumps.
D excavations.

1.9 The land-use in block **A6** is for the following activities:

A Mining and fishing
B Diggings and excavation
C Cultivation and diggings
D Dams and diggings

1.10 The altitude shown by the trigonometrical station in block **G2** is …

A 365 m.
B 1 190 m.
C 365 km.
D 1 218,3 m.

1.11 The true bearing of trigonometrical beacon number 103 in block **D4** from trigonometrical beacon number 381 in block **B5** is …

A 300°.
B 067°.
C 275°.
D 090°.

1.12 If you travel south-westerly on main road R33 from the police station in block **C2** in Vryheid along Route 33 on the topographic map, you are going to ...

A Hlobane.
B Paulpietersberg.
C Kingsley.
D Tinta Drift.

1.13 The area in block **E1** is largely covered by ...

A buildings.
B woodlands.
C dams.
D sports fields.

1.14 Refer to both the orthophoto and topographic map. The feature labelled **7** on the orthophoto map is a ...

A police station.
B school.
C hotel.
D hospital.

1.15 The water extraction feature in block **A3** on the topographic map is a ...

A weir.
B wind pump.
C dam.
D furrow.

(15 x 1) **[15]**

SECTION B: MAPWORK CALCULATIONS AND TECHNIQUES

QUESTION 2

2.1 Refer to the orthophoto map.

2.1.1 Measure and calculate the distance between points **1** and **2** in kilometres.

(2 x 1) (2)

2.2 Calculate the area on the orthophoto map (also indicated by a black rectangular box on the topographic map).
Use the formula:

AREA = LENGTH X BREADTH

(5 x 1) (5)

2.3 Refer to block **G3** on the topographic map. Identify trigonometrical beacon number 60 and spot height 1395.

2.3.1 Is the slope between the two features named above steep or gentle?

(1 x 1) (1)

2.3.2 Support your answer in QUESTION 2.3.1 above.

(1 x 2) (2)

2.3.3 Work out the difference in height between trigonometrical beacon number 60 and spot height 1395.

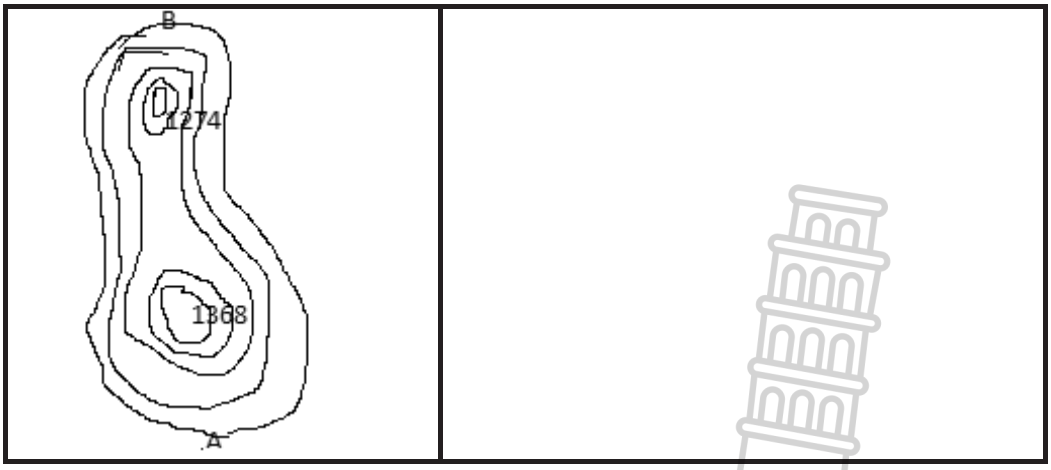
(2 x 1) (2)

2.4 Calculate the magnetic declination of the map for the present year.

(5 x 1) (5)

2.5 Refer to the contour lines below which depict a landform found in blocks **F4/5** on the topographic map (between spot heights 1274 in **F4** and 1368 in **F5**) to answer the questions that follow.

2.5.1 Draw a simple free-hand (not to scale) cross section of the landform shown by the contour lines from A to B.



(2 x 1) (2)

2.5.2 Name the landform illustrated in your cross section above.

(1 x 1) (1)

[20]

QUESTION 3: MAP AND PHOTO APPLICATION AND INTERPRETATION

3.1 Refer to block **D4** on the topographic map.

3.1.1 Name the activity that is practised at **A**.

_____

(1 x 1) (1)

3.1.2 Describe how the activity named in QUESTION 3.1.1 above can be hazardous (harmful) to the environment and people's activities.

