GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

TYPE OF TASK: MAPWORK TASK EXAMPLER (2024)

SUBJECT	:	GEOGRAPHY
GRADE	:	11
TERM	:	ONE
EXAMINER	:	KHUMALO M.
MODERATOR	:	MAPHOSA P.
TIME	:	1,5 hours
TOTAL	:	60
DATE OF IMPLEMENTATION	:	February 2024
TERM WEIGHTING	:	40
SBA WEIGHTING	:	20

Learner's name:	Grade:

QUESTION	ONE	TWO	THREE	FOUR	TOTAL
Marker					
Moderator					
POSSIBLE MARK	10	15	25	10	60

This task consists of 11 pages

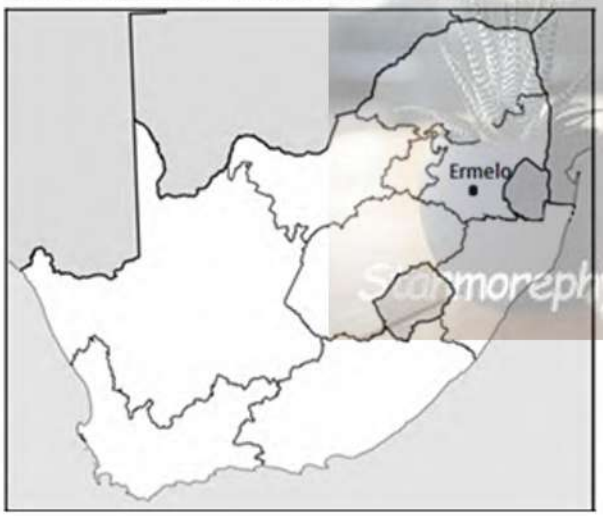
RESOURCE MATERIAL

1. An extract from topographic map 2629DB ERMELO
2. Orthophoto map 2629DB 5 ERMELO

INSTRUCTIONS AND INFORMATION

1. Write your NAME and KEY in the spaces on the cover page.
2. Answer ALL the questions in the spaces provided on this question paper.
3. You are provided with a 1:50 000 topographic map (2629DB ERMELO) and an orthophoto map (2629DB 5 ERMELO) of a part of the mapped area.
4. You must hand the topographic map and the orthophoto map to the invigilator at the end of this test session.
5. You may use the blank page at the end of this question paper for all rough work and calculations. Do NOT detach this page from the question paper.
6. Show ALL calculations and use the formulae provided, where applicable. Marks will be allocated for these.
7. Indicate the unit of measurement in the final answer of calculations, e.g. 10 km; 2,1 cm, West of True North.
8. You may use a non-programmable calculator.
9. You may use a magnifying glass.
10. The area demarcated in RED on the topographic map represents the area covered by the orthophoto map or the mapped area.

GENERAL INFORMATION ON ERMELO



Co-ordinates: 26°31'S ; 29°58'E

Ermelo is an educational, industrial and commercial town in the 7,750 km² Gert Sibande District Municipality in Mpumalanga, South Africa. It is located 210 km east of Johannesburg. It is both a mixed agriculture and mining region. Mixed farming, such as maize and cattle, take place within the district. Mining is important to the district with anthracite, coal and torbanite being mined.

Adapted from: http://en.wikipedia.org/wiki/Ermelo_Mpumalanga

The following English terms and their Afrikaans translations are shown on the topographic map:

ENGLISH	AFRIKAANS
Diggings	Uitgrawings
Hospital	Hospitaal
River	Rivier
Sewerage Works	Rioolwerke
Spruit	Spring

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

1.1 The questions below are based on the 1:50 000 topographic map (2629DB ERMELO) as well as the 1:10 000 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 The province located north of ERMELO is …

