NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2019

GEOGRAPHY: PAPER II

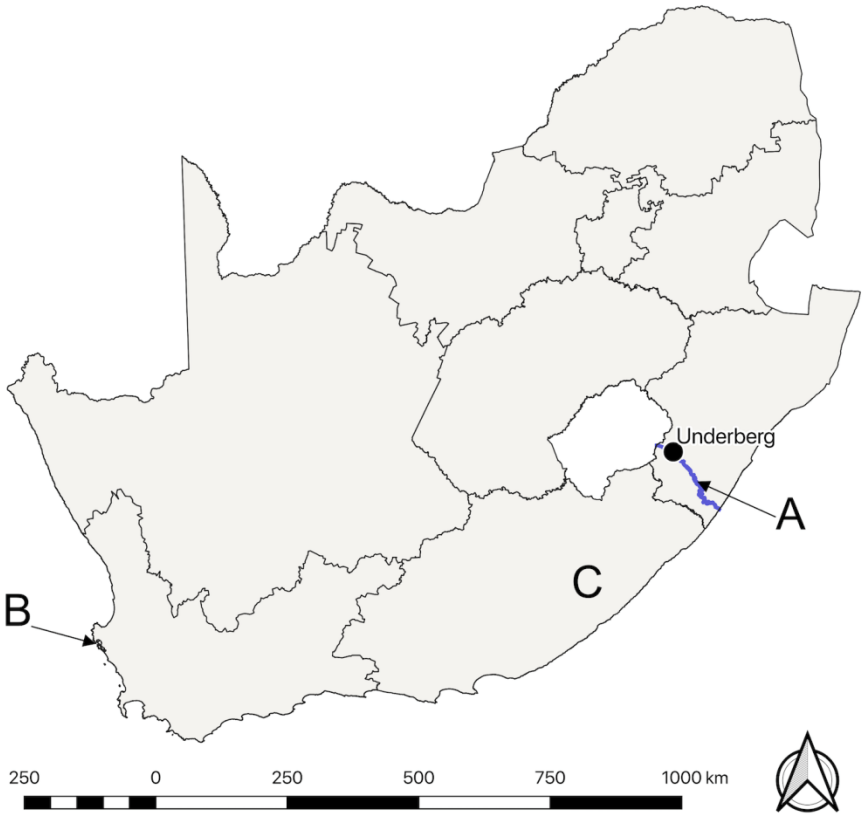
MARKING GUIDELINES

Time: 1½ hours 100 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

Figure 1 – Location map of Underberg in KwaZulu-Natal



Underberg is situated in the foothills of the southern Drakensberg in KwaZulu-Natal. It is an administrative service centre with dairy and cattle farming as its major economic activities. Tourism is the second-largest contributor to the economy with Underberg being the gateway to the southern Drakensberg and being the host of Splashy Fen, one of South Africa's premier music festivals. Underberg also serves as a trading centre for the people of Lesotho who use Sani Pass to enter South Africa.

[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 2929CB, 2929CD, 2929DA and 2929DC, UNDERBERG to answer the questions that follow. **Tick** the correct box.

