Zoom in Map skills

These are the answers to the *Zoom in Map skills Practice book*
(Visit www.oxford.co.za to order your copy of the practice book.)

Contents

Grade 10
Task 1: Robertson

Answers

Question 1

1.1 A
1.2 D
1.3 C
1.4 A
1.5 B

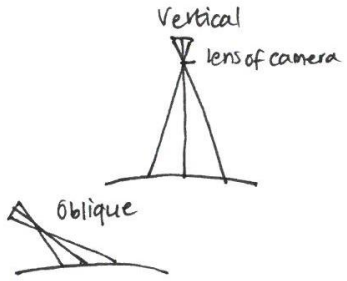
(5x1)
[5]

Question 2

2.1.1 1:50 000 (1x1)
2.1.2 1 cm represents 500 m/1 cm represents 5 km (1x1)
2.2.1 2,6 km (1x1)
2.2.2 1,65 km (1x1)
2.3.1 93º (1x1)
2.4.1 33°47’50”S; 19°48’10”E (2x1)
2.4.2 33°46’20”S; 19°47’01”E (or 19°47’00”E) (2X1)
2.5.1 Gorge
2.5.2 Pointed hill
2.5.3 Saddle (3x1)

2.6	orchards	Rows of trees	Other road	Forestry
	Power line	Railway line	Main road	Buildings
	Contours	Perennial river	Reservoir	(4x1)

2.7



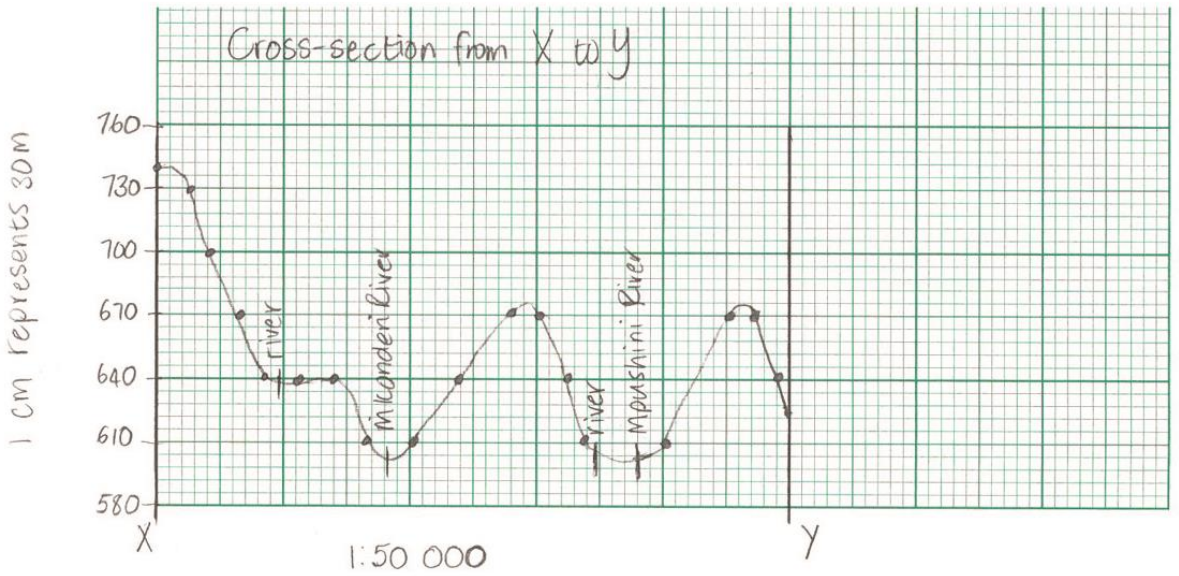
(2x1)

2.8 1 cm represents 100 m (1x1)
2.9 630 m (1x1)

[20]

Question 3

3.1.1



(4x1)

3.1.2 Rivers are indicated on the cross-section (2x½)

3.1.3 False (1x1)

3.1.4 The SW corner of the map is higher (760 m) than the northern part of the map (610 m) (1x1)

3.1.5 640 m (1x1)

3.2.1 Many dams for water storage; non perennial rivers; canals for irrigation (2x1)

3.2.2 Next to the Bree River for water.
Level land for easy construction of buildings.
Easy access to the railway line.
Easy access to the R60. (2x1)

3.3.1 False (1x1)

3.3.2 The conventional sign shows vineyards or orchards, not cultivation. (1x1)

3.4 Canals; a reservoir; dams. (3x1)

3.5 Water is available; the soil next to a river is fertile. (2x1)

3.6 They serve as wind breaks. (1x1)

3.7.1 155 (1x1)

3.7.2
2. A school
3. Industrial zone
4. R60
5. Vineyards
6. A saddle
7. A river valley
8. A power line (7x1)

3.7.3 True (1x1)

3.7.4 Houses with gardens can be seen on the aerial photograph. (1x1)

[30]

Question 4

4.1.1 A passive remote sensing system measures energy signals (2) radiating from Earth.
An active remote sensing system sends out its own energy signals (1) to a target on Earth.
The sensors on the satellite then measure the radiation (2) which the target sends back to it.
The satellites transmit the data to ground stations (3). (4x1)

4.2 iii) A
ii) B
i) C
iv) D (4x1)

4.3.1 Raster data has been used. (1x1)

4.3.2 Line data: The roads.
Points: The buildings
Polygon (area) data: The dam. (3x1)

4.4 Drainage (rivers); Transport routes; Buildings; Farms;
Power supply; Contours of the land (any four). (4x1)

4.5.1 The Earth is round (a sphere). It is impossible to represent a round shape on a flat piece of paper. (1x1)

4.5.2 1. Cylindrical projection.
2. Conical projection.
3. Azimuthal projection. (3x1)

[20]

Total: 60 marks

Grade 10

Task 2: Komatipoort

Answers

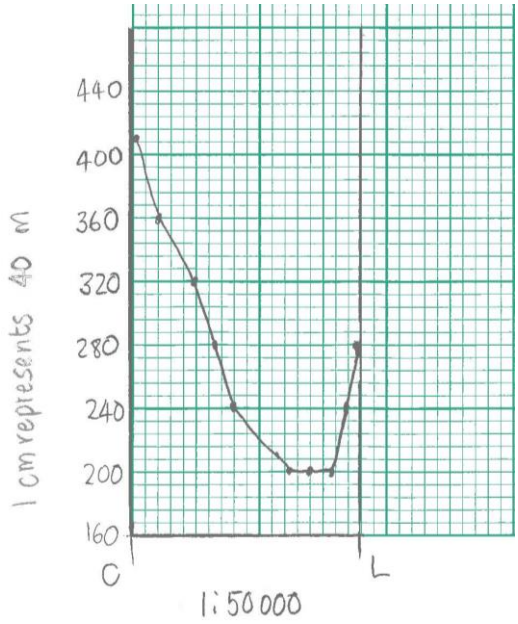
Question 1

1.1 B
1.2 C
1.3 A
1.4 B
1.5 D (5x1)

[5]

Question 2

2.1.1 1 cm represents 500 m/0,5 km (1x1)
2.1.2 5 to 5,5 (2x1)
2.2.1 25°23'55"S; 31°59'55"E (3x1)
2.2.2 Meander (1x1)
2.3 268 m (1x1)
2.4.1 road coloured yellow/brown
2.4.1 green lines (2x1)
2.5 110° (2x1)
2.6 Change = 3 x 5' = 15'; 18°34' +15' = **18°49'** (3x1)
2.7 F = hill
G = ridge (2x1)
2.8



(3x1)

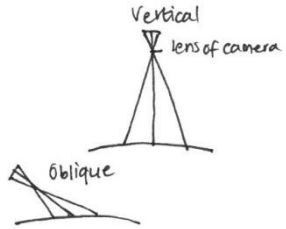
[20]

Question 3

3.1.1 6 (1x1)

3.1.2 405 m (1x1)

3.2.1



(2x1)

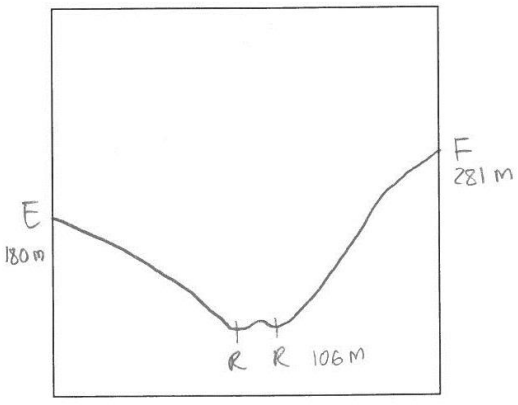
3.2.2 i) River.
ii) Rail bridge.
iii) Agriculture.
iv) Landing strip
v) Residential (low-income) (5x1)

3.2.3 A Industrial purposes. (1x1)

3.2.4 B Irrigation (1x1)

3.3 At the junction of the Umgwenya and Komati Rivers. Available water for the settlement.
Flat land for the buildings.
Fertile soil available for farming.
The railway line and the main roads give access to the surrounding areas.
At the border between South Africa and Mozambique (3x1)

3.4



(3x1)

3.5 Slope C–D faces east. The sun rises in the east. (2x1)

3.6 concave slope. (1x1)

3.7 The rivers are non-perennial. This indicates a seasonal rainfall. (1x1)

3.8 A river flows through it providing water for irrigation; Fertile soil in the river valley;
Road 571 on the border of the farm give access to the surrounding area. (2x1)

3.9 A pass/gorge eroded by the rivers through the mountains. (2x1)

3.10 North. (1x1)

3.11 The western side (South Africa) shows a well-developed infrastructure:
Electricity in block B4; The 571 road; The N2 is shown as a better road (wider red line) to the Ressano Garcia border post; Commercial farms; The town of Komatipoort.
The Eastern side (Mozambique) has the railway line and the main road from SA.
No commercial farming is evident. There are a few scattered buildings, but no urban areas.
(4x1)
[30]

