



GEOGRAPHY: PAPER II

EXAMINATION NUMBER

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Time: 1½ hours

100 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. Write your examination number in the appropriate blocks provided above.
2. This question paper consists of 15 pages, a topographic map extract, an orthophoto map extract and a yellow equipment sheet. Please check that your question paper is complete.
3. Read the questions carefully.
4. Answer ALL the questions in the spaces provided on the question paper.
5. Carefully study the 1:50 000 topographic map extract 2828 AB and 2828 AD BETHLEHEM and the accompanying 1:10 000 orthophoto map extract 2828 AB 24 SAULSPOORT DAM before answering the questions.
6. The topographic map extract has grid lines with markings A to G and 1 to 12 that may be used to identify locations according to blocks.
7. The topographic map extract, orthophoto map extract and your completed answer book must be handed to the invigilator at the end of the examination. The maps and photos may be retained by the school for future use.
8. On page 2 is a glossary of words. This will help you understand what the words in **bold** in the questions are asking you to do.
9. The yellow equipment sheet may be used in lieu of equipment not brought to the examination by the candidate. It may also be used for rough work. There is a fold mark indicating where it should be folded. A magnifying glass and calculator may be used.
10. It is in your own interest to write legibly and to present your work neatly.

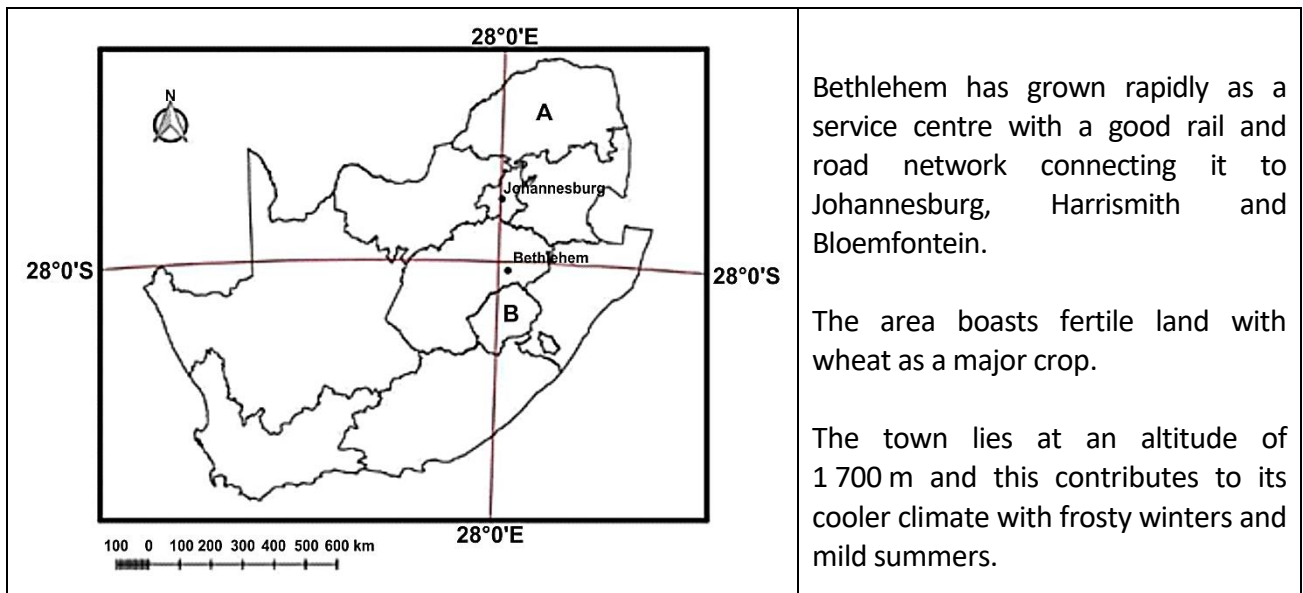
FOR MARKER'S USE ONLY

Question	1	2	3	Total
Marks	44	42	14	100
Obtained				

Glossary of terms

WORD	MEANING
Account for	To justify and provide reasons for something using a short explanation.
Calculate	To work out the value of something using a mathematical method.
Circle	To draw a line around something.
Comment	To give your opinion or make a statement about something, to provide an account of. (Note: a map or diagram may be part of a description.)
Complete	To add information; to add all the missing parts.
Define	To give a precise meaning of.
Describe	To briefly give an account of something; to explain something and give reasons. (Note: a map or diagram may be part of a description.)
Determine	To establish a conclusion after reasoning.