1.1.1 The river labelled A in Figure 1 above is the … River.

Fish	
Orange	
Thukela	
Mzimkhulu	X

1.1.2 The major port labelled B in Figure 1 above is …

Nqura	
Durban	
Saldanha	X
Cape Town	

1.1.3 The province labelled C in Figure 1 is …

KwaZulu-Natal	
North West	
Eastern Cape	X
Western Cape	

1.1.4 The Sani Pass Border Control (A2/3) is roughly 42 km from Underberg. It is the border between South Africa and …

Lesotho	X
Zimbabwe	
Swaziland	
Botswana	

1.1.5 The length of the river marked A in Figure 1 is approximately …

100 km	
175 km	X
250 km	
375 km	

1.1.6 The river marked A in Figure 1 flows in a … direction.

south-easterly	X
north-westerly	
southerly	
east-south-easterly	

1.1.7 The Splashy Fen Musical Festival is an example of a … economic activity.

primary	
secondary	
tertiary	X
quaternary	

1.1.8 The central meridian on the topographic map extract is 29 °E.

True	X
False	

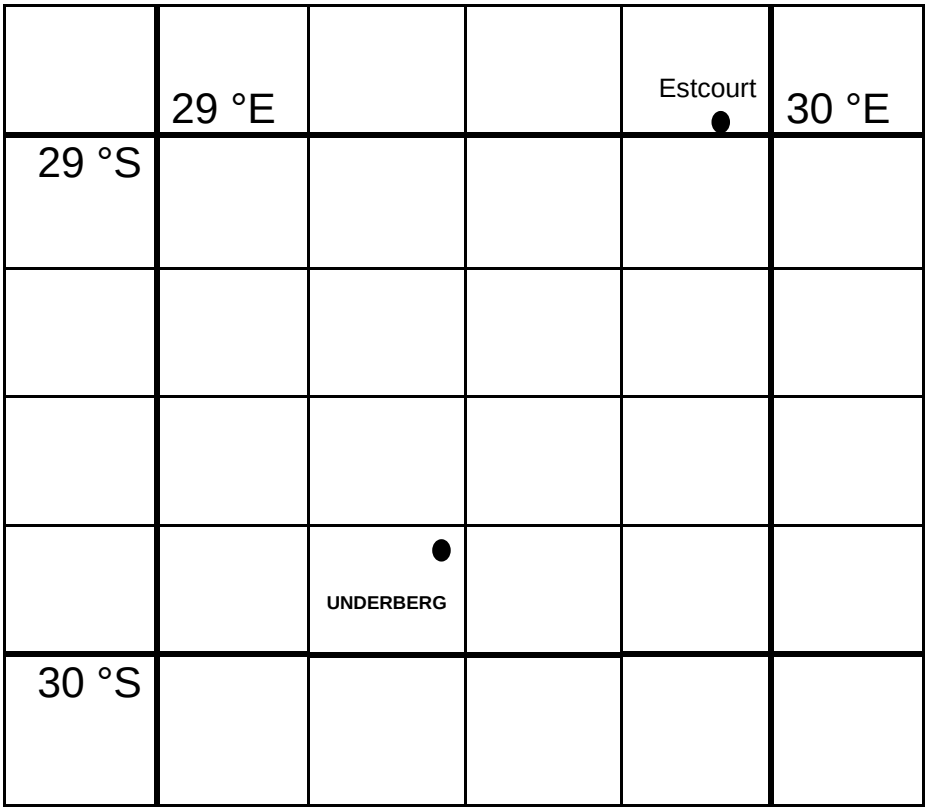
1.1.9 The Lesotho Highlands Water Transfer Scheme provides most of Gauteng's water by pumping water from Lesotho into the Vaal River system.

True	X
False	

1.1.10 The river labelled A in Figure 1 flows into the Atlantic Ocean.

True	
False	X

1.2 The map extract provided is a composite of four maps covering Underberg and the surrounding areas (2929CB, 2929CD, 2929DA and 2929DC) and is shown below in grid format.



1.2.1 Indicate with a dot and label where Underberg – 2929CD is found.
(No need to use a dot or a label, any indication acceptable.)

1.2.2 Using the information provided on the grid above, give the map code for Estcourt.

2829 DD

(1 for latitude, 1 for longitude, 1 for D and 1 for second D)
Each mark can be marked separately.

1.3 The following information on the display of a smart watch shows a hike in the Mkhomazi Wilderness Area from Cobham Camp (E2) to Ngwenya Cave (B2). The exact hiking route is highlighted in orange in Figure 2 and on the topographic map extract.

Figure 2 – Hiking information from a smart watch

1.3.1 Calculate the gradient of the hike.

(a) Height difference: *Cobham: 1 640 m – 1 620 m*
Ngwenya: 1 820 m – 1 780 m
140 m – 200 m (accept anywhere in between)

The distance from Cobham to Ngwenya (refer to Figure 2 ONLY) is 7,25 km.