Question 4

4.1.1 Aerial and satellite photographs; Census figures; Maps; Questionnaires; etc. (3x1)

4.1.2 Hardware: The computer system on which a GIS operates.
Software This provides the functions and tools needed to store, analyse and display geographic information. (2x1)

4.1.3 People provide the necessary skills to operate the hardware and the software.
GIS technology is of limited value without the people who manage the system and develop plans for applying it to real-world problems. (2x1)

4.1.4 Procedures. (1x1)

4.2.1 Spatial data refers to all types of data that are present in a geographical space. Spatial data is also known as geospatial data, spatial information or geographic information.
Attribute data is information added to spatial data in tabular format. Attribute data provides characteristics about spatial data. (4x1)

4.2.2 Layers of information are accessed by the software programs.
Each layer of information is carefully chosen for its relevance to the project on hand.
In this example the following layers were chosen:
Monitoring wells, industries and population.
Attribute data for the features on the layers was also accessed.
The layers were superimposed on each other and a 3D map was produced. (5x1)

4.3 **Vector data**

Point	Line	Area
Buildings	Road, hiking trail	Cultivated land

(3x1)
[20]
Total: 60 marks

Grade 10
Mid-year examination 1: Ladysmith

Answers

Question 1

1.1	C	
1.2	B	
1.3	C	
1.4	D	
1.5	C	
1.6	D	
1.7	A	
1.8	B	
1.9	C	
1.10	A	(10x1)
		[10]

Question 2

2.1.1	150 m	(1x1)
2.1.2	150 m	(1x1)
2.1.3	120 m	(1x1)
2.1.4	4: Saddle; 5: Slope.	(2x1)
2.1.5	Concave slope.	(1x1)
2.2.1	1 080 m/1 090 m	(1x1)
2.2.2	28°34’40”S; 29°46’40”E	(2x1)
2.2.3	140°	(1x1)
2.3	1056,2 m	(1x1)
2.4	Approximately 6,25 km	(1x1)
2.5	N11	(1x1)
2.6	Maize. The conventional sign indicates cultivated land.	(2x1)
2.7.1	Fouriespruit/river	(1x1)
2.7.2	A power line	(1x1)
2.7.3	$\frac{HS}{VS} = \frac{500}{20}$ = 25 times	(2x1)
2.8	Any of the following: cultivated land; other road; buildings; reservoir; non-perennial river.	(1x1)
		[20]

Question 3

3.1 Next to the Klip River for access to water.
On relatively flat land for easy construction of buildings.
The N11 and 103 roads connect Ladysmith to other areas.
The railway line connects Ladysmith to other areas. (3x1)

3.2 There are dams for the storage of water.
Many of the rivers are non-perennial.
There are reservoirs for the storage of water.
Windmills allow the farmers to access groundwater. (2x1)

3.3 It is a good location for an industrial area:
It is near the railway line.
The neighbouring suburbs will provide labour.
A large dam to the east could provide water.
The flat land will facilitate the construction of factory buildings. (3x1)

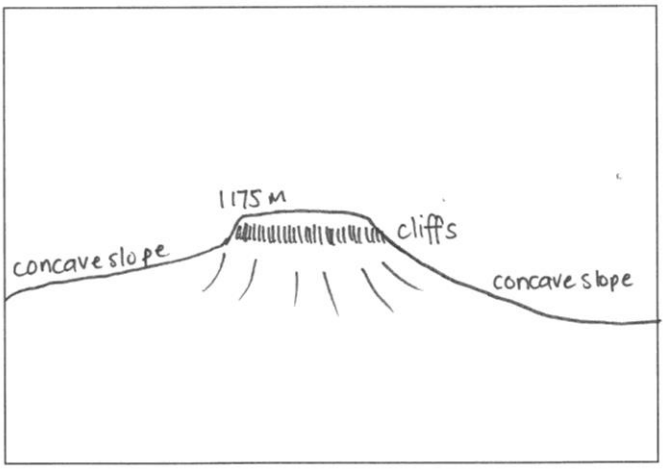
3.4 Factory workers
Teachers
Farm workers
Tourism, especially for the historical sites, etc. (3x1)

3.5.1 i) False it is a spur.
ii) True
iii) False it is a concave slope. (3x1)

3.5.2 Wagon Hill; Military cemetery; Manchester fort; Caesar's Camp (any two). (4x½)

3.5.3 Residential buildings. (1x1)

3.5.4



(3x1)

[20]

Question 4

4.1	Geographical Information Systems	(1x1)
4.2.1	Attribute data gives information about the spatial data.	(1x1)
4.2.2	Lines, points, areas.	(2x1)
4.2.3	Satellite and aerial photographs, maps, Specific information e.g. census information, traffic counts. Global Positioning Systems (GPS) Digital maps.	(2x1)
4.3	C. A. B.	(1x1)
4.4	Contours of the land Position of other shopping centres in the area. Access routes. Income levels in the surrounding suburbs, etc.	(3x1)
		[10]
		Total: 60 marks

Grade 10
Mid-year examination 2: Paarl
Answers

Question 1

1.11	A	
1.12	C	
1.13	C	
1.14	C	
1.15	B	
1.16	A	
1.17	B	
1.18	D	
1.19	D	
1.20	C	(10x1)
		[10]

Question 2

2.1	30°42'55"S; 18°56'35"E	(2x1)
2.2	Montvue	(1x1)
2.3.1	1:50 000	(1x1)
2.3.2	4 km +22 km = 26 km	(2x1)
2.4	South-southwest	(1x1)
2.5	15 years x 6' = 90' = 1°30' 23°33' + 1°30' = 25°03'	(3X1)
2.6	3319 DD	(2x1)
2.7	Cultivated land, probably wheat.	(1x1)
2.8	300 m	(1x1)
2.9	Non-perennial.	(1x1)
2.10	389.8 m	(1x1)
2.11		

A	Cliff
B	Gentle slope
C	Spur
D	Stepped slope

(4x1)
[20]

Question 3

3.1	The town of Paarl is linear shaped because it follows the Berg River from south to north.	(2x1)
3.2	Paarl Mountain (Paarlberg) has prevented the westward expansion of the town.	(1x1)
3.3	Wine Industry; raisins and sultanas; Flour/bread industry.	(2x1)

3.4.1 The railway line runs through the industrial area.
The R45 and 301 roads are close by.
Water from the Berg River is available
The land is flat which assists the construction of factories.
The industrial area is close to the Paarl market. (3x1)

3.5 Visiting the Wild Flower Reserve
Picnicking near the dams. (Swimming is probably not allowed).
Hiking on the mountain
Mountain biking on the mountain.
Rock climbing.
Picnicking at Pienaar's Camp (Pienaarskamp.) (4x1)

3.6.1 Igneous; magma; massive. (3x1)

3.7 4 (1x1)

3.8.1

	Page	Province	Grid	Country	Longitude	Latitude
Paarl	28	Western Cape	B2	South Africa	18°58'E	33°45'S

(6x½)

3.9 Gauss Conform projection (1x1)

[20]

Question 4

4.1.1 E
4.1.2 C
4.1.3 A
4.1.4 B
4.1.5 D (5x1)

4.2.1 B (1x1)

4.2.2 Polygons. (1x1)

4.3 Radiation from the sun (1) is reflected from the Earth (2) and is recorded by a satellite sensor system. This information is sent to a ground station (3) (3x1)

[10]

Total: 60 marks

Grade 10

Year-end examination 1: Graaff-Reinet

Answers

Question 1

1.1	A	(1x1)
1.2	A	(1x1)
1.3	B	(1x1)
1.4	D	(1x1)
1.5	B	(1x1)
1.6	C	(1x1)
1.7	D	(1x1)
1.8.1	D	(1x1)
1.8.2	A	(1x1)
1.9	D	(1x1)
1.10	D	(1x1)
1.11	C	(1x1)
1.12	A	(1x1)
1.13	B	(1x1)
1.14	D	(1x1)
		[15]

Question 2

2.1	5,2 km + 47 km = 52,2 km	(2x1)
2.2.1	510 km	(1x1)
2.2.2	Approximately 950 km	(2x1)
2.3	True bearing = 180° + magnetic declination in 2009 =205°07'.	(2x1)
2.4	False.	(1x1)
2.5	Any six of: cultivated land, other road, windmill, reservoir, hiking path, spot height, bench mark, main road, buildings	(6x½)
2.6	3224 CB	(2x1)
2.7	G1	(1x1)

2.8.1

(5x1)

2.8.2 HS = 500 m; Vertical exaggeration = 25 times (1x1)
VS 20 m

[20]

Question 3

3.1.1 The map is more up to date. (1x1)

3.1.2 The suburb has expanded to the west. (1x1)

3.1.3 The Sunday's River would protect the town.
The town is protected by the mountains on either side of the town. (2x1)

3.2.1 False. (1x1)

3.2.2 It is an oblique photograph. (1x1)

3.2.3 Sunday's (Sondags) River. (1x1)

3.2.4 School buildings (1x1)

3.2.5 1317,7 m (1x1)

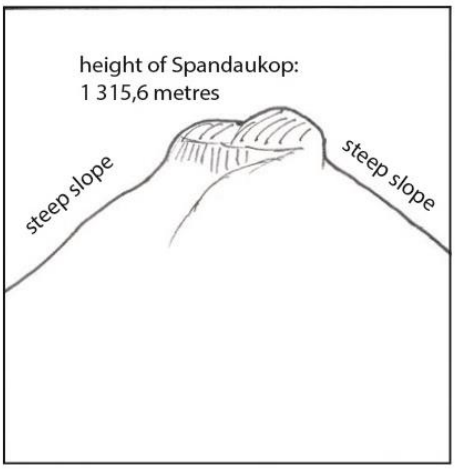
3.2.6 A mountainous landscape with peaks higher than 1000 m. Horizontal sedimentary layers are evident on the slopes of the mountain in the photograph. The Sunday's River encircles the town. The town is located in the flat land inside the river's meander. Apart from next to the river, the vegetation is sparse. This indicates that Graaff-Reinet experiences a dry climate.
(5x1)