A. Gauteng.
B. Limpopo.
C. KwaZulu Natal.
D. Mpumalanga

1.1.2 The contour interval on the orthophoto map is … metres.

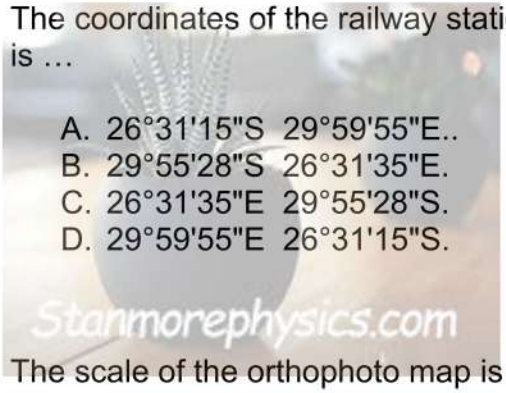
A. 5
B. 10
C. 20
D. 25

1.1.3 The map index of the topographic map, north of 2629 DB ERMELO, is …

A. 2629 BC
B. 2629 DD
C. 2629 DA
D. 2629 BD

1.1.4 The coordinates of the railway station in block **B5** on the topographic map is …

A. 26°31'15"S 29°59'55"E..
B. 29°55'28"S 26°31'35"E.
C. 26°31'35"E 29°55'28"S.
D. 29°59'55"E 26°31'15"S.



1.1.5 The scale of the orthophoto map is …. than the scale of the topographical map.

A. 5 times smaller
B. 5 times larger
C. 10 times smaller
D. 10 times larger

1.1.6 The height of a trigonometrical station in block D4 is…metres

A. 309
B. 1773,7
C. 2068,8
D. 1458,8

1.1.7 Feature 6 on the orthophoto map is a…

A. School
B. Prison
C. Hospital
D. Shopping centre

1.1.8 The type photograph used to compile an orthophoto map is…

A. Horizontal photograph
B. Oblique photograph
C. Satellite image
D. Vertical aerial photograph

1.1.9 The non-perennial river flowing in block **D5** on the topographic map is flowing in a … direction.

A. Western
B. Southerly
C. Northerly
D. Easterly

1.1.0 The Area calculation for the RED demarcated area of the orthophoto on the topographic map is … in km²

A. 3.1
B. 3.5
C. 4.8
D. 4.1

[10]

QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 Refer to the topographic map to answer the following questions.

2.1.1 Calculate the distance in KM along the N17road (A5) from the intersection with the N11 road in block A5 to Chrissiemeer. (3 x 1) (3)

_____

2.1.2 Identify the feature at **26°33'37" S 29° 59'27" E.** (1 x 2) (2)

_____

2.1.3 Calculate the mean Magnetic Bearing of **F** (**B3**) from **G** (**B3**) for the current year. Write your answers in the table below.

Key questions	Answer	Marks
True Bearing =		(1)
Mean magnetic declination:		(0)
Difference in years:		(1)
Mean Annual Change:		(1)
Total change:		(1)
Present magnetic declination:		(2)
Magnetic Bearing	…… …… ……	(2)
		(8)

2.1.4 Explain why the magnetic declination changes over time. (1 x 2) (2)

_____

_____

[15]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to both topographical, orthophoto map, vertical photographs and all sources provided to answer the questions below.

3.1.1 Identify the line of latitude for this map. (1 x 1) (1)

_____

3.1.2 Use your answer to QUESTION 3.1.1 and identify the circulation cell and the pressure belt in which this area is located. (2 x 1) (2)

_____

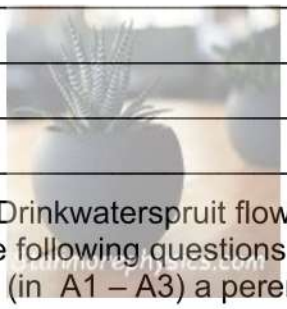
3.1.3 Describe the weather conditions associated with the pressure belt you mentioned in QUESTION 3.1.2. (2 x 2) (4)