_____

_____

(1 x 2) (2)

3.2 Refer to the table below together with the topographic map to answer the questions that follow.

VRYHEID WEATHER BY MONTH / WEATHER AVERAGES

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	21	21	20	18,1	15,2	12,8	12,8	15	16,9	18,7	19,6	20,6
Precipitation / Rainfall (mm)	148	123	100	43	22	11	13	20	43	92	122	149

3.2.1 What was the mean monthly temperature for June?

_____

(1 x 1) (1)

3.2.2 State the month in which Vryheid receives its highest rainfall.

_____

(1 x 1) (1)

3.2.3 Calculate the mean annual temperature range for Vryheid.

_____

_____

(2 x 1) (2)

3.2.4 Vryheid receives less than average rainfall. Provide TWO pieces of evidence from the map showing that Vryheid receives seasonal rainfall.

_____

_____

(2 x 1) (2)

3.3 Refer to the topographic map.

3.3.1 Name any recreational activity in block **C2**.

_____

(1 x 1) (1)

3.3.2 Identify any ONE tourist attraction on the Vryheid mapped area.

_____

(1 x 1) (1)

3.4 Name the feature labelled **6** on the orthophoto map.

_____

(1 x 1) (1)

3.5 Refer to the Klipfontein Dam on the topographic map.

3.5.1 Mention the main river that supplies the dam with water.

_____

(1 x 1) (1)

3.5.2 A man was canoeing in the Klipfontein Dam moving from Inkamana (block **D5**) towards the damwall (block **D6**). Determine the direction the man was heading in.

_____

(1 x 2) (2)

3.5.3 Suggest TWO possible ways in which Inkamana (block **D5**) and the neighbouring settlements would benefit from the Klipfontein Dam.

_____

_____

_____

(2 x 1) (2)

3.5.4 Give ONE reason why people at Inkamana would consider the dam as a threat to their lives during flooding.

_____

_____

_____

(1 x 2) (2)

3.6 Refer to the landform in block **B/C6**.

3.6.1 The feature represented by the contour lines crossed by line **E** is a (spur / valley).

_____

(1 x 1) (1)

3.6.2 Support your answer to QUESTION 3.6.1 above.

_____

_____

_____

(1 x 2) (2)

3.7 Refer to the orthophoto map.

3.7.1 Choose the correct answer from the options between brackets:

The orthophoto map is derived from a (high oblique / vertical aerial) photograph.

_____

(1 x 1) (1)

3.7.2 Describe the difference between *an oblique* and *a vertical* photograph.

_____

_____

_____

(2 x 1) (2)

[25]

QUESTION 4: GEOGRAPHIC INFORMATION SYSTEMS (GIS)

4.1 Refer to FIGURE 4.1 below which shows parts of a GIS component system and how it operates to answer the following questions.