3.3.1 There are reservoirs for water storage.
Many dams for water storage.
Windmills to access groundwater.
Canals for water transfer. (2x1)

3.3.2 Southwards. (1x1)

3.3.3 Soil erosion. (1x1)

3.3.4



3.3.4 (3x1)

3.3.5 There is a possibility that the Sunday's River will flood. (1x1)

3.3.6

1.	Flat-topped hill
2.	Pointed hill
3.	Convex slope

(3x1)

[25]

Question 4

4.1.1 Geographical Information Systems. (1x1)

4.1.2 GIS brings together lots of information that governments, organisations or businesses can use to make decisions and implement plans.
GIS technology is a useful research tool in subjects such as geology, sociology, economics, etc.
GIS can store huge amounts of data and can retrieve it very quickly.
Computers are now bigger and faster and can handle huge amounts of information.
More GIS software packages are available for many different uses. (3x1)

4.2.1 Line; Point; Area. (2x1)

4.2.2 Layers that would give information for the end-product were chosen.
Two vector layers were used. These showed 'Political boundaries' and 'Streets'.
Three raster layers were used. These showed 'Parcels', 'Land usage' and 'Elevation' (height).
The layers were placed one on top of the other to produce the 3D map of the real world.
(5x1)

4.3 Passive remote sensing: A satellite collects data that is constantly radiated by the Earth.
Active remote sensing; A satellite sends radiation to a target. This information is then collected by the satellite. (4x1)

[15]

Total: 75 marks

Grade 10
Year-end examination 2: East London

Answers

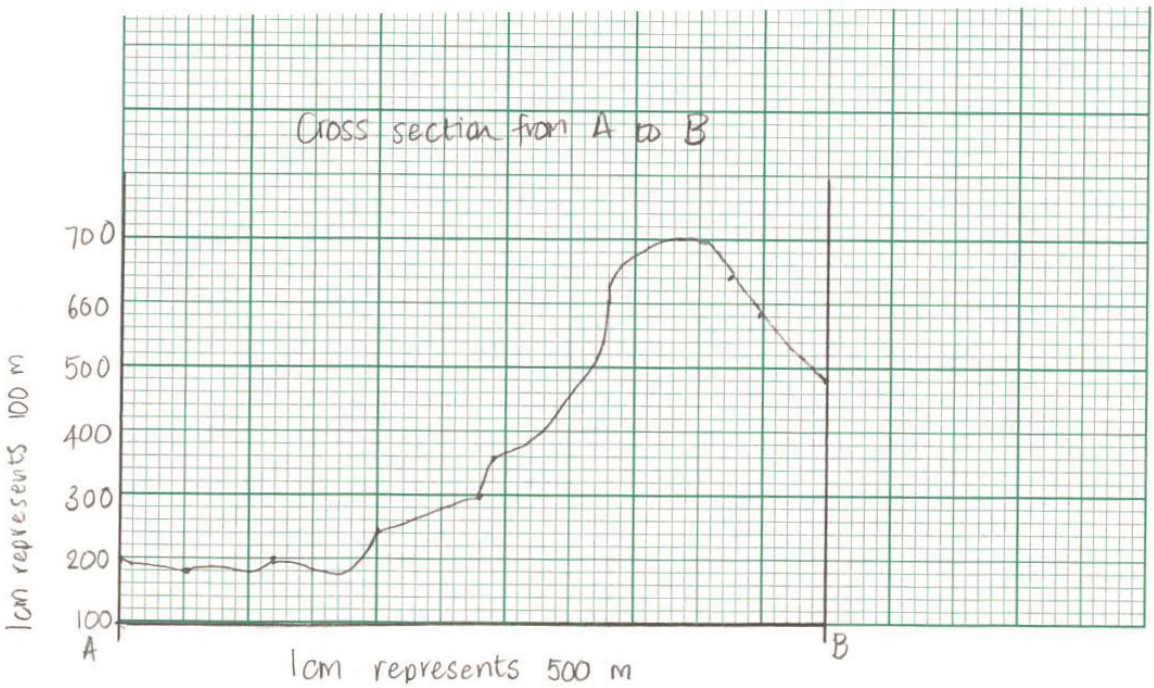
Question 1

1.1	A	(1x1)
1.2	B	(1x1)
1.3	C	(1x1)
1.4	D	(1x1)
1.5	B	(1x1)
1.6	D	(1x1)
1.7	A	(1x1)
1.8	C	(1x1)
1.9	A	(1x1)
1.10	B	(1x1)
1.11	C	(1x1)
1.12	C	(1x1)
1.13	C	(1x1)
1.14	A	(1x1)
1.15	C	(1x1)
		[15]

Question 2

2.1.1	C	Spur/convex slope	
	D	Hill	
	E	River valley	
	F	Spur/convex slope	
	G	Even slope	(5x1)
2.1.2	662 m – 300 m = 362 m		(1x1)
2.1.3	Northwards		(1x1)

2.1.4



(3x1)

2.1.5 HS = 500 m = 5 times (1x1)
VS 100 m

2.2.1 3,7 km (1x1)

2.2.2 Any of the following: Orchards, perennial river, cultivated land, national freeway, main road, spot height, other road, buildings, trees/bushes (4x1)

2.2.3 32°57'30"S 27°53'50"E (2x1)

2.2.4 225° (1x1)

2.3.1 True. (1x1)

[20]

Question 3

3.1 Nahoon Point is a **rocky outcrop**, followed by **Nahoon beach**. The Nahoon River is **blocked by a sand bank** from entering the sea. Between Nahoon beach and the next little river there are **alternating rocks and beaches**. This little river is **open to the sea**. The Strandloper Hiking Trail takes the hiker along a **combination of rocks and beaches**. (5x1)

3.2.1 March. (1x1)

3.2.2 96–98 mm. (1x1)

3.2.3 Winter. (1x1)

3.2.4 Approximately 5°. (1x1)

3.3 The warm Indian Ocean moderates the temperatures. Moisture off the warm sea leads to a higher rainfall. (2x1)

3.4 Dams to store water; Reservoirs to store water; Windmills to access groundwater. (2x1)

3.5 They are close to the N2.
Railway lines service this industrial area.

Flat land allows for easy construction of factory buildings.
The Nahoon River is close by for water.
East London is close by. (3x1)

3.6.1 In the meander of the Nahoon River. Irrigation water is available.
Good view sites of the river.
The land is relatively flat.
As Dorchester heights is a distance from East London, the land will be relatively cheap.

(2x1)

3.6.2 The river could flood the suburb.
The suburb is quite a distance from the N2 and the R72.
No schools are indicated so learners will have quite a distance to go to school.

(2x1)

3.7 There are no rail links.
There is no direct road link.
It will take time
and money to get to work. (3x1)

3.8 The letter 'S' indicates that it is indeed a school.
The style of the buildings (long) indicates classrooms.
There are extensive sports fields. (2x1)

[25]

Question 4

4.1 Information. (1x1)

4.2.1 Hardware is the powerful computer system on which the GIS is developed. (1x1)

4.2.2 Software programs store, manipulate, analyse and display geographic information.

(2x1)

4.3 A passive remote sensing system measures energy signals radiating from Earth. These energy signals come from the sun.
An active remote sensing system sends out its own energy signals to a target on Earth. The sensors on the satellite then measure the radiation which the target sends back to it.

(4x1)

4.4 i) Spatial data is data that shows us what something is. (1x1)

4.5.1 Remote sensing.
Maps converted into information in digital form.
Specific information about traffic counts, market research, population census figures, etc.

(3x1)

4.5.2 Rivers.
A map showing transport routes.
Farms/cultivation.
Contours of the land.
Settlements. (3x1)

[15]

Total: 75 marks

Grade 11

Task 1: Velddrif

Answers

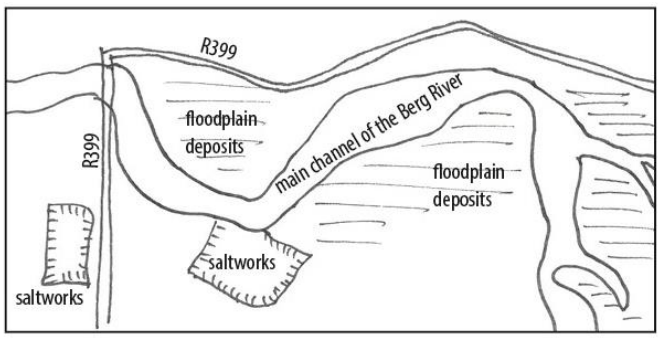
Question 1

1.1	A	
1.2	D	
1.3	C	
1.4	A	
1.5	B	(5x1)

Question 2

2.1	Light house and marine lights.	(1x1)
2.2	Railway line; Main Road; Other road; hiking trail	(4x½)
2.3.1	True bearing = 138° Magnetic declination in 2017 = 24°34' Magnetic bearing in 2017 = 162°34'	(3x1)
2.4.1	West-southwest	(1x1)
2.4.2	Use the formula for calculating speed. Speed = distance divided by time Time = distance divided by speed Distance = speed multiplied by time ii) 0,96 km/hour	(2x1)
2.5.1	5,5 km	(1x1)
2.5.2	13,5 m	(1x1)
2.5.3	B $\frac{VD}{HD}$ $\frac{5,5\ m}{2\ 500\ m = 1:454,5}$	(2x1)
2.6.1	1 cm represents 500 m/0,5 km	(1x1)
2.6.2	1:10 000	(1x1)
2.6.3	iii) five times smaller	(1x1)
2.7	32°49'55"S; 18°08'40"E	(2x1)
2.81	ii) 245 000 m^2	(2x1)
2.8.2	ii) 24,5 hectares	(1x1)

2.9



(4x1)