_____

_____

_____

_____



3.2 Refer to the Klein Drinkwaterspruit flowing between blocks **A1** and **A3** and answer the following questions

3.2.1 Is this spruit / river (in A1 – A3) a perennial or non-perennial? Give a reason for your answer

Type of river: _____ (1 x 1) (1)

Reason: _____ (1 x 2) (2)

3.2.2 State the general direction in which this spruit flows and give a reason for your answer.

General flow direction: _____ (1 x 2) (2)

Reason: _____ (1 x 2) (2)

_____

3.3 Evaluate TWO possible negative environmental impact that could be caused by the excavation occurring in blocks **D1** & **E1** on topographic map. (2 x 2) (4)

_____

_____

_____

_____

3.4 Comment on what you think could be the disadvantage of living in a settlement that is near the Sewage works at **J** on the topographic map. (1 x 2) (2)

_____

_____

3.5 Refer to the orthophoto map.

3.5.1 An urban and regional planner wants to examine the building density of ERMELO. She decides to use an orthophoto map instead of a topographic map in the local council's database. Give a reason for her choice. (1 x 2) (2)

_____

_____

_____

_____

3.6 Study the photograph of Wesselton Primary School below and answer the questions that follow.

3.6.1 What type of oblique photograph is represented above? (1 x 1) (1)

(low or high) _____ oblique

3.6.2 Give evidence from the photograph to support your answer in QUESTION 3.6.1 (1 x 2) (2)

_____

_____

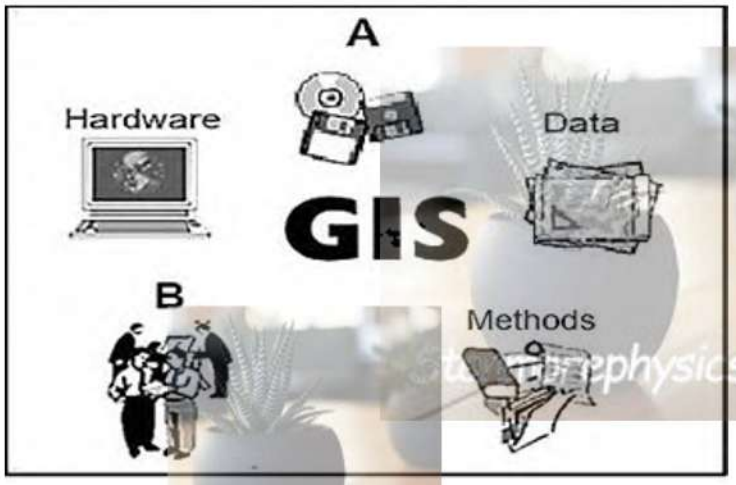
_____

_____

[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 The following diagram shows the components of GIS.



4.1.1 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A – D) in the box next to each question. (2 x 1) (2)

(a) Component **A** in the illustration above is…

A software
B hardware
C people
D Methods

(b) Component **B** in the illustration above is…

A. data
B hardware
C people
D methods

4.2 Refer to block **E1** on the topographic map showing raster and vector data.

4.2.1 Differentiate between the *raster* and *vector* data. (1 x 1) (1)

_____

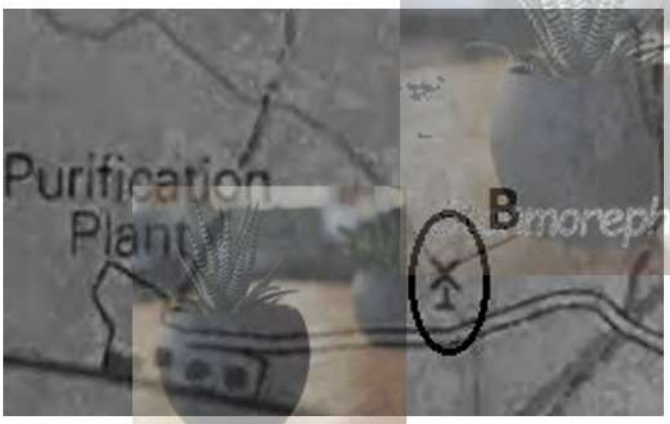
_____

_____

4.2.2 Identify a polygon feature in block **E1.** (1 x 1) (1)

4.2.3 Refer to the image below which a portion of the topographic 2629DB ERMELO.

(a) Identify the feature marked **B.** (1x1) (1)