Draw	To show by means of a sketch.
Estimate	To make an approximate judgement or calculation.
Explain	To describe something so that it can be understood.
Give	To provide something or state something.
Justify	To explain and give reasons for.
State	To present information or details plainly, directly and simply, without discussion.
Substantiate	To supply evidence; to prove a point.
Tabulate	To arrange or give ideas or data in a table format.
Tick	To mark with a tick to indicate the chosen option.

Figure 1: Location Map of Bethlehem in the Free State



[Source: Examiner]

QUESTION 1 ATLAS USE, MAP ORIENTATION AND TECHNIQUES

1.1 Refer to the location map above (Figure 1), as well as the topographic map extract 2828 AB and 2828 AD to answer the questions that follow. **Tick** the correct box.

1.1.1 The province labelled A in Figure 1 above is ...

Limpopo	<input type="checkbox"/>
North West	<input type="checkbox"/>
Gauteng	<input type="checkbox"/>
Mpumalanga	<input type="checkbox"/>

(1)

1.1.2 The neighbouring country labelled B in Figure 1 above is ...

Swaziland	<input type="checkbox"/>
Mozambique	<input type="checkbox"/>
Lesotho	<input type="checkbox"/>
Zimbabwe	<input type="checkbox"/>

(1)

1.1.3 Johannesburg is ... of Bethlehem.

NE	<input type="checkbox"/>
NW	<input type="checkbox"/>
NNW	<input type="checkbox"/>
NNE	<input type="checkbox"/>

(1)

1.1.4 The approximate distance from Bethlehem to Johannesburg is ... (use Figure 1).

200 km	
225 km	
275 km	
300 km	

(1)

1.1.5 (a) The Ballyduff smallholdings (D4) rely on underground water for irrigating their crops.

True	
False	

(1)

(b) **Justify** your answer to Question 1.1.5 (a).

(2)

1.2 Photograph 1 was taken on the outskirts of Bethlehem on the R26 toward Retief and Warden.

Photograph 1



[Source: Examiner's photograph]

1.2.1 Study positions 1, 2, 3 and 4 on R26 on the topographic map extract. At which position was the photographer standing? **Tick** the correct option.

1	
2	
3	
4	

(2)

1.2.2 **Account for** your answer to Question 1.2.1 using evidence from the topographic map extract.

(2)

1.2.3 **State** the direction in which Photograph 1 was taken.

(1)

1.2.4 (a) **Determine** whether the diggings (D4) are visible from where the photographer stood.

Yes	
No	

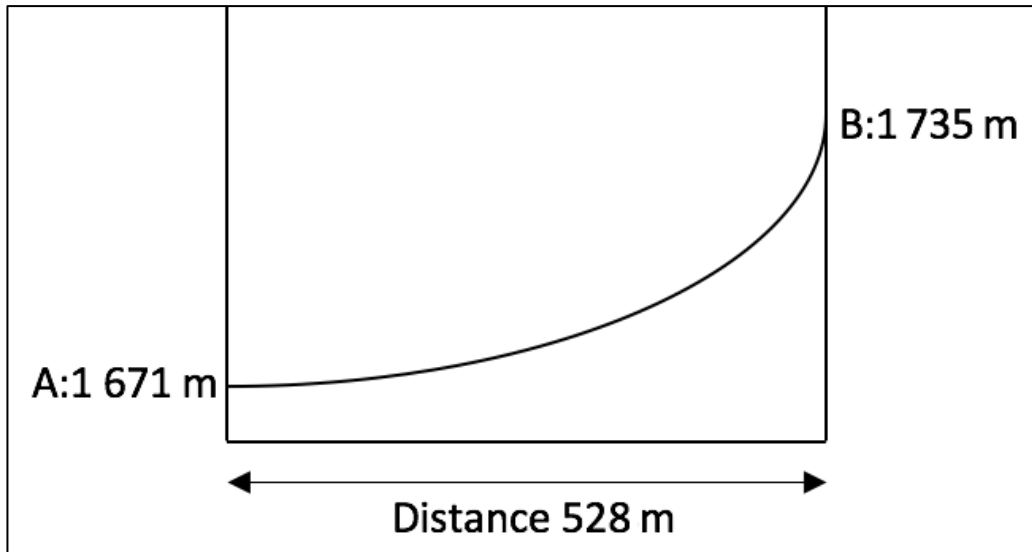
(1)

