EXAMINATIONS AND ASSESSMENT CHIEF DIRECTORATE
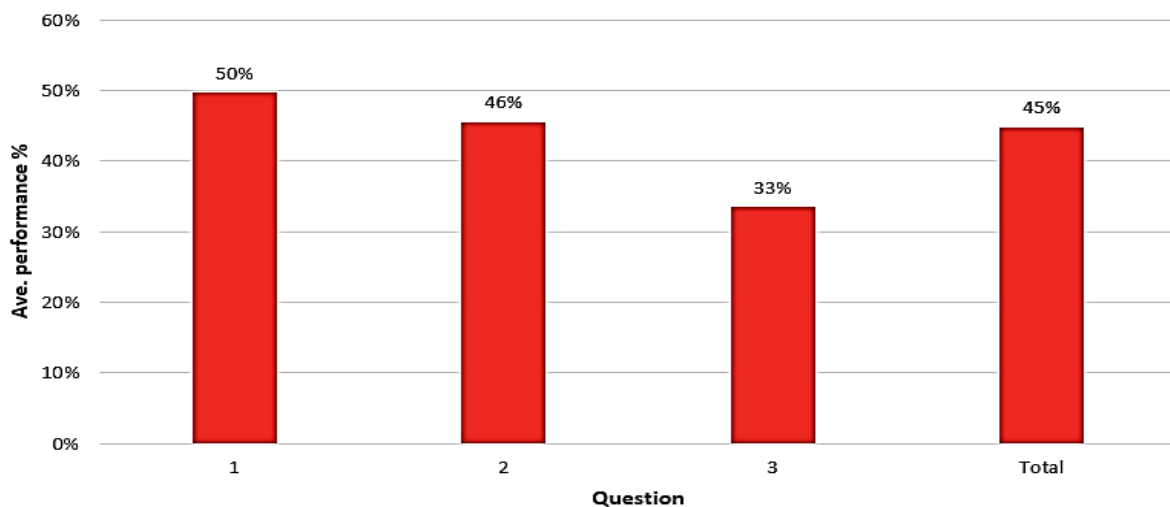Home of Examinations and Assessment, Zone 6, Zwelitsha, 5600
REPUBLIC OF SOUTH AFRICA, Website: www.ecdoe.gov.za

2022 NSC CHIEF MARKER'S REPORT

SUBJECT	GEOGRAPHY	
PAPER	ONE	
DURATION OF PAPER:	3 hours	
PROVINCE	EASTERN CAPE	
DATES OF MARKING	07/12/2022 until the 22/12/2022	