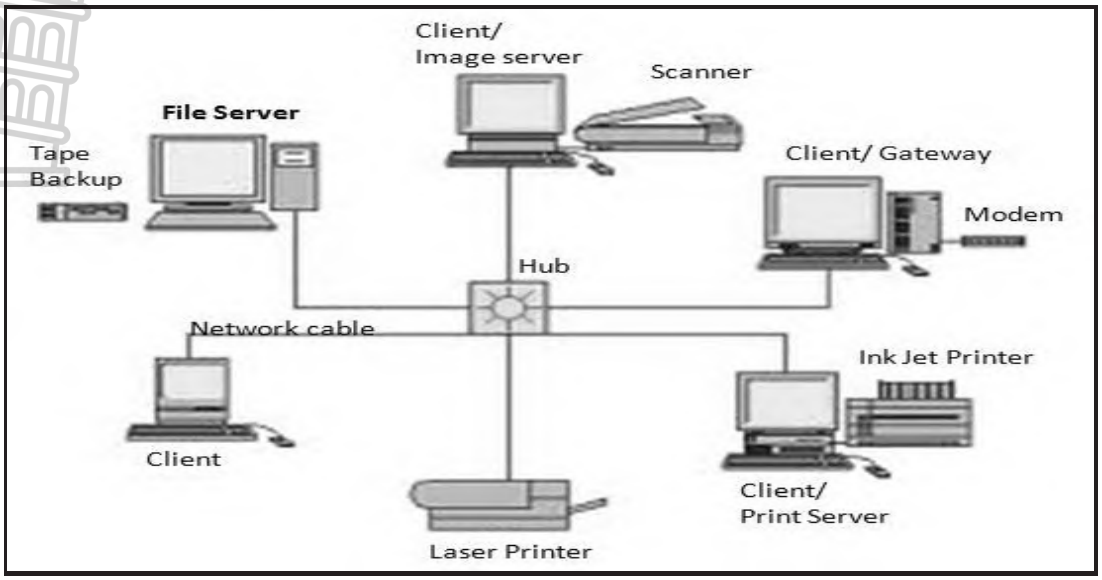


FIGURE 4.1

4.1.1 Define the term *geographical information systems* (GIS).

_____

_____

(1 x 1) (1)

4.1.2 Name any FOUR components of GIS.

_____

_____

_____

_____

(4 x 1) (4)

4.1.3 From FIGURE 2 above, name any ONE hardware device that is used for:

(a) Capturing information into the system

_____

(b) Storing information in the system

_____

(c) Connecting the system to a network

_____

(3 x 1) (3)

4.2 Explain the importance of using GIS in today's fast changing world.

_____

_____

(1 x 2) (2)

4.3 Refer to block **D3** on the topographic map.

4.3.1 State ONE example of each of the following types of features, found in block **D3**:

(a) Area (polygon) feature

_____

(b) Line (arc) feature

_____

(c) Point (node) feature

_____

(3 x 1) (3)

4.4 Refer to the area on the top north-western part of the orthophoto map. Explain why it would be wise for the surveyors to use remote sensing in collecting data from that area.

_____

_____

_____

(1 x 2) (2)

[15]

TOTAL: 75

ROUGH WORK AND CALCULATIONS
(NOTE: Do NOT detach this page from the question paper.)

Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

NOVEMBER 2019

GRADE 10

GEOGRAPHY P2
MARKING GUIDELINE

MARKS: **75**

This marking guideline consists of 12 pages.

GENERAL INFORMATION ON VRYHEID

The town of **Vryheid** in KwaZulu-Natal Province lies southward along the R33 in the valley at the foot of the Zungwini Mountain. It is the centre of coal mining and cattle farming in the district and being an old town with a historical past, there are a number of national monuments in the town. Decisive battles were fought in the vicinity during the Anglo Boer War.

Coordinates: 27° 46′ 3″ S, 30° 47′ 9″ E

[Source: https://www.google.co.za/images]

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

The questions below are based on the 1 : 50 000 topographic map 2730DD VRYHEID, 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 (1.1–1.15).

1.1 The type of scale evident on the orthophoto map is a ...

A line scale.
B ratio scale.
C word scale.
D Richter scale.

B

1.2 The contour interval of the topographic map is …

A 20 m.
B 10 m.
C 15 m.
D 20 km.

A

1.3 The 1 : 50 000 scale of the topographic map is ... than that of the orthophoto map.

A 5 times smaller
B 5 times larger
C 50 times smaller
D 50 times larger

A

1.4 The index number of the map sheet southwest of Vryheid on the topographic map is …

A 2730 BB.
B 2731 CC.
C 2730 BA.
D 2731 AA.

C

1.5 The distance of the line labelled **D** on the topographical map is ...

A 2,1 km
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1.7 The man-made feature found at grid reference 27°48′35″S / 30°47′40″E is a(n) ...

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

C

1.8 The evidence that mining has taken place in block **F1** is the presence of …

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B roads.
C mine dumps.
D excavations.

C

1.9 The land use in block **A6** is for the following activities:

A Mining and fishing
B Diggings and excavation
C Cultivation and diggings
D Dams and diggings

C

1.10 The altitude shown by the trigonometrical station in block **G2** is …

A 365 m.
B 1 190 m.
C 365 km.
D 1 218,3 m.

D

1.11 The true bearing of trigonometrical beacon number 103 in block **D4** from trigonometrical beacon number 381 in block **B5** is …

A 300°.
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1.12 If you travel south-westerly on main road R33 from the police station in block **C2** in Vryheid along Route 33 on the topographic map, you are going to ...

A Hlobane.
B Paulpietersberg.
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D Tinta Drift.

C

1.13 The area in block **E1** is largely covered by ...

A buildings.
B woodlands.
C dams.
D sports fields.