- (b) Using evidence from the topographic map extract, **account for** your answer to Question 1.2.4 (a).

(2)

1.2.5 Refer to Figure 2.

Figure 2: The gradient from A to B in Photograph 1



Using the data in Figure 2, **calculate** the gradient between A and B.

- (a) Gradient: 1 : _____

Calculations:

(3)

- (b) **Circle** the word that best describes the slope shown in Figure 2.

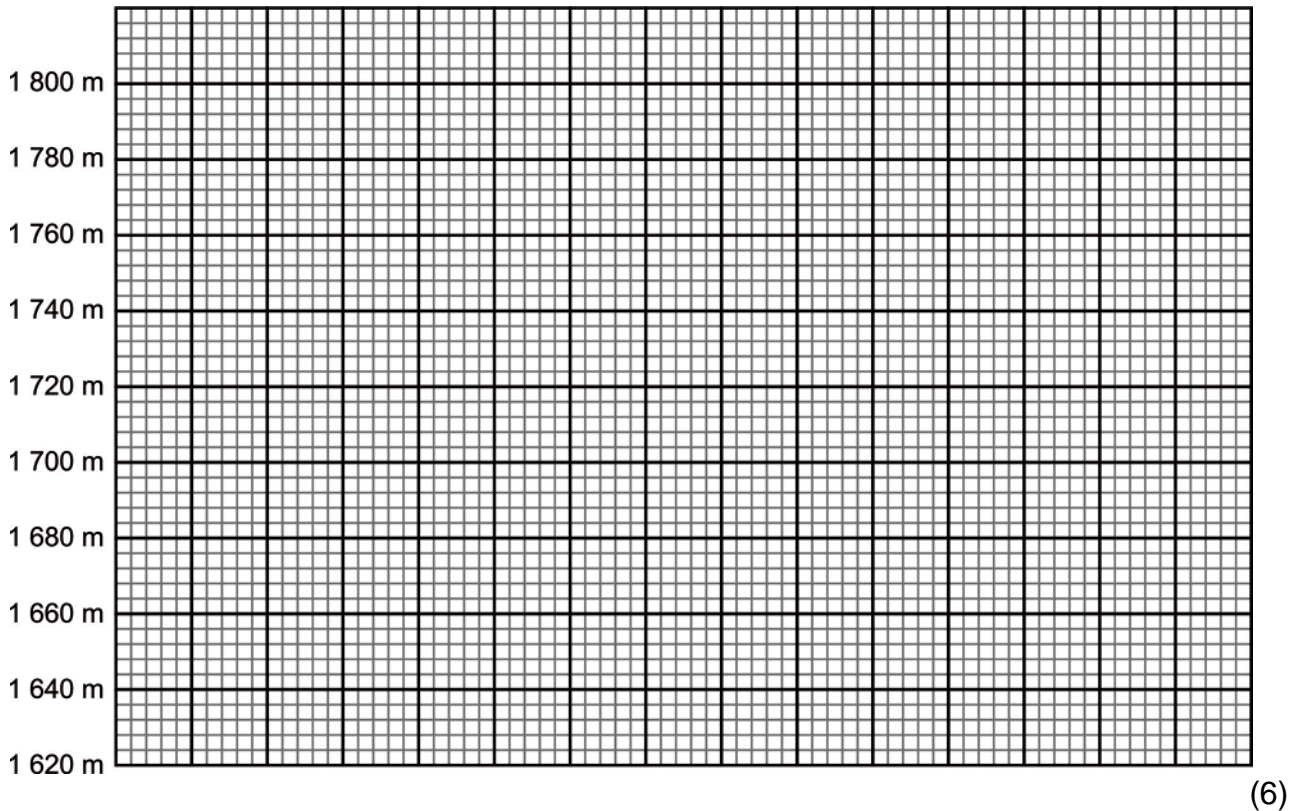
concave convex flat gentle steep very steep

(2)

1.3 Geographic techniques and orthophoto interpretation

1.3.1 Study the orthophoto map extract 2828 AB 24 SAULSPOORT DAM. This area is covered by the purple square drawn on the topographic map extract.