[**25]**

Question 3

3.1 Atlantic Ocean (1x1)

3.2 The map is more recent. The map shows more industrial development in block A5. (2x1)

3.3 B Golf course; C Cemetery; D Residential;
E Jetties. (4x1)

3.4.1 Close to the ocean; Close to Velddrif; Flat land; In the meander of the Berg River. (2x1)

3.4.2 There is a jetty and it fronts onto the water. (2x1)

3.4.3 The Berg River could come down in flood. (1x1)

3.4.4 Positive: Trees will be planted
Negative: Water pollution from the residences and the boats. (2x1)

3.5.1 Water: Low rainfall so the possibility of large industrial development is not possible. The Berg River does provide water, but as it is open to the sea, the water is salty.(3x1)
Resources:

- Salt is produced in the area. The hot temperatures evaporate the water let out from the Berg River.
- Fish are a diminishing resource and fewer people can make a living out of fishing.
- Tourism possibilities can be exploited by the residents. (3x1)

Transport infrastructure:

- The Berg River is navigable.
- There is a railway line close by.
- The R27 from the south crosses the Carinus Bridge into the town. (2x1)

3.5.2 Air pollution; water pollution; litter (2x1)

3.6 Sailing jetties in block A3–A4.
Motor boats using the same jetties
Fishing in the sea (block A3) and the river.
Golf (block A4)
Going to the beach (block A3).
Swimming, snorkling, diving, etc. (A3) (4x1)

3.7 It is hot and dry. (1x1)

3.8 The landscape is very flat. (1x1)

[30]

Question 4

4.1 line (secondary and other roads); point (windmill) (2x1)

4.2
1. Paper files
2. Interviews
3. Field survey
4. Remote sensing
5. Photogrammetry
6. Digital data (6x½)

4.2.2 The level of detail of the data that is being worked with. (1x1)

4.2.3 The orthophoto map shows a high resolution. (1x1)

4.3

Attribute data	**Spatial data**
(ii)	(i)
	(iii)

(3x1)

4.5 Remote sensing acquires information about an object or phenomenon without making physical contact with the object and thus in contrast to on-site observation, for example aerial photography. (1x1)

4.6 Layers of information could be used. For example:
The drainage system
The residential areas
The topography of the area (contour maps)
Climate statistics
This information could be used to analyse the extent of the danger if heavy rain occurred.
(4x1)

[15]

Total: 75 marks

Grade 11

Task 2: Parys

Answers

Question 1

1.1 D
1.2 A
1.3 B
1.4 D
1.5 C (5x1)

Question 2

2.1.1 Northeast (1x1)
2.1.2 3 km + 29 km = 32 km (1x1)
2.1.3 100° (1x1)
2.2 18°32’ + 12’ = 18°44’; 100°+ 18°44’ = 118°44’W of True North. (3x1)
2.3 400 m (1x1)
2.4 26°59’43”S; 27°27’45”E (2x1)
2.5 Shop (1x1)
2.6 There is no intervening high point to block the view. (1x1)
2.7 Northwards (1x1)
2.8.1 1 cm represents 100 m (1x1)
2.8.2 325 000 m^2 = 32,5 hectares (1x1)
2.8.3 fruit (1x1)
2.8.4 (A) shows a course texture. The texture of the field at (D) is smooth. (1x1)
2.8.5 5 m (1x1)
2.8.6 About 1392,5 m (1x1)
2.8.7 On the orthophoto map no development is shown. There are houses at Pomona on the topographic map. (1x1)
2.9.1 50 m (1x1)
2.9.2 1. Saddle 2. flood plain 3. Cliff
4. flat-topped hill (4x1)
2.9.2 100 m (1x1)
[25]

Question 3

3.1.1 It is sited next to the Vaal River. This gives the town a secure water supply.
The land is relatively flat.
The railway line is close by.
A number of roads connect the town to other places. (2x1)
3.1.2 Flooding could be a problem. (1x1)
3.1.3 The Vaal River has a braided pattern. It is relatively narrow where the bridge has been built. (1x1)

3.2 A number of dams have been built.
There are windmills to access groundwater.
Some of the rivers are shown as non-perennial.
Furrows have been built to carry water from the Vaal River.
There are reservoirs for the storage of water. (3x1)

3.3

	Tumahole	West End
3.3.1 Location	SE of Parys.	NW side of Parys. Next to the Vaal River
3.3.2 Comparative size of residential blocks	Very small residential blocks	Relatively large residential blocks.
3.3.3 Proximity to the Parys CBD	1–2 km from the CBD	2,5–4 km from the CBD
3.3.4 Quality of living space	The railway line will cause noise pollution. The industries could cause air pollution. The industrial area is close. 6 recreation areas are present	Close to the Vaal River which can be used for recreation and watersports. Larger plot of land, thus better quality of living space.

(8x1)

3.4 Crop farming. (1x1)

3.5 Golf course; Vaal River for fishing; water sports such as skiing; Caravan Park for camping (4x1)

3.6.1 Westwards. (1x1)

3.6.2 The dam walls stop the westward flow of water.
The angle at which the tributaries join the main stream. (1x1)

3.7 Wind from the NW. The row of trees will reduce the wind. (1x1)

3.8 Water is brought along the furrows from the Vaal River.
Proximity to the railway line.
Proximity to the Parys and Tumahole for labour.
Electricity is supplied.
Flat land for easy construction. (4x1)

3.9 E cemetery
F sewerage works (2x1)

3.10 Pomona (1x1)

[30]

Question 4

4.1 A 3; B 1; C 5; D 4; E 6; (5x1)

4.2.1 A polygon / area; B line; C point data (3x1)

4.3.1 Field research; photographs, maps, questionnaires (Primary data).
Books, newspapers, internet sites. (secondary data). (2x1)

4.3.2 Rivers; urban areas; rainfall / climate data; topography / contours of the area; transport routes etc. (3x1)

4.4 29,5 m pixels do not give clear images. 0,8 m pixels show far more detail. (2x1)

[15]

Total: 75 marks

Grade 11
Mid-end examination 1: Queenstown

Answers

Question 1

1.1 B
1.2 D
1.3 D
1.4 A
1.5 D
1.6 C
1.7 B
1.8 C
1.9 A (C is also correct)
1.10 D
1.11 C
1.12 A
1.13 C
1.14 B
1.15 C (15x1)
[15]

Question 2

2.1 True bearing = 130°
Magnetic declination in 2017 = 15 x 6' = 90' = 1°30' + 24°16'
Magnetic bearing in 2017 = 130°+24°16' **= 155°16'** (6x1)

2.2.1 $\frac{\text{Vertical interval}}{\text{Horizontal distance}}$ $\frac{303{,}5\text{ m}}{1750\text{ m}}$ $\frac{1}{5{,}7}$ 1:5,7 (4x1)

2.2.2 For every 5,9 m on the ground the height changes by 1 m.
The contours are close together indicating a steep slope. (2x1)

2.3 1 369 m (2x1)

2.4 Horizontal scale = 1 cm = 50 000 m
Vertical scale = 1 cm = 20 m.
$\frac{50\,000}{20}$ **= 25 times** (3x1)

2.5 There is a ridge between the two points. The height of the ridge is higher than .1179 and will block the view from .1496 (1x1)

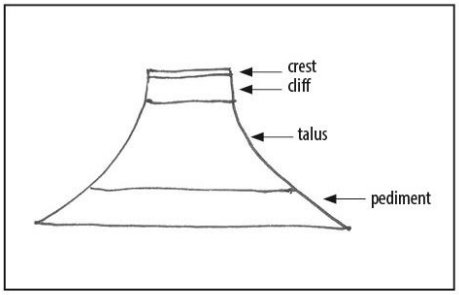
2.6 31°51'55"S; 26°52'25"E (2x1)
[20]

Question 3

3.1.1 Rivers eroded downwards into the original plateau.
Back-wasting of the resultant slopes occurred.
As the slopes of the landforms eroded backwards, mesas developed. Further erosion led to the development of Bowker's Kop, which is a butte. (5x1)

3.1.2 Many of the rivers are non-perennial.
The presence of reservoirs for water storage.
Windmills access groundwater
Dams for water storage. (4x1)

3.2



(4x1)

3.3 Overgrazing by cattle or sheep.
Over-cultivation.
A poor vegetation cover.
Occasional flooding by the non-perennial rivers.
Soft, easily eroded rock. (2x1)

3.4 The road goes over the saddle/pass between the two mountains. (2x1)

3.5.1 Sheep farming (1x1)

3.5.2 It is too dry for crop farming. (1x1)

3.6 1 A cemetery.
2. A recreation area.
3. A golf course.
4. A school. (4x1)

3.7 It is in the Lawrence De Lange Nature Reserve. (1x1)

3.8 16:00 (1x1)

[25]

Question 4

4.1.1 The more the pixels per area the better the spatial resolution. 10 x 10 pixels per area shows poor resolution; 50 x 50 pixels per area shows the 'R' very clearly. (3x1)

4.2

Attribute – Trigonometrical beacon	Number	Latitude	Longitude	Height
	194	31°53'40"	26°49'35"E	1363,8

(4x1)

4.3 Topography (contour map) of the area.
Residential areas in Queenstown.
Drainage of the area.
Transport routes.
Position of other shopping centres, etc. (3x1)

4.4.1 Satellites will continuously take photos of the area at different times.
By comparing these photos we will see the expansion of erosion.
Photos can be used to analyse the impact of erosion.
Aerial photographs and satellite photographs will allow the local municipality, over a period of time, to assess the negative effect of overgrazing in the area. [Any THREE – Accept other reasonable answer] (3x1)

4.5.1 Accessing topographical maps, orthophoto maps, satellite photographs, aerial photographs, questionnaires. (2x1)

[15]

Total: 75 marks

Grade 11
Mid-year examination 2: Augrabies

Answers

Question 1

1.1	D	(1x1)
1.2	C	(1x1)
1.3	A	(1x1)
1.4	B	(1x1)
1.5	C	(1x1)
1.6	B	(1x1)
1.7	D	(1x1)
1.8	A	(1x1)
1.9	B	(1x1)
1.10	C	(1x1)
1.11	D	(1x1)
1.12	C	(1x1)
1.13	B	(1x1)
1.14	A	(1x1)
1.15	C	(1x1)
		[15]