SECTION 1: (General overview of Learner Performance in the question paper as a whole)
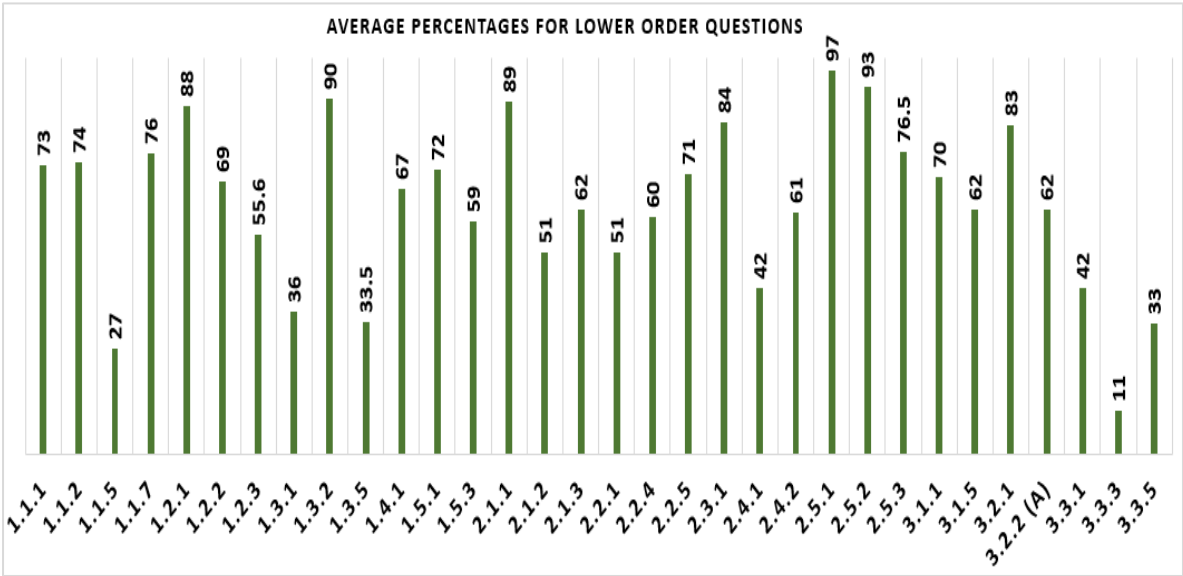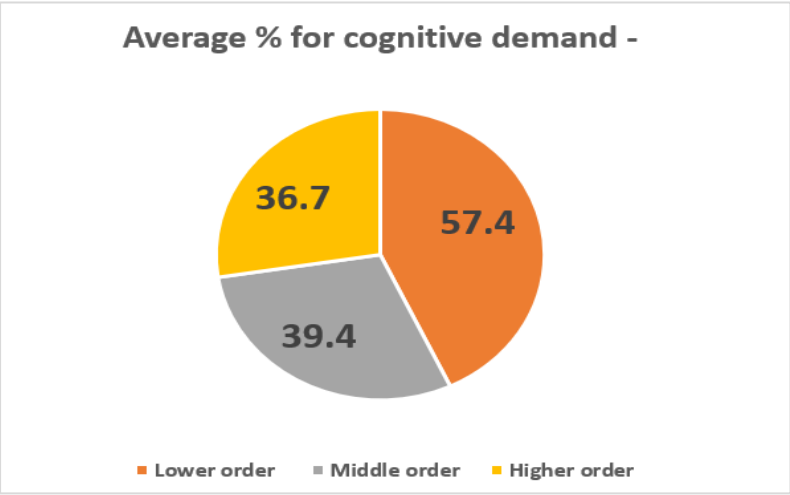

The above graph indicates the overall performance from the sampled scripts. It shows that the candidates had an average % of 45, with question 1 having the highest percentage.

Despite a very good improvement against the cohort of 2021, the following challenges were experienced by the candidates.

- If candidates understood how to use the diagram properly the responses from 1.3.2 to 1.3.5 could have been easily extracted.
- Candidates struggled to express themselves geographically e.g., in question 1.5.5 they wrote that, the inversion layer is on top/over the plateau instead of inversion layer above. They also saw the air movement in the sketch as the ocean flowing to the interior.
- Some topics were not properly taught or revised during the year. The understanding of processes was lacking, because they struggled to answer the middle to higher order questions comprehensively, as the pie-chart below indicates.

Average % for cognitive demand -

36.7   57.4   39.4

■ Lower order   ■ Middle order   ■ Higher order

AVERAGE PERCENTAGES FOR LOWER ORDER QUESTIONS

The total Average for lower order questions is 57.4. The low performing questions on the graph is due to content gaps in certain topics, like saddles, global air circulation, the tri-cellular arrangement, interpreting and analysing synoptic weather maps, stages of a river, and map work reading and interpretation.