(b) What is the importance of the point feature identified in QUESTION 4.2.3 (a) to agriculture in this area? (1x1) (1)

_____

4.2.4 The river that runs along the north eastern part of the town of Wesselton poses a flood threat to the town. Suggest TWO ways in which the local municipality can use GIS to reduce the impact of a flood. (2 x 2) (4)

_____

_____

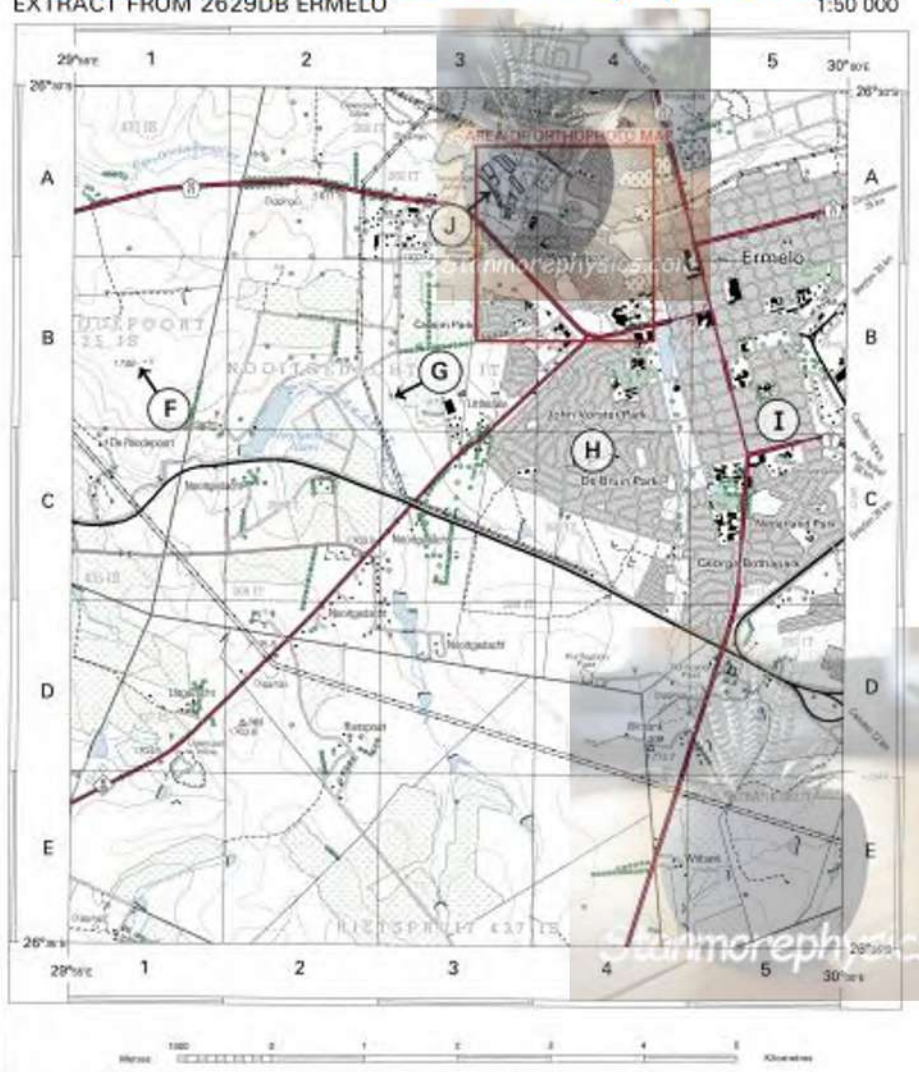
_____

_____

[10]