B

1.14 Refer to both the orthophoto and topographic map. The feature labelled **7** on the orthophoto map is a ...

A police station.
B school.
C hotel.
D hospital.

B

1.15 The water extraction feature in block **A3** on the topographic map is a ...

A weir.
B wind pump.
C dam.
D furrow.

B

(15 x 1) **[15]**

SECTION B: MAPWORK CALCULATIONS AND TECHNIQUES

QUESTION 2

2.1 Refer to the orthophoto map.

2.1.1 Measure and calculate the distance between points **1** and **2** in kilometres.

Distance = cm/scale x 100 000

3,4 cm √ /10 000 x 100 000 [Range: 3,3–3,5 cm]

= 34 km √ [Range: 33–35 km]

(2 x 1) (2)

2.2 Calculate the area covered by the orthophoto map (also indicated by a black rectangular box on the topographic map). Use the formula:

AREA = LENGTH x WIDTH

Length = 8,2 cm √ x 0,5 [8,1 cm–8,3 cm]
= 4,1 km √
Width = 5,8 cm √ x 0,5 [5,7 cm–5,9 cm]
= 2,9 km √
Area = 4,1 x 2,9
= 11,89 km^2 √ [Range = 11,5–12,24 km^2]

(5 x 1) (5)

2.3 Refer to block **G3** on the topographic map. Identify trigonometrical beacon number 60 and spot height 1395.

2.3.1 Is the slope between the two features named above steep or gentle?

Steep √

(1 x 1) (1)

2.3.2 Support your answer in QUESTION 2.3.1 above.

Contour lines are closely spaced. √√
Land rises sharp over short distance. √√
Trig beacon 60 is on a hill top √√ **[Any ONE]**

(1 x 2) (2)

2.3.3 Work out the difference in height between trigonometrical beacon number 60 and spot height 1395.

1 430,9 m – 1 395 m √ = 35,9 m √

(2 x 1) (2)

2.4 Calculate the magnetic declination of the map for the present year.

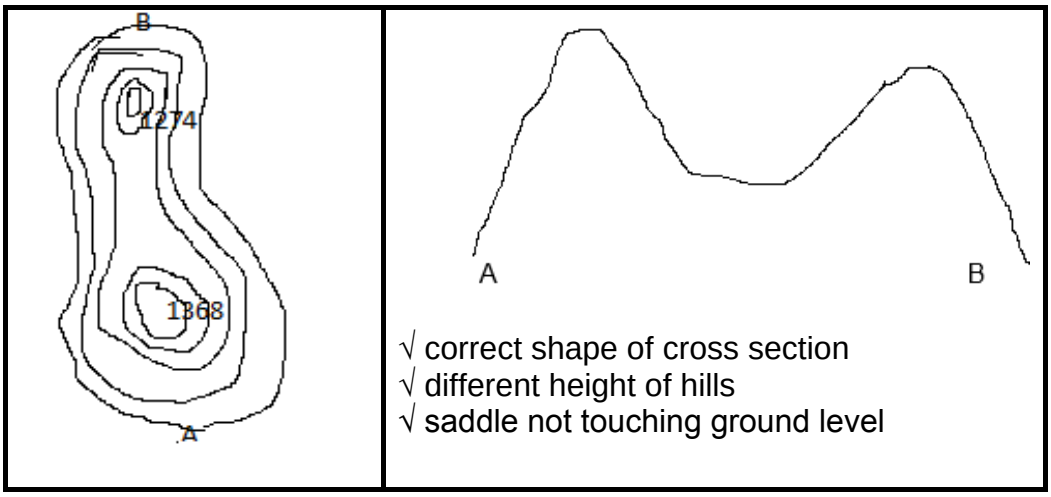
Difference in years: 2019 – 1997 = 22 √ years
Mean annual change: 6′ √ West

Total change: 22 x 6′ = 132′W (1° = 60′)
= 2º 12′ √ W

Magnetic declination: 19° 38′ + √ 2º 12′
= 21° 50′ WTN √ (5 x 1) (5)

2.5 Refer to the contour lines below which depict a landform found in blocks **F4/5** on the topographic map (between spot heights 1274 in **F4** and 1368 in **F5**) to answer the questions that follow.