Draw a cross section on the graph paper below from position S (E8) north of Coenana Farm to trigonometric station 49 at 1 787,4 m (D8 and D9). A vertical scale of 1 cm : 20 m has been provided for you.



1.3.2 Fill in and label the position of the following on the cross section:

- the Saulspoort Dam
 - any road
- (2)

1.3.3 **Determine** the vertical scale of the cross section as a ratio.

1 : _____ (2)

1.3.4 **Calculate** the vertical exaggeration of the cross section.

_____ times.

Calculations:

(2)

1.4 Photograph 2 is of a scene simulating landing a plane at Bethlehem Aerodrome/Airport (E3 and E4). This picture shows the southern runway, Runway ONE on the topographic map extract. Photograph 3 shows the landing fees at Bethlehem Aerodrome/Airport.



[Source: <<https://flyawaysimulation.com>>]

[Source: Examiner's photograph]

A pilot is completing the preflight information that is needed to program into the light aircraft's (weighing 2 400 kg) GPS navigation system. **Complete** the preflight checklist below with the information needed to make a successful flight. SIX local flights will be completed during the day.


1.4.1 Number of runways at Bethlehem Aerodrome/Airport		(1)
1.4.2 The landing cost of six trips today		(1)
1.4.3 Bearing of Runway ONE (landing in an easterly direction)		(2)
1.4.4 The magnetic declination for 2018 is ... Calculations:		(2)
1.4.5 Magnetic bearing for a pilot to land on Runway ONE in 2018 would be ...		(2)
1.4.6 Co-ordinates of the eastern end of Runway ONE to enter into the GPS	S – _____ ° _____ ' _____ " E – _____ ° _____ ' _____ "	(4)

[44]

Q1 subtotal

QUESTION 2 FLUVIAL PROCESSES, CLIMATE AND GEOGRAPHIC INFORMATION SYSTEMS

2.1 Study the Fact File and Photograph 4 of the Saulspoor Dam below.

<p>Fact File:</p> <p>Saulspoor Dam supplies Bethlehem with domestic water. The water level when the dam is full is 1 627,3 m above sea level.</p> <p>The dam wall is in block D5. The water exits north into block C5.</p>	<p>Photograph 4</p> 
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[Source: Department of Water and Sanitation]

2.1.1 Using information from the topographic map extract and Photograph 4, **estimate** from the options below what the correct bottom level is.

Hint: bottom level is the lowest point of the dam along the original river course.

1 415 m	
1 523 m	
1 616 m	
1 640 m	

(2)

2.1.2 Using evidence from Photograph 4, **substantiate** why the dam is at full capacity.

(2)

2.2 Study the satellite photograph of the river below and the map extract of the area just north of the dam wall and the Skulpspruit Farm in C5 and C6 indicated by Y on the photograph.

Photograph 5: Skulpspruit Farm, Bethlehem



[Source: Google Earth]

2.2.1 What type of fluvial feature is evident at X in Photograph 5? **Tick** the correct option.

Waterfall	<input type="checkbox"/>
Meander	<input type="checkbox"/>
Oxbow lake	<input type="checkbox"/>
Paired terraces	<input type="checkbox"/>

(2)

2.2.2 (a) Is the river at peak flow in this image? **Circle** the correct answer.

YES / NO

(1)

(b) **Substantiate** your answer with evidence from Photograph 5 and the topographic map extract.