(b) Gradient 1: *accept anywhere between 1:36,3 and 1:51,8.*

Calculations		
$Gradient = \frac{Height}{Distance}$	$\frac{140}{7\ 250}$	$\frac{200}{7\ 250}$
	$= 51,8$	$= 36,3$

(method mark is given for converting 7,25 km into 7 250 m ONLY)

1.3.2 (a) Draw a *sketch* cross section on the axes below, from Cobham Camp to Ngwenya Cave along the orange line (the hiking trail) indicated.

(1 mark for each level. Unifrom concave slope can be awarded max 2 marks. Award 1 mark for a start and/or end at correct height. Uniform slope with height can be awarded 3 marks)

(b) Is Ngwenya Cave <u>visible</u> from Cobham Camp?

Yes	
No	X

1.3.3 Using the topographic map extract, choose the most appropriate true bearing from Cobham Camp to Ngwenya Cave.

84°	
174°	
264°	
354°	X

1.3.4 The magnetic declination for the topographic map extract for 2019 is …

24° 15' W	
25° 51' W	
24° 36' W	
24° 51' W	X

Calculations
24° 15' in 2015, change is 4 years @ 9' W pa = 36'
Plus 36' = 24° 51' W of TN

(NOTE: no method marks awarded here)

1.3.5 Consider a hiker using a conventional compass. Calculate the magnetic bearing for the hike from Cobham Camp to Ngwenya Cave for 2019.

018° 51'

Calculations: *MB = TB + MD* *354° + 24° 51' = 018° 51'*

(Method mark can be awarded if a MB and TB are added together. If no calculation is shown, but 378° 51' is given as answer, only award 1 method mark. If ONLY 378° is given, NO mark is awarded)

1.3.6 Provide the coordinates for Ngwenya Cave (use the symbol on topographic map extract).

Latitude – *29* ° *39* ' *20* " S	*(accept 17–25")*
Longitude – *29* ° *24* ' *25* " E	*(accept 21–28")*

(Minutes and seconds awarded marks. If latitude is wrong, the minutes and seconds (even if correct) cannot be awarded marks as it is the wrong position)

1.4 PHOTO ANALYSIS

Study Photograph 1 below showing the view the hiker had of the Sani Pass Hotel and Golf Course during the hike. This is taken from position E on the topographic map extract.

Photograph 1 – View of the Sani Pass Hotel

[Source: Examiner's photo]

1.4.1 (a) The photograph shown above is an example of a …

vertical photograph	
high oblique photograph	X
low oblique photograph	
false colour photograph	

(b) Provide ONE advantage of this type of photograph.

Specific to oblique photo – A large area can be photographed.
Relief is quite easy to identify.
Height differences can be seen.
Colour photo shows clear, real-life detail.
Horizon only – no marks

1.4.2 (a) During which season do you think this photo was taken?

Winter	X
Summer	

(b) Provide one reason, using photographic evidence, for your answer to Question 1.4.2 (a).

The photograph shows the landscape being very brown and dry. This area gets very little rain in winter and the frequent frosts "kill" the grass.
River is low, floodplain evident
Fire breaks evident in photo

1.4.3 State the direction the photographer was facing when the photograph was taken.

NE or ENE or E

1.4.4 The picture shows the Mkhomazana River that flows past the hotel. Evidence in this picture proves that the river is in its middle course.

Circle the features in the block below that support this statement.

meandering	superimposed drainage	flat land
	rejuvenation turbulent flow	

(If 3 are circled with 2 out of 3 correct, award max 1 mark. If 4 or 5 circled – no marks awarded)