2.5.1 Draw a simple free-hand (not to scale) cross section of the landform shown by the contour lines from A to B.



√ correct shape of cross section
√ different height of hills
√ saddle not touching ground level

(2 x 1) (2)

2.5.2 Name the landform that is depicted by the cross section in QUESTION 2.5.2 above.

Saddle / butte / pointed butte √ **[Any ONE]**

(1 x 1) (1)

[20]

QUESTION 3: MAP AND PHOTO APPLICATION AND INTERPRETATION

3.1 Refer to block **D4** on the topographic map.

3.1.1 Name the activity that is practised at **A**.

Excavation √

(1 x 1) (1)

3.1.2 Describe how the activity named in QUESTION 3.1.1 above can be hazardous (harmful) to the environment and people's activities.

The landscape loses shape √√
It leads to land degradation/desertification √√
Top soil/fertile soil with nutrients is lost √√
Land loses importance for cultivation √√
Plant and animal species are lost by clearing vegetation √√
It facilitates soil erosion √√ **[Any ONE]**

(1 x 2) (2)

3.2 Refer to the table below together with the topographic map to answer the questions that follow.

VRYHEID WEATHER BY MONTH / WEATHER AVERAGES

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	21	21	20	18,1	15,2	12,8	12,8	15	16,9	18,7	19,6	20,6
Precipitation / Rainfall (mm)	148	123	100	43	22	11	13	20	43	92	122	149

3.2.1 What was the mean monthly temperature for June?

12,8 degrees Celsius √/12,8 °C

(1 x 1) (1)

3.2.2 State the month in which Vryheid receives its highest rainfall.

December √

(1 x 1) (1)

3.2.3 Calculate the mean annual temperature range for Vryheid.

21 °C – 12,8 °C √ = 8,2 °C √

(2 x 1) (2)

3.2.4 Vryheid receives less than average rainfall. Provide TWO pieces of evidence from the map showing that Vryheid receives seasonal rainfall.

Presence of non-perennial rivers √
Wind pumps √
Reservoirs √ **[Any TWO]**

(2 x 1) (2)

3.3 Refer to the topographic map.

3.3.1 Name any recreational activity in block **C2**.

Golf/golf driving √

(1 x 1) (1)

3.3.2 Identify any ONE tourist attraction in the Vryheid mapped area.

Hotels √√
Golf driving / Golf course √√
Dams/Fishing/Boating √√
Mountain viewing / Besterkop / Esikhuma / Skaapkoppie / Lancaster Hill / Hiking **/** Vryheid Nature Reserve √√
National monuments √√ **[Any ONE]**

(1 x 2) (2)

3.4 Name the feature labelled **6** on the orthophoto map.

Power lines √

(1 x 1) (1)

3.5 Refer to the Klipfontein Dam on the topographic map.

3.5.1 Mention the main river that supplies the dam with water.

Besterspruit river √

(1 x 1) (1)

3.5.2 A man was canoeing in the Klipfontein Dam moving from Inkamana (block **D5**) towards the damwall (block **D6**). Determine the direction the man was heading in.

Southwards/South √

(1 x 1) (1)

3.5.3 Suggest TWO possible ways in which Inkamana (block **D5**) and the neighbouring settlements would benefit from the Klipfontein Dam.

Water for domestic/Recreation/Irrigation/Farming/Fishing √
Cooling temperatures in summer √
Job creation / Tour guides √
Agricultural projects √ **[Any TWO]**

(2 x 1) (2)

3.5.4 Give ONE reason why people at Inkamana would consider the dam as a threat to their lives during flooding.

Dam water can overspread causing flood into the settlement √√
They are located on a lower ground √√
Mosquitos in summer causing malaria disease √√
Unclear water especially in dry seasons causing cholera √√

[Any ONE]

(1 x 2) (2)

3.6 Refer to the landform in block **B**/**C6**.

3.6.1 The feature represented by the contour lines crossed by line **E** is a/an (spur/valley).

Valley √

(1 x 1) (1)

3.6.2 Support your answer to QUESTION 3.6.1 above.

Contours are pointing to higher ground √√
Presence of a river along the marshes √√ **[Any ONE]**

(1 x 2) (2)

3.7 Refer to the orthophoto map.

3.7.1 Choose the correct answer from the options between brackets:

The orthophoto map is derived from a (high oblique / vertical aerial) photograph.