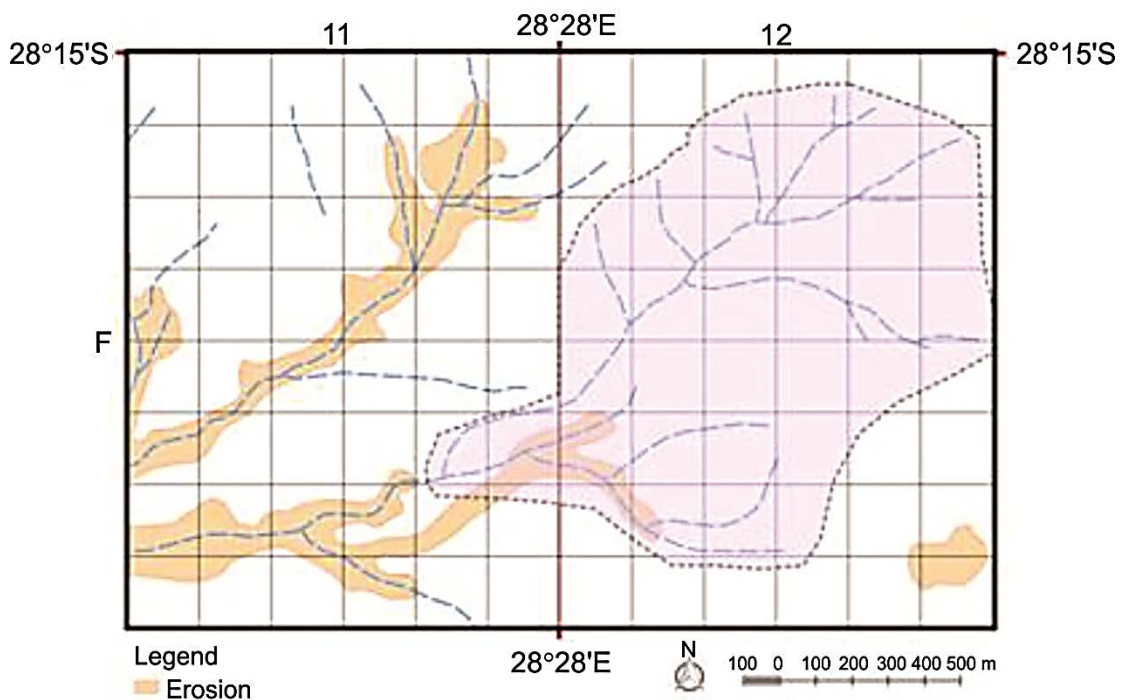
(4)

2.3 **Describe** why the farm buildings at Skulpspruit (located at Y on Photograph 5) are located in an ideal microclimatic position.

(6)

2.4 Study the tributaries of the Liebenbergsvlei River in blocks F11 and F12 of the topographic map extract. Figure 3 is a GIS-generated map of the same area showing the rivers and erosion.

Figure 3



2.4.1 **Calculate** the area of the drainage basin indicated by the dotted line in Figure 3.

Area: _____ m²

Calculations:

(4)

2.4.2 **Circle** the type of data evident on this GIS-generated map (Figure 3).

Vector
Raster

(2)

2.4.3 **Circle** THREE types of attribute data that best describe the Liebenbergsvlei River tributaries found in blocks F11 and F12.

Perennial	Non-perennial	Episodic	Periodic
Exotic	Dendritic	Parallel	Haphazard

(3)

2.4.4 **Give** ONE possible reason for the erosion evident in F11.

(2)

2.4.5 A dotted line shows the drainage basin of this system in Figure 3. **Define** the term drainage basin.

(2)

2.5 **Circle** the correct underlined word to complete the sentence below.

The drainage density of the stream network in Figure 3 could be described as high / medium / low and the river's texture could be described as medium / coarse / fine.

(2)

2.6 2.6.1 **Tabulate** the stream orders of the rivers in the drainage basin in Figure 3 in the table below.