QUESTION 2 THEMATIC MAPS, AERIAL PHOTOGRAPH, FLUVIAL PROCESSES, VALLEY CLIMATES AND GEOGRAPHIC INFORMATION SYSTEMS

2.1 Study the aerial photograph 2929CD of Cobham (E2).

2.1.1 At approximately what time was the photograph taken?

06:00	
10:00	X
14:00	
18:00	

2.1.2 Provide a reason for your answer above using photographic evidence.

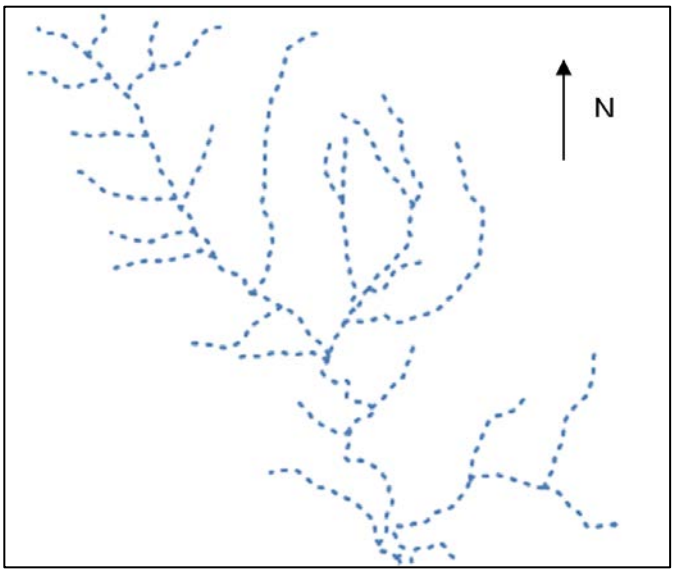
Shadows are being cast on the south-western/western side of trees, therefore sun is in the east. 06:00 is too early for these shadows: they would have been longer. Reference must be made to the photo showing shadows in W/SW direction, not just sun rising in the east (this isn't visible on the photo).

2.2 Three features / land use (F, G and H) are labelled on the photograph. Identify them.

F – *Timber Dam or Dam only, perennial water, lake also accepted.*
G – *Cultivated land / farmland / agricultural land also accepted.*
H – A *fire break or any reference to burning (white outlined polygon shape), or Mkomazi protected area/ nature reserve or hiking trail.*

2.3 Study Figure 3 below of the Trout Beck River drainage basin (it has been marked with a purple outline on the topographic map extract). This river drains into the Pholela River further south. Answer the question below.

Figure 3 – Trout Beck River drainage basin



There is one dominant drainage pattern evident in this basin. Circle the words in the list below that best describe the rivers evident in this drainage basin.

deranged	perennial	dendritic
radial	trellis	non-perennial

(If 3 are circled with 2 out of 3 correct, award max 1 mark. If 4 or 5 circled – no marks awarded)

2.4 2.4.1 Describe the drainage density and texture of this river system.

Density: the density is high/ medium density with many first order streams in the drainage basin.
Texture: Fine.

2.4.2 Identify ONE factor, evident on the topographical map, which could give rise to this type of drainage density and texture.

Relief is steep/mountains/contours close together, leading to runoff and higher density.
Slopes are most likely grassy or hard/impermeable/resistant leading to runoff and higher density.

2.5 Study the stream ordering table below of the Trout Beck River system.

Stream Order	1	2	3	4
Number of	26	5	2	1

Calculate the **bifurcation ratio** for this river system. ***3.2***

Calculations
26/5 = 5,2
5/2 = 2,5 } *all three orders calculated correctly for 1 mark*
2/1 = 2

5,2 + 2,5 + 2 = 9,7 all three orders added up correctly for 1 mark

9.7 / 3 (total to be divided by 3 for 1 mark) = 3,2

MAX 3 method marks if answer above is incorrect.

*If answer above is 3, look for method marks. For 4 marks **3.2** must be given*

2.6 2.6.1 The hiker mentioned in Question 1.3 spent the evening in the cave. At around 04:00 a bitterly cold wind was felt in the cave.

Describe the site of the cave on the topographical map extract.

The cave is midway up the slope of a valley. Close to water source. Aspect – reference to north-facing slope. Located in the thermal belt/inversion layer. On the side of a steep mountain.

2.6.2 (a) Name the wind that was likely to have been experienced by the hiker in the cave mentioned in Question 2.6.1. Choose the correct answer.

Anabatic	
Katabatic	X
Berg	
Upslope	

(b) Account for the direction of these winds using topographic map evidence.

The cave is halfway up the slope/valley and therefore the winds will blow down the slope and pass through the cave at night. (Reference must be made to the position of the cave with air moving down the slope.)

2.7 Account for the snow on the peaks of the mountains in photograph 2 below. The photograph is taken from position "I" on the topographic map extract. Provide ONE climatological reason.