Vertical aerial √

(1 x 1) (1)

3.7.2 Describe the difference between *an oblique* and *vertical* photograph.

In vertical photographs the camera is perpendicular / vertical above the earth's surface / taken from the air √√
In oblique photographs the camera is tilted/slanting at an angle √√
Objects behind high features like hills or buildings are obscured/ hidden in oblique √√
Objects below appear from their roof top √√
Scale varies within the same photographs in oblique / Objects in the foreground appear larger than those in the background √√
The scale is nearly the same for vertical photographs √√

[Any ONE]

(1 x 2) (2)

[25]

QUESTION 4: GEOGRAPHIC INFORMATION SYSTEMS (GIS)

4.1 Refer to FIGURE 4.1 below which shows parts of a GIS component system and how it operates to answer the following questions.

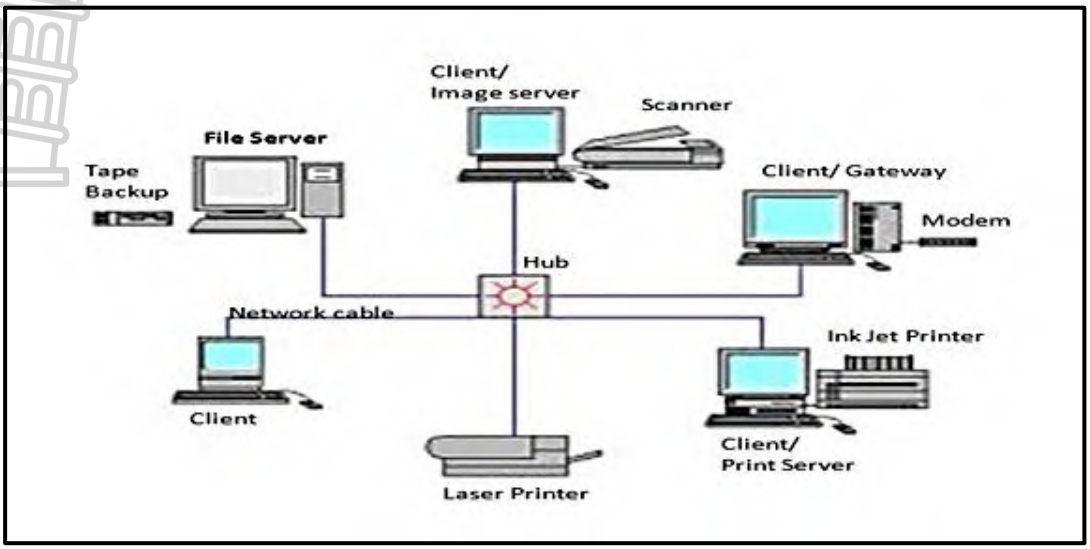


FIGURE 4.1

4.1.1 Define the term *geographical information systems* (GIS).

Is a computer-based tool of doing work √
Is a computer-based technique of gathering, manipulating, storing and retrieving information for doing work. √

(1 x 1) (1)

4.1.2 Name any FOUR components of GIS.

Software √/Users √/Procedures or Methods √/Data √/Network √
[Any FOUR]

(4 x 1) (4)

4.1.3 From FIGURE 4.1 above, name any ONE hardware device that is used for:

(a) Capturing information into the system
Scanner/Keyboard √

(b) Storing information in the system.
Image server/CPU/Tape back-up/File server √

(c) Connecting the system to a network
Network cable/Modem √

(3 x 1) (3)

4.2 Explain the importance of using GIS in today's fast changing world.

Computers are faster / cheaper / efficient √√
More information is coming into the world √√
The world's problems exist in a geographical context √√
GIS can be used in daily lives, e.g. choosing a nearby school √√

[Any ONE]
(1 x 2) (2)

4.3 Refer to block **D3** on the topographic map.

4.3.1 State ONE example of each of the following types of features in block **D3**.

(a) Area/(Polygon): Excavation/Recreation ground/Lakeside settlements/Cemetary √ **[Any ONE]**

(b) Line/(Arc): Arterial Road/Secondary road/Power line/Track/hiking trail/River √ **[Any ONE]**

(c) Point/(Node): Buildings/School/Trigonometrical beacon/ Trees √ **[Any ONE]**
(3 x 1) (3)

4.4 Refer to the area on the top north-western part of the orthophoto map. Explain why it would be wise for the surveyors to use remote sensing in collecting data from that area.

Not accessible by roads/no roads leading there √√
It can be dangerous to go there because of snakes and wild animals √√
Landscape is too steep, forested and unreachable √√
Remote sensors can easily reach unreachable places from a distance √√

[Any ONE]
(1 x 2) (2)
[15]

TOTAL: 75