AVERAGE PERCENTAGES FOR MIDDLE ORDER QUESTIONS
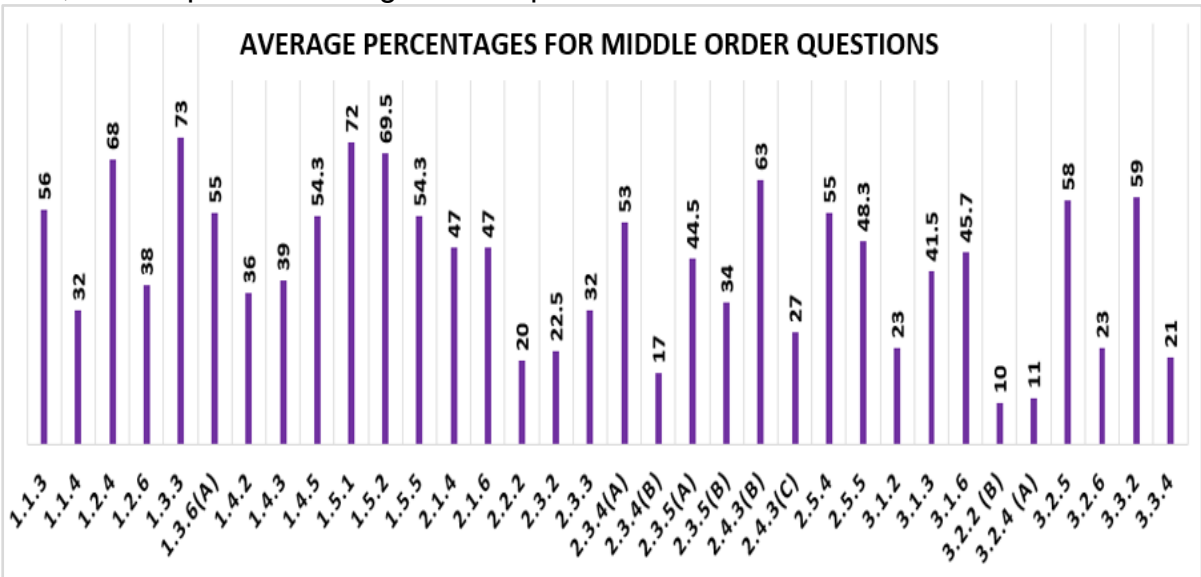
The Average % for middle order questions was 39.4, which is a significant drop if compared to the lower order questions. This emphasised the finding that learners did not understand geographical processes very well.

AVERAGE PERCENTAGES FOR HIGHER ORDER QUESTIONS

Question	Value
1.1.6	29
1.1.8	25
1.2.5	53
1.2.7	69
1.3.4	24.5
1.3.6(B)	28
1.4.4	64
1.5.4	8
2.1.5	52
2.1.7	91
2.1.8	68
2.2.3	37
2.2.6	22
2.2.7	32
2.4.3(A)	19.7
2.4.4	21.5
3.1.4	20
3.1.6	45.7
3.2.3	8
3.2.4 (B)	28
3.3.6	25.5
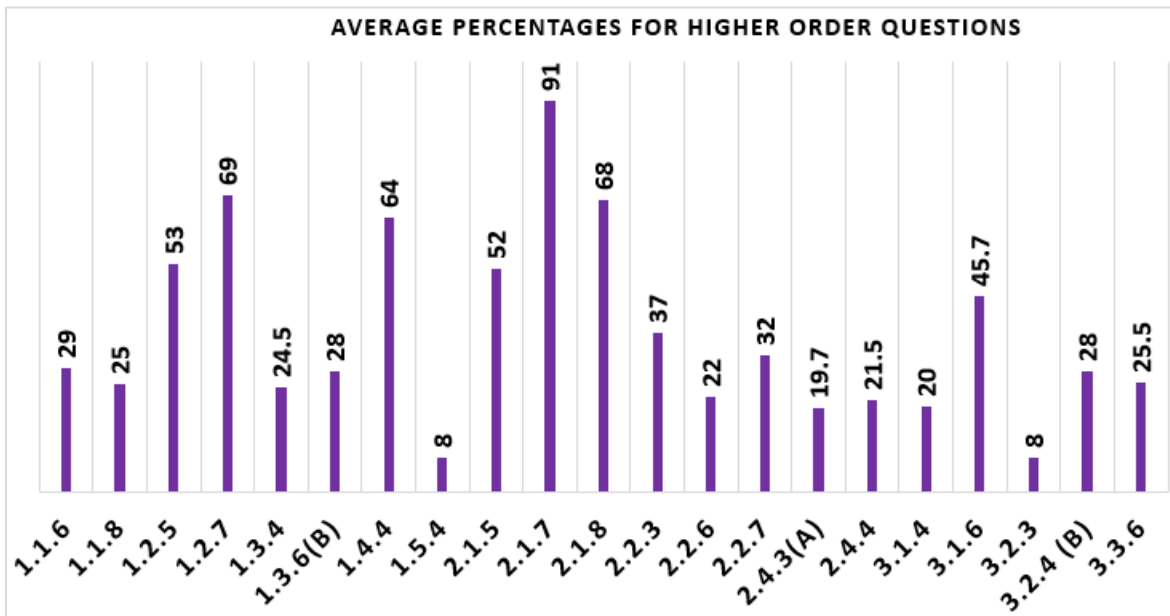
Analysing, Evaluating and Explaining was a serious problem in most questions, as the average % of 36.7 for higher order questions indicate.