Peaks are at higher altitude and therefore precipitation turns to snow.
The scenario is in winter with colder temps at high altitude.
Reference could be made to a passing cold front but there must be reference to snow falling at higher altitudes.

Photograph 2 – snow-covered peaks at position I

[Source: Examiner's photo]

2.8 Study photograph 3 below of Hazeldene (at J in D8).

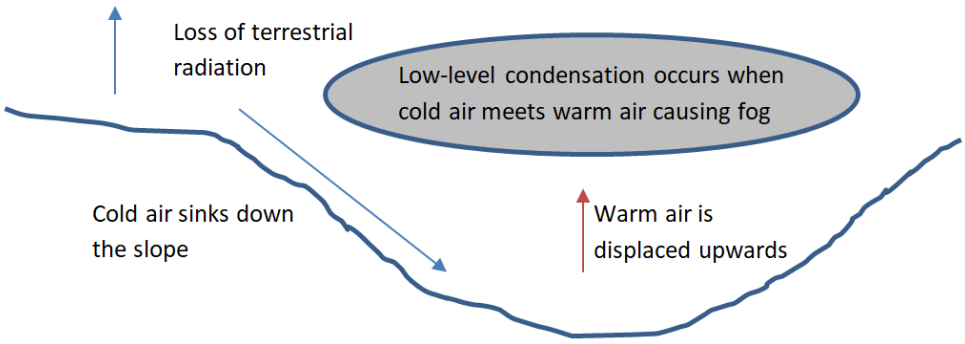
Photograph 3 – Hazeldene

[Source: Examiner's photo]

2.8.1 Name the climatological feature clearly evident in photograph 3 above.

Radiation fog, fog, temp inversion or mist

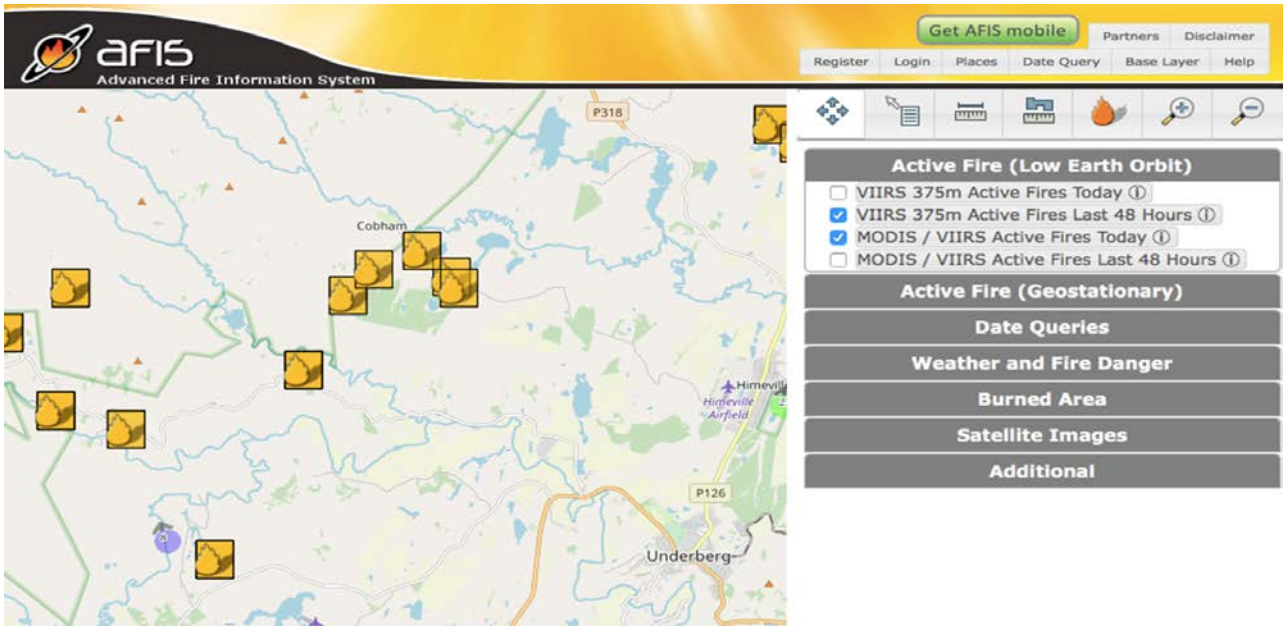
2.8.2 With the aid of an annotated sketch, show how this feature develops.