GRAND TOTAL: 60

EXTRACT FROM 2629DB ERMELO 1:50 000



EXTRACT FROM 2629DB 5 ERMELO 1:10 000

REFERENCE

VERKLARING

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

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MARKING GUIDELINES

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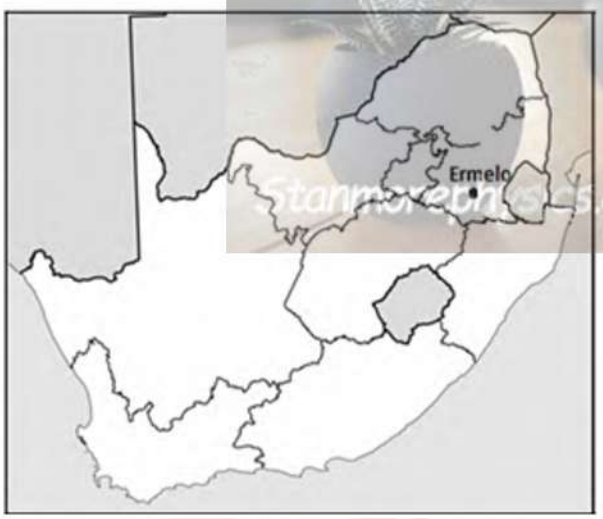

Co-ordinates: 26°31'S ; 29°58'E

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River	Rivier
Sewerage Works	Rioolwerke
Spruit	Spring

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1.1 The questions below are based on the 1:50 000 topographic map (2629DB ERMELO) as well as the 1:10 000 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 The province located north of ERMELO is …

A. Gauteng.
B. Limpopo.
C. KwaZulu Natal
D. Mpumalanga

D

1.1.2 The contour interval on the orthophoto map is … metres.

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

A

1.1.3 The map index of the topographic map, north of 2629 DB ERMELO, is …

A. 2629 BC
B. 2629 DD
C. 2629 DA
D. 2629 BD

D

1.1.4 The coordinates of the railway station in block **B5** on the topographic map is …

A. 26°31'15"S 29°59'55"E.
B. 29°55'28"S 26°31'35"E.
C. 26°31'35"E 29°55'28"S.
D. 29°59'55"E 26°31'15"S..

A

1.1.5 The scale of the orthophoto map is …. than the scale of the topographical map.

A. 5 times smaller
B. 5 times larger
C. 10 times smaller
D. 10 times larger

B

1.1.6 The height of a trigonometrical station in block D4 is…metres

A. 309
B. 1773,7
C. 2068,8
D. 1458,8

B

1.1.7 Feature 6 on the orthophoto map is a…

A. School
B. Prison
C. Hospital
D. Shopping centre

C

1.1.8 The type photograph used to compile an orthophoto map is…

A. Horizontal photograph
B. Oblique photograph
C. Satellite image
D. Vertical aerial photograph

D

1.1.9 The non-perennial river flowing in block **D5** on the topographic map is flowing in a … direction.

A. Western
B. Southerly
C. Northerly
D. Easterly

D

1.1.0 The Area calculation for the RED demarcated area of the orthophoto on the topographic map is … in km²

A. 3.1
B. 3.5
C. 4.8
D. 4.1

D

[10]

QUESTION 2: MAP CALCULATIONS AND TECHNIQUES

2.1 Refer to the **topographic map** to answer the following questions.

2.1.1 Calculate the distance in KM along the N17road (A5) from the intersection with the N11 road in block A5 to Chrissiemeer.