Question 2

2.1.1	A	hiking trail;	B	other road;	C	Orange River;	
	D	steep slope;	D	non-perennial river			(5x1)
2.1.2	Vertical scale		400	12.5 x			(2x1)
	Horizontal scale		500				
2.2	64	1:37,5					(4x1)
	2400						
2.3	28°36’55”S; 20°16’20”E						(2x1)
2.4.1	No						(1x1)
2.4.2	A 632 m hill is in the way						(1x1)
2.5	NW						(1x1)
2.6.1	250°						(1x1)
2.6.2	269°24’						(1x1)
2.7	724 – 680 = 44 m						(1x1)
2.8	Secondary road						(1x1)
							[20]

Question 3

3.1.1 Ridge
3.1.2 Grapes
3.1.3 Commercial farming
3.1.4 Gorge
3.1.5 Favours (5x1)

3.2.1 A Misval; B Potholes; C Augrabies Falls; D Gorge (4x1)

3.3.1 Perennial River. (1x1)
3.3.2 Very dry climate Rugged topography (2x1)
3.4 A Isolated farmstead; D Grapes; E Commercial. (3x1)
3.5.1 Northwest (1x1)
3.5.2 The row of trees was planted to protect the grapes from the wind. (1x1)
3.6 Reservoirs; Furrows to carry water; Canals to carry water. (2x1)
3.7.1 Batholith (1x1)
3.7.2 Exfoliation (1x1)
3.7.3 Tor (1x1)
3.7.4 Convex (1x1)
3.7.5 Rock falls (1x1)
3.7.6 Walk (1x1)
[25]

Question 4

4.1 Collecting and capturing data; storing and managing data; recalling and processing data; analysing data; integrating with other data; displaying data as information tables and maps. (3x1)
4.2 i) B; ii) D; iii E; iv) A; v) C (5x1)
4.3 1. Line; 2. Point. 3. Polygon Point (4x1)
4.4 Contours of the land.
Drainage lines (rivers)
Farm boundaries
Transport routes
Geology etc. (3x1)
[15]
Total: 75 marks

Grade 11
Year-end examination 1: Howick

Answers

Question 1

1.6	C	(1x1)
1.7	A	(1x1)
1.8	C	(1x1)
1.9	D	(1x1)
1.10	D	(1x1)
1.11	B	(1x1)
1.12	B	(1x1)
1.13	B	(1x1)
1.14	D	(2x1)
1.15	B	(1x1)
1.16	A	(1x1)
1.17	B	(1x1)
1.18	A	(1x1)
1.19	B	(1x1)
		[15]

Question 2

2.1.1	South; Southeast	(1x1)
2.1.2	2,4 km + 24 km = 26,4 km	(2x1)
2.1.3	29°23'35"S; 30°13'45"E	(2x1)
2.1.4	VI = 69,7 m; HD =1 km; $\frac{VI}{HD} = \frac{69,7\ m}{1\ 000\ m} \quad \frac{1}{19,3}$ **1:14,3**	(3x1)
2.2.1	VE = $\frac{500}{40}$ = **12,5 times**	(4x1)
2.2.2	a non-perennial river (Shelter River)	(1x1)
2.3	Gauss Conform map projection	(1x1)
2.4	2017 – 2002 = 15 years; 15 x 12' = 180' = 3°; 22°54' + 3° = **25°54'**	(2x1)
2.5	National road; Arterial road; Railway line	(3x1)
2.6	There are many hiking trails.	(1x1)
		[20]

Question 3

3.1.1 Close to the Mgeni River for a water supply
Flat land
Near the Howick Falls
The railway line passes close by
The N3 and other main roads connect Howick to Gauteng, Pietermaritzburg and Durban. (2x1)

3.1.2 The flooding of the Mgeni River will cause periodic problems. (1x1)

3.2 The Umgeni Valley Nature Reserve for hiking and camping.
The Howick Falls, the Cascade Falls and the Shelter Falls will attract tourists.
The Howick golf course will attract golfers
The Midmar Dam is popular for water sports
The Caravan Park in block H3 will attract campers. (4x1)

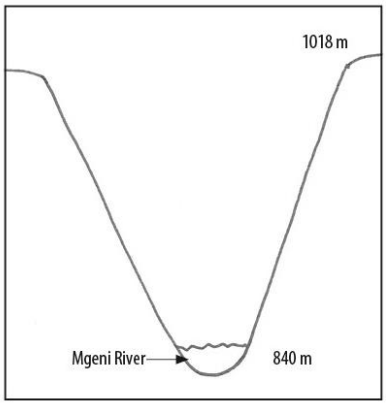
3.3.1 The steep slopes along the ridge in block D1 will increase the potential for mass movement. (2x1)

3.3.2 Soil creep; slump; mud flow; earth flow; rock falls; land slides (2x1)

3.4 The many non-perennial rivers.
The dams used for water storage (2x1)

3.5 The many firebreaks in the forested areas. (1x1)

3.6



(3x1)

3.7 Wood; maize; sugar cane; dairy products; meat (3x1)

3.8 They can access water from the Mgeni River
They are close to the Howick CBD.
They are close to the N3 and the R103.
The railway line to Pietermaritzburg is close by.
The Howick industrial area is very accessible. (2x2)

3.9 School buildings. (1x1)

3.10.1 Mesa (1x1)

3.10.2 Dolerite sill (1x1)

[25]

Question 4

4.1 i) B
ii) C
iii) A
iv) E
v) D
vi) F (6x1)

4.2 The orthophoto map has a higher spatial resolution as the grid cells (pixels) cover a relatively small area. (1x1)

4.3 A line. B polygon / area. C point. (3x1)

4.4.1 Digital data
Maps
Aerial Photographs
Satellite images (2x1)

4.4.2 Access roads into the forest; Available water to fight the fires – rivers and dams; Position of buildings in the forests; Contours of the landscape; Types of trees in the forest, etc. (3x1)

[15]

Total: 75 marks

Grade 11
Year-end examination 2: Marquard

Answers

Question 1

1.1	D	(1x1)
1.2	B	(1x1)
1.3	D	(1x1)
1.4	C	(1x1)
1.4.2	D	(1x1)
1.4.3	B	(1x1)
1.4.4	A	(1x1)
1.5	A	(1x1)
1.6	C	(1x1)
1.7	C	(2x1)
1.8	B	(1x1)
1.9	A	(1x1)
1.10	C	(1x1)
1.11	D	(1x1)
		[15]

Question 2

2.1	Northwest	(1x1)
2.2.1	Lookout Tower	(1x1)
2.2.2	28°41'19"S; 27°27'17"E	(2x1)
2.3	Approximately 2,5 km	(2x1)
2.4.1	True bearing = 103°.	(1x1)
2.4.2	Magnetic declination in 2017 = 21°39' Magnetic bearing in 2017 = 113°+ 21°39'. Answer: **124°39'**	(2x1)
2.5	P = Post Office; PS = Police Station	(2x1)
2.6.1	1. Spur 2. cliff 3. Stepped slope; 4. Even slope 5. Hill.	(5x1)
2.7	B 5 times larger.	(1x1)
2.8.1	Morning	(1x1)
2.8.2	The shadows are falling to the west.	(1x1)
2.9	There is no intervening high ground between the two trigonometric beacons.	(1x1)
		[20]

Question 3

3.1 A railway line from the north ends at the Marquard station. The main road, 708, links Marquard to Clocolan to the south-west. The main road, 707, links the town to places north of the town. The towns are inter-linked with other roads. (3x1)

3.2 Non-perennial rivers; many dams for water storage; windmills to access ground water; reservoirs to store water; canals to transport water when needed. (4x1)

3.3

	Moemaneng	Marquard
3.3.1 Location	To the south west of Marquard. Approximately 2.5 to 3 km from the centre of the town	Close to the centre of the town
3.3.2 Size of residential blocks	Small residential blocks Houses will thus also be small.	Larger blocks with larger houses.
3.3.3 Available recreation areas	3 small recreation areas	A golf course on the edge of the town; show grounds and a sports field; a small recreation area in the centre of the town

(3x2)

3.4.1 In commercial farming crops are grown and animals are reared for sale in the market. Subsistence farmers grow crops mainly for the farmer's family needs. (2x1)

3.4.2 Maize, wheat and potatoes. (2x½)

3.4.3 Reservoir for water storage; windmills to access ground water; a dam. (3x1)

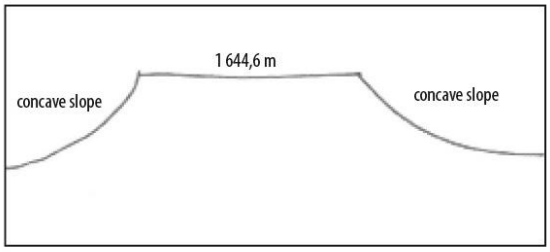
3.4.4 As a wind break from the northwest wind. (1x1)

3.4.5 An other road / dirt road. (1x1)

3.5.1 Northwards. (1x1)

3.5.2 The angle at which the tributaries join the main river.
The position of the dam wall in blocks E3 and C2. (1x1)

3.6.1



(2x1)

[25]

Question 4

4.1 Collecting and capturing data; storing and managing data; recalling and processing data; analysing data; integrating with other data; displaying data as information tables and maps. (3x1)

4.2 i) C; ii) E; iii) B; iv) D; v) A (5x1)

4.3.1 

4.3.2 

4.3.3 

(3x1)

4.4 Attribute – Trigonometrical beacon	Number	Latitude	Longitude	Height
	22	28°44’	27°25’25”	1644,6

(4x1)

[15]

Total: 75 marks

Grade 12

Task 1: Welkom (Odendaalsrus)

Answers

Question 1

1.1	D	(1x1)
1.2	B	(1x1)
1.3	D	(1x1)
1.4	C	(1x1)
1.5	B	(1x1)
1.6	B	(1x1)
1.7	C	(1x1)
1.8	A	(1x1)
1.9	A	(1x1)
1.10	D	(1x1)
1.11	B	(1x1)
1.12	C	(1x1)
1.13	D	(1x1)
1.14	B	(1x1)
1.15	A	(1x1)
		[15]