Stream order	1	2	3
Number of streams			

(6)

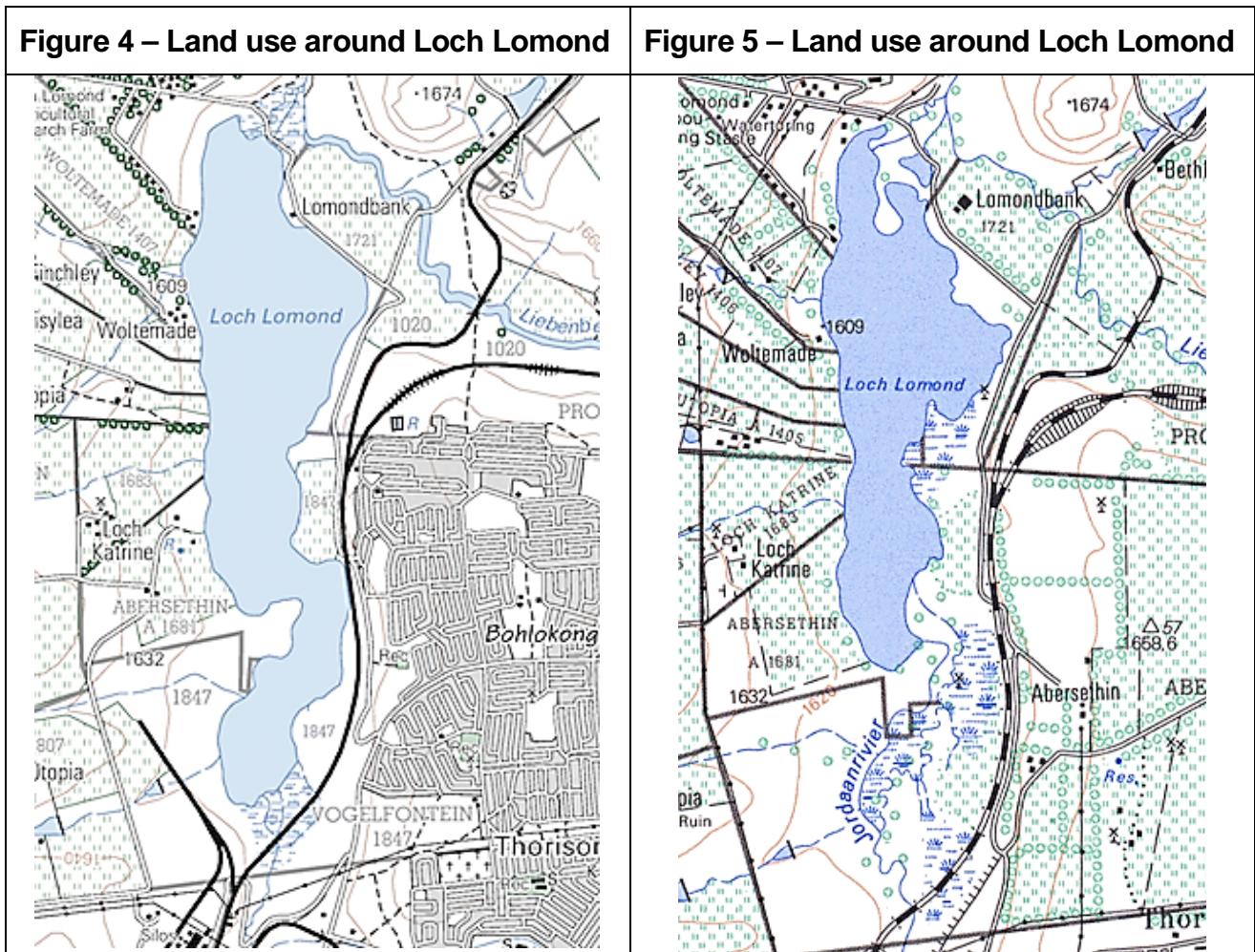
2.6.2 **Comment** on how stream ordering can be used as a predictor of flooding.

(4)
[42]

Q2 subtotal

QUESTION 3 SETTLEMENT AND THE ECONOMY

Study the topographic map extracts in Figures 4 and 5 below.



3.1 Refer to the map extracts above. Which is the more recent map of the area, Figure 4 or Figure 5? **Explain** your answer.

(4)

3.2 Referring to Figure 4, **draw** a land-use sketch map for the area in Bethlehem. Use the template provided below. It must have a legend or key.

Legend or Key	
Features	Symbol
Railway lines	
Roads	
Bodies of water	
Buildings (use topographic symbols)	
Other features	

(10)
[14]

Q3 subtotal

Total: 100 marks