(3 x 1) (3)

3.3cm ✓(range 3.2cm -3.4cm) x 0.5 = 1.7km✓(range 1.6 km – 1.7 km) + 35km =36.7km✓(range 36.6 km – 36.7km)

2.1.2 Identify the feature at **26°33'37" S 29° 59'27" E.** (1 x 2) (2)

Dam (2)

2.1.3 Calculate the mean Magnetic Bearing from feature **F** (**B1**) to feature **G** (**B3**) for the current year. Write your answers in the table below.

Key questions	Answer	Marks
True Bearing =	*98° (97° – 99°) √*	(1)
Mean magnetic declination :	*18° 34' West of True North (Oct 2013)*	(0)
Difference in years:	*2024 – 2013 = 11yrs √*	(1)
Mean Annual Change:	*4' West √*	(1)
Total change:	*11 x 4' West = 44' West √*	(1)
Present magnetic declination:	*18° 34' West* *+ 44' West* *18° 78' West = **19°18' West of TN**√√*	(2)
Magnetic Bearing =	***TB + MD*** *98° + 19°18' West of TN = 117° 18' West of TN√√* *(range 116° – 118° 18' WTN)*	(2)
		(8)

2.1.4 Explain why the magnetic declination changes over time. (1 x 2) (2)

As the earth's magnetic field changes the position of magnetic north and south also changes therefore magnetic declination also changes (2)

[15]

QUESTION 3: APPLICATION AND INTERPRETATION

3.1 Refer to both topographical, orthophoto map, vertical photographs and all sources provided to answer the questions below.

3.1.1 Identify the line of latitude for this map. (1 x 1) (1)

26°S (1)

3.1.2 Use your answer to QUESTION 3.1.1 and identify the circulation cell and the pressure belt in which this area is located. (2 x 1) (2)

Cell = Hadley (1)

Pressure belt = Subtropical High (1)

3.1.3 Describe the weather conditions associated with the pressure belt you mentioned in QUESTION 3.1.2. (2 x 2) (4)

- *Sinking air at 30° causes dry conditions. (2)*
- *This air also causes cold conditions (2)*

3.2 Refer to the Klein Drinkwaterspruit flowing between blocks **A1** and **A3** and answer the following questions

3.2.1 Is this spruit / river (in A1 – A3) a perennial or non-perennial? Give a reason for your answer

Type of river: perennial √(1) (1 x 1) (1)

Reason: it has a solid blue line √√(2) (1 x 2) (2)

3.2.2 State the general direction in which this spruit flows and give a reason for your answer.

***General flow direction**: west√√ (2)* (1 x 2) (2)

***Reason:** tributaries join the main river at acute angle in an easterly direction √√ (2)*
Contours point east indicating the river flows westward √√ (2)
[Any ONE] (1 x 2) (2)

3.3 Evaluate TWO possible negative environmental impact that could be caused by the excavation occurring in blocks **D1**& **E1** on topographic map. (2 x 2) (4)

- *Cause land/air and water pollution/ground water pollution (2)*
- *Acid rain increases (2)*
- *Destruction of natural vegetation (2)*
- *Destroys ecosystem/biodiversity/habitat (2)*
- *Soil erosion (2)*

[Any TWO]

3.4 Comment on what you think could be the disadvantage of living in a settlement that is near the Sewage works at **J** on the topographic map. (1 x 2) (2)

- *Bad odour/pollution (water, air) (2)*
- *Environmental degradation (2)*

[Any ONE]

3.5 Refer to the orthophoto map.

3.5.1 An urban and regional planner wants to examine the building density of ERMELO. She decides to use an orthophoto map instead of a topographic map in the local council's database. Give a reason for her choice. (1 x 2) (2)

- *The orthophoto map has a good/high degree of clarity/detail. (2)*
- *The orthophoto map is a photo/image of the area/realistic view/primary source. (2)*
- *It gives her a clear plan view of the building density/distance between buildings. (2)*
- *It gives updated information. (2)*
- *The local community database will have updated information. (2)*
- *The orthophoto map has a larger scale. (2)*