Question 2

2.1 True bearing = 127°; Magnetic declination in 2017 = 20°04’ + 30’ = 20°34’.
Magnetic bearing = 127° + 20°34’ = **147°34’** (4x1)

2.2.1 **Gradient = VI / HE** = 27 m / 2750 m **= 1:101,85** (4x1)

2.2.2 The slope is very gentle. (1x1)

2.2.3 For every 1 m of rise there is 101 m of horizontal distance; the contours are far apart. (1x1)

2.3 27°53’40’S; 26°43’50”E (2x1)

2.4 It is in the centre of the town; There are many multi-storied buildings; There three traffic circles to facilitate the movement of vehicles in the busy CBD. (2x1)

2.5 Circles do away with the need for robots. They should help the traffic should flow more freely in busy areas. (1x1)

2.6 A vertical aerial photograph is taken straight from above, while an oblique aerial photograph is taken from a camera that is pointing at an angle to the ground. (1x1)

2.7 1 200 m or 1,2 km (2x1)

2.8 L x B. 350 m x 350 m = 122 500 m = **12,25 ha.** (2x1)

[20]

Question 3

3.1.1 C5: opencast mining; C3 Deep level/shaft mining. (2x1)

3.1.2 Open cast mining is a broad category of mining in which soil and rock overlying the mineral deposit (the overburden) are removed.
Underground or shaft mining involves the overlying rock being left place, and the desired mineral are removed through shafts or tunnels. (2x1)

3.1.3 There are no roads so they have to walk to work. (1x1)

3.1.4 The rock brought up to the surface by the mining process is dumped there. (1x1)

3.1.5 Mining led to an improvement in the infrastructure in the area. Roads, electricity, schools etc. were provided.
Mining provided jobs for the local people.
The money earned by the workers was spent locally.
The increase in the population in the Welkom area provided a market for the local businesses.
Mining led to an increase in the demand for more housing, furniture etc. which was beneficial to many other businesses in the Welkom area. (4x1)

3.1.6 The service line connects the various mining areas. (1x1)

3.2.1 It is in a summer rainfall area; fertile soils will promote healthy crops; summer temperatures promote good crop growth. They experience frost which helps to dry the crop out before the harvest. (2x1)

3.2.2 There is a marsh/wetland in that area. (1x1)

3.3 It is a noise and air pollution-free zone. (2x1)

3.4 It is a very flat area which allows for the runways to be built. (1x1)

3.5 Flamingo Pan is a perennial pan, while Toronto Pan is a non-perennial pan. (1x1)

3.6.1 The suburb's name is Doring. (1x1)

3.6.2 Industrial/factory buildings. (1x1)

3.6.3 Medical services. (4) is a hospital. (1x1)

3.6.4 It provides for regular sized plots; It is easy to lay out.
Traffic congestion occurs as a result of the many intersections. (2x1)

3.6.5 True. (1x1)

3.6.6 The shadows are cast to the south west, which means the photo was taken in the morning. (1x1)

[25]

Question 4

4.1.1 Diagram B. (1x1)

4.1.2 Active remote sensing systems send a signal to the surface of the Earth and then record how it is reflected back. For example, radar sensors emit a radio wave signal to record information about objects on the surface of the Earth. (2x1)

4.1.3 The analysis of photographs taken of the gold mining area would identify environmental issues. Photographs could be taken over a period of time that would analyse the effectiveness of efforts to reduce the environmental impacts of mining. (2x1)

4.2.1 Area/polygon feature. (1x1)

4.3.1 The availability of undeveloped land in Jan Cilliers Park.
The location of other shopping centres.
Roads that are available for access to the proposed shopping centre.
Income levels of the surrounding population.
Property prices in the area. Etc. (3x1)

4.4.1 Attribute data describe the spatial characteristics of the geographic object. (2x1)

4.4.2 Co-ordinates: 27°54'50"S; 26°43'30"E
Height of 1358 m above sea level.
An other road gives access to the farm from the main road 710.
A cultivated crop, probably maize, is grown on the farm.
There is a farm dam and a reservoir close to the farm buildings. (2x1)

4.5.1 Secondary source. (1x1)

4.5.2 The original aerial/satellite photographs have been manipulated to produce the 1:10 000 orthophoto map. Contour lines and other height clues have been added, various features have been identified, suburbs and roads have been labelled.
(1x1)

[15]

Total: 75 marks

Grade 12

Task 2: Beaufort West

Answers

Question 1

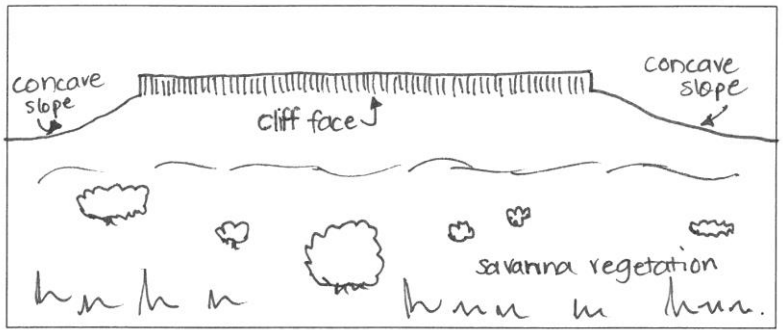
1.1	C	(1x1)
1.2	D	(1x1)
1.3	A	(1x1)
1.4	C	(1x1)
1.5	B	(1x1)
1.6	C	(1x1)
1.7	D	(1x1)
1.8	B	(1x1)
1.9	A	(1x1)
1.10	B	(1x1)
1.11	A	(1x1)
1.12	B	(1x1)
1.13	D	(1x1)
1.14	C	(1x1)
1.15	A	(1x1)
		[15]

Question 2

2.1.1	38,2 m	(1x1)
2.1.2	Gentle. The difference in height is only 38,2 m whereas the distance between the two points is 2 000 m. The intervals between contours indicate a gentle slope.	(2x1)
2.1.3	Yes. There is no intervening higher height to block the view between the two points.	(2x1)
2.1.4	The vertical exaggeration of 25 times will give a clearer idea of the profile of the landscape. The vertical scale is 1 cm = 20 m and the horizontal scale is 1 cm = 500 m.	(2x1)
2.2.1	259°	(1x1)
2.2.2	Magnetic declination = 24°10 west in 2008. 2017 to 2008 = 9 years. 9 x 7’ = 63’ = 1°3’ Magnetic declination in 2017 = 24°10’+ 1°3’ = 25°13’ west of true north.	(3x1)
2.2.3	True bearing = 259° Magnetic declination in 2017 is 25°13’. Magnetic bearing = 259° + 25°13’ **= 284°13’**	(2x1)
2.3	350 m x 350 m = 122 500 m^2. 225000/10 000 = **12,25 ha**	(3x1)
2.4	32°20’50’S; 22°33’30”S	(2x1)
2.5	7,75 km + 193 km = **200,75 km**	(2x1)
		[20]

Question3

3.1.1 Landform: Mesa
Labels: see below.



(4x1)

3.1.2 There are many storage dams;
There are many windmills for the access of ground water;
Very little vegetation or trees are shown on the orthophoto map and the topographic map.
The rivers are non-perennial. (3x1)

3.2.1 3 (2x1)

3.2.2 The slope labelled (2) is a north facing slope. This slope will receive intense radiation during the day. (2x1)

3.2.3 Horizontal sedimentary rock or massive igneous rock. (1x1)

3.2.4 Steep slopes; soft rock; poor vegetation cover. (2x1)

3.3.1 Blocks B5 and B6 and C5 and C6. (1x1)

3.3.2 The rural/urban fringe. (1x1)

3.4.1 Grid iron street pattern. (1x1)

3.4.2 Easy to plan and lay out. Easy to extend later on.
Facilitates the subdivision of land into smaller proportions.
Yields rectangular plots, which are convenient for the erection of buildings. (2x1)

3.4.3 Many rectangular street crossings hamper the flow of traffic.
Monotonous – boring! (1x1)

3.4.4 When the streets were laid out this was the usual type of street pattern.
A grid iron pattern is easy to lay out as the land is very flat. (1x1)

3.5.1 True. (1x1)

3.5.2 Beaufort West provides a variety of urban services to the farmers who live in the surrounding rural areas. (2x1)

3.6 The Hans River is depositing its load. A graded river is a river in a state of equilibrium/balance. The river should have just enough energy to carry its water and its load without eroding its river bed or depositing its load. (1x1)

[25]

Question 4

4.1 A Geographic Information System (GIS) is a computer-based tool for mapping and analysing features and geographic events on earth.
A GIS collects, stores, retrieves, displays and analyses spatial data. (2x1)

4.2.1 Vector data shows geographic objects in point, line and area/polygon format.
Raster data is data of geographic objects shown with grid cells/pixels. (2x1)

4.2.2 The orthophoto map. This map is based on photographs which consist of pixels. (2x1)

4.3.1 Resolution is the ability of a remote sensing sensor to create a sharp and clear image. (1x1)

4.3.2 Individual buildings can be seen.
Individual trees can be seen. (1x1)

4.4.1 Data integration is the combination of two or more data layers in order to create a new layer. The diagram shows how maps with different scales have been integrated for form a new 1:50 000 map. (2x1)

4.4.2 The drainage in the area.
Transport routes
The contours indicating the height in the area. (3x1)

4.5 Buffering is the creation of a zone of equal width around a point, line or area feature.
A river flows through Beaufort West. Buffering will help to identify the height of flooding of this river. Buildings will not be allowed in this buffered zone. (2x1)

[15]

Total: 75 marks

Grade 12

Mid-year examination 1: Mbombela

Answers

Question 1

1.1	B	(1x1)
1.2	B	(1x1)
1.3	A	(1x1)
1.4	D	(1x1)
1.5	A	(1x1)
1.6	D	(1x1)
1.7	D	(1x1)
1.8	A	(1x1)
1.9	B	(1x1)
1.10	A	(1x1)
1.11	C	(2x1)
1.12	B	(1x1)
1.13	A	(1x1)
1.14	C	(1x1)
		[15]