TWO valid points (there must be reference to cold air at the bottom of the valley meeting warmer air that has been displaced then reaching condensation point in the form of fog. Evidence of a thermal belt/temp inversion).

2.9 The following information is taken from the Advanced Fire Information Systems (AFIS) website (Figure 4 below). It uses remote sensing to show fires in the Underberg area. Photograph 4 below shows a fire burning close to farmland in B5.

Figure 4 – AFIS viewer showing low intensity fires for 17 August 2018



[Source: <https://southernafrica.afis.co.za/>]

Photograph 4 – Fire evident on the Sani Pass Road at B5

[Source: Examiner's photo]

2.9.1 The base map used in the AFIS viewer is an example of ... (circle the correct answer).

raster data / (vector data)

2.9.2 AFIS also has an application for smart phones. Analyse how local dairy and cattle farmers can use the app, along with other weather-related apps, to help contain fires in their area?

Farmer can instantly view any runaway fires and check to see if they are in the vicinity of their farms. By checking weather-related apps and looking at wind direction (as an example) they are able to see whether the fire will spread in their direction. They could also use this map to plan the burning of firebreaks or to see where the closest water point is to help fight fires. Weather apps could be used to identify days when fire could potentially break out (berg wind etc.) and to take associated preventative measures.

Reference to two developed points can be awarded 2 × 2 = 4 or 4 simple points 4 × 1 = 4.

Answer does not need to refer to AFIS directly, it can relate to only other weather apps.

QUESTION 3 LOCAL ECONOMY, SETTLEMENT

3.1 There are two clear built-up areas on this topographic map extract – Underberg (J7) and Himeville (G/H8). Complete the table below.

	Underberg	Himeville
3.1.1 Classification on urban hierarchy	*town (could also say major country town)*	*local service centre (could also say minor country town)*
3.1.2 Dominant street pattern	*irregular*	*linear, could accept grid iron or rectangular*
3.1.3 Population density (circle the most likely)	*high* *(medium)* *low* *Low could also be accepted here based on the shading in the conventional symbols/key*	*high* *medium* *(low)*
3.1.4 Services available (use map evidence available)	*churches* *school* *post office* *recreational ground* *golf course* *train station (rail services)* *cemetery* *communications tower for cell phone services* *(any one)*	*police station* *post office* *recreational ground* *landing strip* *cemetery* *(any one)*
3.1.5 Dominant economic activity	*primary (farming or forestry)* *tertiary (tourism/ trading centre/ admin service centre)*	*primary (farming/forestry)* *tertiary (tourism)*

3.2 Study the photographs in the table below taken around the Underberg and Himeville areas and state whether the accompanying statements are true or false. **NB – Provide a reason if your answer is false, or a supporting fact if it is true.**

		Statement	True / False + reason
3.2.1		Tarring the Sani Pass road (currently 4×4 only) (A3) will negatively impact on tourism businesses like Sani Pass Tours (who does 4×4 tours up the pass).	*TRUE – they will lose business as normal sedans will be able to use the road. People won't need guided drives.*
3.2.2		Goxhill Farm (G/H 9/10) is an example of intensive subsistence farming.	*FALSE – extensive commercial dairy farming.*
3.2.3		Underberg serves the local area as a service centre.	*TRUE – yes, people in the surrounding area are drawn to Underberg to provide them with daily services and retail goods.*
3.2.4		The KFC in Underberg is an example of a lower order service.	*TRUE – this is a less-specialised function found in settlements of all sizes drawing a smaller threshold population and smaller range.*
3.2.5		This settlement at Goxhill (G10) is an example of market gardening.	*FALSE – the Goxhill settlement rely on subsistence farming for their own products. Answer could also reference extensive commercial farming taking place around Goxhill. (Question refers to 'settlement at Goxhill'). The settlement has dry, barren lands therefore most likely subsistence*

[Source: Examiner's photos]

Total: 100 marks