[Any ONE]

3.6 Study the photograph of Wesselton Primary School below and answer the questions that follow.

3.6.1 What type of oblique photograph is represented above? (1 x 1) (1)

(low or high) *High √*

3.6.2 Give evidence from the photograph to support your answer in QUESTION 3.6.1 (1 x 2) (2)

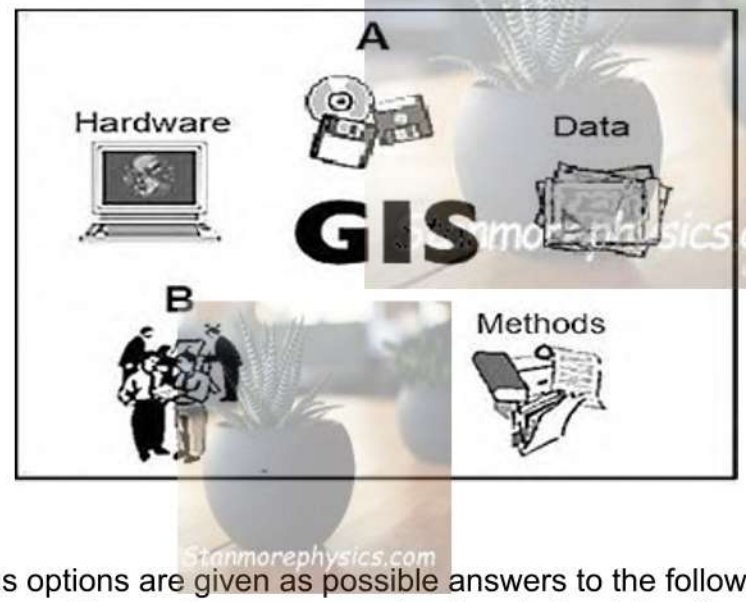
- *Covers a larger area (from the school's fields and beyond/horizon (2)*
- *The image also shows side view (2)*
- *The camera is angled at 60° to the vertical. (2)*

[Any ONE]

[25]

QUESTION 4: GEOGRAPHICAL INFORMATION SYSTEMS (GIS)

4.1 The following diagram shows the components of GIS.



4.1.1 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A – D) in the box next to each question. (2 x 1) (2)

(a) Component **A** in the illustration above is…

A software
B hardware
C people
D Methods

A

(b) Component **B** in the illustration above is…

A. data
B hardware
C people
D methods

C

4.2 Refer to block **E1** on the topographic map showing raster and vector data.

4.2.1 Differentiate between the *raster* and *vector* data. (1 x 1) (1)

Raster Data – Data used is represented and stored by grid cells (rows & columns) or pixels (1)
Vector Data - Shows features as points, lines, nodes and areas (polygons). (1)

4.2.2 Identify a polygon feature in block **E1.** (1 x 1) (1)

Polygon: *Dam/ cultivated land/ open cast mine/ diggings (1)*

4.2.3 Refer to the image below which a portion of the topographic 2629DB ERMELO.

(a) Identify the feature marked **B.** (1x1) (1)

Windpump

(b) What is the importance of the point feature identified in QUESTION 4.2.3 (a) to agriculture in this area? (1x1) (1)

Provides water for irrigation of crops/easy access to water for irrigation of crops (2)

4.2.4 The river that runs along the north eastern part of the town of Wesselton poses a flood threat to the town. Suggest TWO ways in which the local municipality can use GIS to reduce the impact of a flood. (2 x 2) (4)

Check service delivery shortfalls after a flood (2)
Route planning to supply relief/emergency service (2)
Analyse the quality of service (relief efforts, emergency services) (2)
Relief / emergency coordination (2)
Prioritising relief (2)
Remote sensing - Satellite pictures to assess the destruction (2)
[Any TWO]

[10]

GRAND TOTAL: 60

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