Question 2

2.1	1 cm represents 500 m or 0,5 km.	(1x1)
2.2	**Gradient = VI** 83 = 1:21,68 **HE** 1800	(3x1)
2.3.1	25°25'30"S; 30°55'30"E	(2x1)
2.3.2	Marathon	(1x1)
2.4	There is no higher ground between the two points.	(1x1)
2.5	C. 210 m^2	(2x1)
2.6.1	5,25 km	(2x1)
2.6.2	North-northwest	(1x1)
2.7	National route (red) Main road (red) Secondary road (brown) Other road (no colour)	(3x1)
2.8.1	800 m	(1x1)
2.8.2	2. Hill; 3. Valley; 4. Spur.	(3x1)
		[20]

Question 3

3.1 1. Show grounds; 2. Mbombela station; 3. Sewerage works; 4. Citrus orchard; 5. Riverside Industrial Park. (5x1)

3.2 Homogenous underlying rock. (1x1)

3.3 Many farm dams for water storage; Canals to transport water to the farms; Reservoirs to store water; (3x1)

3.4.1 Planned irregular street pattern. (1x1)

3.4.2 The roads can follow the contours of the land; Irregular plot sizes allow for individual houses. It is difficult to extend the streets. You can get lost very easily. (2x1)

3.5

	Riverside Industrial Park	**West Acres**
3.5.1 Main land use	Industry/factories	Residential
3.5.2 Access to transport routes	R27 and R40 arterial routes. Railway line with a nearby station	R40 arterial road and a secondary road give access to the suburb
3.5.3 Degree of pollution	Air and water pollution from the factories.	Free of pollution

(6x½)

3.6 More privacy; You can make your own decisions; You live on the farm and so can better control the farm activities. (2x1)

3.7 False. (1x1)

3.8 Police station; Post office; (2x1)

3.9.1 248 mm (1x1)

3.9.2 Rainfall is low in winter (May to August). (1x1)

3.9.3 Warm temperatures of 15° to 23° C. Average temperature is 19,8°. Small temperature range (8° C). Annual rainfall of 796 mm. Most of the rain falls in summer. (3x1)

[25]

Question 4

4.1 i) Data integration involves combining data from many different sources into meaningful and valuable information. (2x1)

ii) A query is a request that examines features or tabular attributes. The user can select the criteria. (2x1)

4.2 Spatial data. (1x1)

4.3.1 1. Vector data; 2. Raster data. (2x1)

4.3.2 Points and polygons. (2x1)

4.4 A contour map of the area; a layer showing the residential areas; The transport infrastructure layer; The position of other shopping centres; The average Income of the surrounding residential areas, etc. (4x1)

4.5 Buffering will identify the areas along the river that could possibly flood. The 50 year flood level is often chosen. (2x1)

[15]

Total: 75 marks

Grade 12

Mid-year examination 2: Memel

Question 1

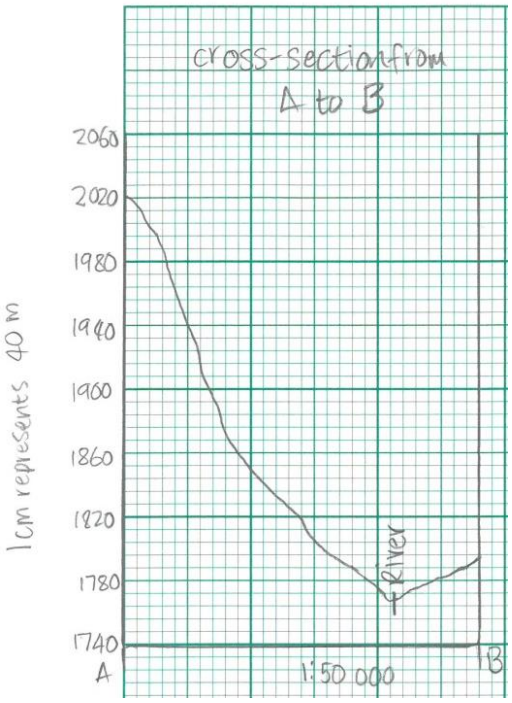
1.1	A	(1x1)
1.2	B	(1x1)
1.3	C	(1x1)
1.4	D	(1x1)
1.5	B	(1x1)
1.6	A	(1x1)
1.7	B	(1x1)
1.8	B	(1x1)
1.9	C	(1x1)
1.10	C	(1x1)
1.11	D	(2x1)
1.12	C	(1x1)
1.13	A	(1x1)
1.14	B	(1x1)
		[15]

Question 2

2.1	R: Sewerage works; S: Silos; T: Weir; U: Meandering river/oxbow lake; V: Dam.	(5x1)
2.2	The tone of the sewerage works is darker than the dam, which has a lighter tone.	(2x1)
2.3	7 years x 3' = 21'. Magnetic declination = 20°51' + 21' = 21°12'.	(2X1)
2.4.1	HE = 750 m. VI= 169,3. Gradient = $\frac{VI}{HE} = \frac{169,3}{750} = 1:4,4$	(3x1)
2.4.2	It indicates that it is a steep slope.	(1x1)
2.5	27°39'23"S; 29°33'40"E	(2x1)
2.6	There is no high land to block the view.	(1x1)
2.7	150 m x 150 m = 22 500 m^2 = **2,25 ha.**	(3x1)
2.8	To access ground water.	(1x1)
		[20]

Question 3

3.1.1



(3x1)

3.1.2 VS = 40 **12,5 x** (1x1)
HS 500

3.2.1 Katabatic flow. (1x1)

3.2.2 Katabatic flow in winter will cause it to be cold at the bottom of the valley. (1x1)

3.2.3 Frost might kill the crop. (1x1)

3.3.1 25°C (1x1)

3.3.2 Slope (3) is a north facing slope and it will receive intense radiation during the day. (2x1)

3.4.1 ii) Up the valley slope towards the reservoirs. (1x1)

3.4.2 During the day the air at the bottom of the valley is heated and rises up the slopes and up the valley. (2x1)

3.5 An other road. (1x1)

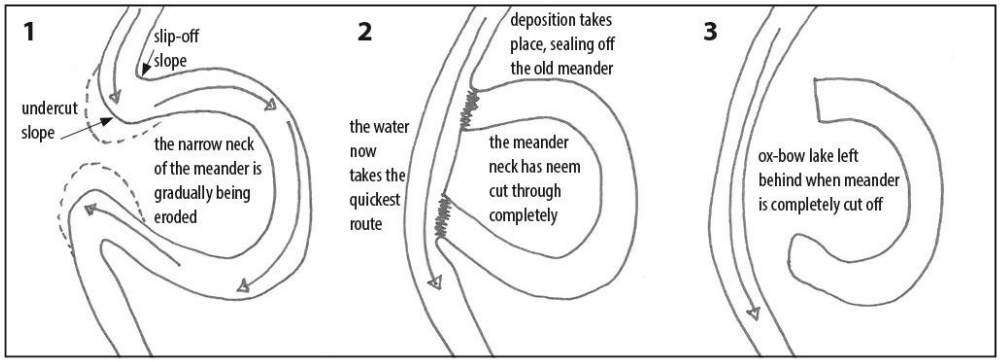
3.6.1 C. A minor country town. (1x1)

3.6.2 Grid iron pattern (1x1)

3.6.3 It provides for regular sized plots; It is easy to lay out. (2x1)

3.6.4 Zamani is situated outside the town, away from the town to separate the race groups. Zamani is a low-income housing area that was designated for black people. (2x1)

3.7.1 A meander has developed in the river. The river flows faster on the inside slope, (**undercut slope)** and **erosion** takes place. **Deposition** takes place on the **slip-off slope**. Over time the **meander** gets tighter and the ends become closer together. During a flood, the ends join up and the meander loop is cut-off from the main channel. The cut-off is called an oxbow lake.



(5x1)

[25]

Question 4

4.1.1 1 = Hardware
2 = Data
3 = Approaches/methods
(3x1)

4.1.2 People manage the system and develop plans for applying it to real-world problems. (2x1)

4.2 Contour map; Transport infrastructure; Farms; Rivers; Settlements. (3x1)

4.3.1 A buffer zone in GIS is a zone around a map feature (e.g. a river) measured in units of distance or time. (1x1)

4.3.2 A buffer zone would identify the height of recent flood levels. The holiday resort would be built above this zone identified by buffering. (2x1)

4.4.1 Spatial resolution is a measure of how detailed an image is. (1x1)

4.4.2 A. (1x1)

4.4.3 The pixels in diagram A are smaller. Far more detail is shown in diagram A. (2x1)

[15]

Total: 75 marks

Grade 12

Year-end examination 1: George

Answers

Question 1

1.1	A	(1x1)
1.2	D	(1x1)
1.3	C	(1x1)
1.4	B	(1x1)
1.5	D	(1x1)
1.6	D	(1x1)
1.7	A	(1x1)
1.8	D	(1x1)
1.9	C	(1x1)
1.10	B	(1x1)
1.11	C	(1x1)
1.12	B	(1x1)
1.13	C	(1x1)
1.14	A	(1x1)
1.15	C	(1x1)
		[15]

Question 2

2.1	L = 250 m; B = 300 m. Area = 250 m x 300 m =75 000 m^2 7,5 hectare.	(3x1)
2.2	VI = 8,4 m; HE = 1400 m. $\frac{VI}{HE} = \frac{8,4\ m}{1400\ m} = \frac{1}{166}$ = 1:166	(3x1)
2.3.1	No	(1x1)
2.3.2	There is a hill with a height of 140 m between the two points.	(1x1)
2.4	3422 AD	(2x1)
2.5	350 m or 3,5 km	(2x1)
2.6	West-northwest.	(1x1)
2.7	26°38’	(3x1)
2.8.1	The grass of the fairways has a smooth texture. The greens are also smooth, but lighter in colour. The trees have a course texture.	(2x1)
2.9.1	i)	(1x1)
2.9.2	The slope indicated by the contours is a steep convex slope.	(1x1)
		[20]

Question 3

3.1.1 False. (A) is a golf course. (1x1)

3.1.2 False. (B) is recreational buildings (1x1)

3.1.3 True (1x1)

3.1.4 False. The houses at Heatherlands are relatively large and have gardens. (1x1)

3.2.1 No (1x1)

3.2.2 The wind will be from the southeast. This wind will blow the smell to the west. (2x1)

3.3 Katabatic flow will cause cold air to descend into the valley. (1x1)

3.3.1 River terraces, knick points and incised meanders. (2x1)

3.3.2 Turbulent flow will occur because the gradient of the river is steep. There will be rocks in the river bed which will also cause turbulent flow. (2x1)

3.4.1 George is close to the Indian Ocean. The beaches will attract visitors. Swimming, surfing, etc. will be popular.
There are a number of golf courses which will attract golfers.
The rivers will attract hikers.
Fishing will be popular on the rocky coastline.
Tourists can hike in the Kat River Nature Reserve, etc. (4x1)

3.5.1 ***A Central Place*** is a settlement which provides one or more services for the population living around it. (1x1)

3.5.2 The N2 goes through George. It is a freeway which makes George easily accessible.
A railway line runs through George with a station on the edge of George CBD.
The N9 arterial route, links George to inland areas to the north.
The main road, 102, gives the local people access to York Street. (4x1)

3.6

	Heather Park	**Lawaaikamp**
3.8.1 Property size	Relatively large plots	Very small plots.
3.8.2 Access to transport routes	The N9 links Heatherlands to the centre of George.	A secondary road links Lawaaikamp to the CBD.
3.8.3 Proximity to recreation areas	Golf courses, forests are close by.	Small recreation areas linked to the two schools in the area.
3.8.4 Degree of air pollution	Approximately 4km from industrial areas. A strong SE wind might blow pollution towards Heatherlands.	Approximately 1km from the industrial area. Air pollution, especially if the wind is from the west, will be a problem.

(4x1)

[25]

Question 4

4.1.1 The detail with which a map depicts the location and shape of geographic features. (1x1)

4.1.2 The larger the map scale, the higher the possible resolution. The orthophoto map has a large scale of 1:10 000 (1x1)

4.1.3 Raster data consists of a matrix of cells (or pixels) organised into rows and columns (or a grid) where each cell contains a value representing information. The word 'pixel' means a picture element. Every photograph, in digital form is made up of pixels. (1x1)

4.2.1 Collecting and interpreting information about the environment and the surface of the earth from a distance. (1x1)

4.2.2 Satellite photographs and aerial photographs can be accessed over a period of time to assess the impact of erosion. (2x1)

4.3.1 Spatial data give information about the location and shapes of geographic features and the relationship between them.
Attribute data describes the geographic characteristics of features. It is usually stored as tables or written text in a GIS data base. (2x1)

4.3.2 Line. (1x1)

4.4.1 GIS uses modern computer technology to link map features to data about the map features. It makes use of a wide range of geographic information. (2x1)

4.4.2 **Census tracts:** This layer will give information about the people living in the surrounding area.
Roads: This layer will show how accessible the new McDonald's will be.
Bus routes: This layer will show if the available public transport infrastructure will make McDonald's accessible.
Shopping centres: Food outlets at nearby shopping centres might be strong competition for the new McDonald's.
Industrial sites: Workers in nearby industrial sites will buy from McDonald's, especially during the day. (4x1)

[15]

Total: 75 Marks

Grade 12

Year-end examination 2: Umkomaas

George

Answers

Question 1

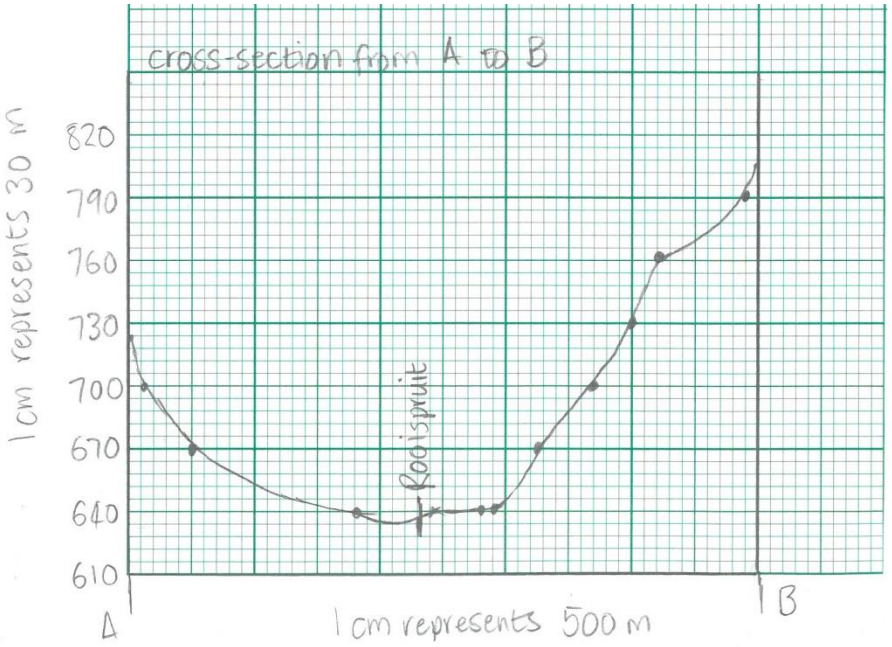
1.1	C	(1x1)
1.2	C	(1x1)
1.3	D	(1x1)
1.4	D	(1x1)
1.5	A	(1x1)
1.6	B	(1x1)
1.7	D	(1x1)
1.8	B	(1x1)
1.9	C	(1x1)
1.10	A	(1x1)
1.11	A	(1x1)
1.12	C	(1x1)
1.13	B	(1x1)
1.14	C	(1x1)
1.15	B	(1x1)
		[15]

Question 2

2.1.1 1 cm represents 500 m or 0,5 km (1x1)

2.1.2 30 m (1x1)

2.1.3



(4x1)

2.1.4 Vertical exaggeration: VS = 30 m = 16,6 times (2x1)
HS 500 m

2.1.5 **Gradient = VI** 189 1 = **1:10,3**
HE 1 950 (3x1)

2.1.6 No. (1x1)

2.1.7 There is a 730 m hill between the two points. (1x1)

2.2.1 30°8'10"S; 30°47'40"E (2x1)

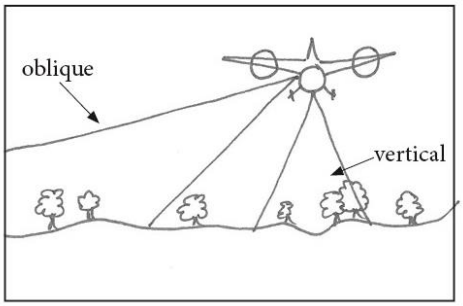
2.2.2 204° (1x1)

2.2.3 True bearing = 204°. Annual change 2010 to 2017 = 42'.
Magnetic declination in 2017 = 25°26'.
Magnetic bearing = 204°+ 25°26' **= 209°26'** (2x1)

2.3 1350 m x 1550 m = 2 092 500 = **209,25 ha**
(2x1)

[20]

Question 3



3.1.1

(2x1)

3.1.2 Mkomazi River. (1x1)

3.1.3 Umkomaas Railway station (1x1)

3.1.4 Fruit. (1x1)

3.1.5 The rocky coastline will encourage fisherman. (1x1)

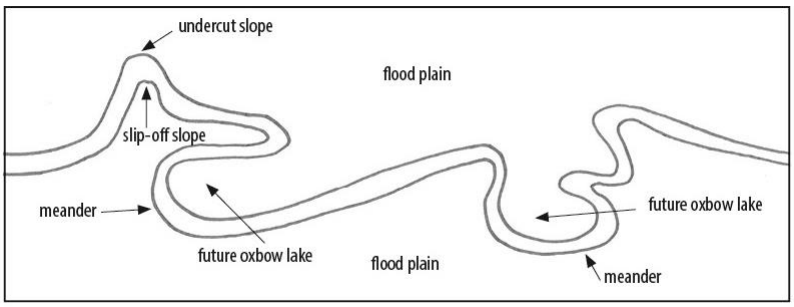
3.1.6

	Settlements in block A1	**Craigieburn in blocks E1**	
Settlement pattern	Isolated pattern	Nucleated pattern	(2x1)
Available infrastructure	A road classified as 'other'. This will be a dirt road. A shop.	Roads in the suburb and the N2 nearby. A school A water supply. Electricity.	(4x1)

3.2.1 A deeply incised valley. (1x1)

3.2.2 Steep slopes.
Soft rocks.
A poor vegetation cover.
High rainfall in the area. (2x1)

3.3.1



(4x1)

3.3.2 It will bring cold air into the valley. Frost and mist are possible in the early morning. (1x1)

3.4.1 Steep slopes, heavy rain, soft rock and a poor vegetation cover will encourage mass movement in the Umkomaas area. (2x1)

3.4.2 Re-vegetate the slopes.
Avoid overgrazing by their animals.
Contour plough when they grow crops. Etc. (2x1)

3.5 B (1x1)

[25]

Question 4

4.1.1 Pixels. (1x1)

4.1.2 The more the grids/pixels, the greater the spatial detail. (2x1)

4.1.3 Points, lines and polygons. (3x1)

4.1.4 A road. (1x1)

4.2.1 i) Data manipulation means working with the data that has been stored in the GIS. This data can then be used to perform different functions.
ii) Data integration involves combining data from many different sources into meaningful and valuable information. (2x1)

4.2.2 Buffering will determine the zone in which flooding of the Mgababa occurs. This will mean that no settlement will be allowed inside this buffer zone. (2x1)

4.3 A contour map of the area.
The transport infrastructure of the area.
The drainage system in the area (rivers).
The position of the residential areas.
The position of other hotels and Bed and Breakfast establishments in the area.
The details of the coastline.
Etc. (4x1)

[15]

Total: 75 marks