The following misconceptions/content gaps was detected in the responses of the 2022 cohort:
- ➢ Origins of cyclones
- ➢ Wind belts that drive cyclones
- ➢ Reading of graphs and Satellite images
- ➢ General characteristics of Cyclones
- ➢ Reading and interpreting synoptic weather maps
- ➢ Understanding geographical vocabulary

Candidate's skill levels were very low. The following skills must be looked at and improved with future cohorts:
- ❖ Writing skills
- ❖ Interpreting graphs and tables
- ❖ Map skills and interpretation

The 2022 Candidates made the following common errors in their responses:
- ✓ They did not read/follow the instructions properly
- ✓ Learner's responses are generalized where specific answers were required
- ✓ Treating extracts as comprehension passage
- ✓ Not giving the correct units required

SECTION 2: Comment on candidates' performance in individual questions

QUESTION 1- WEATHER AND CLIMATE

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average Performance per sub- question
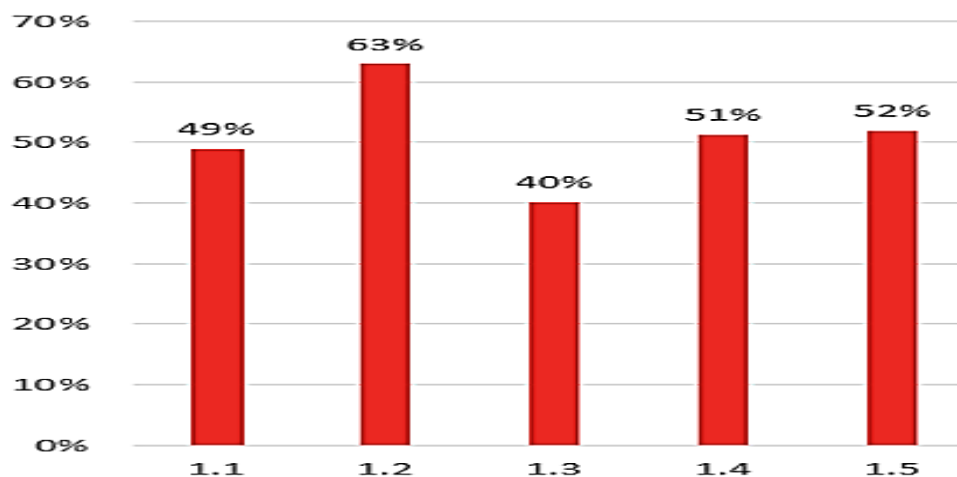
Generally, candidates improved and could answer the lower order questions well, however the middle to higher order questions posted problems for candidates. The questions on Synoptic weather maps (1.1) and Mid-Latitude cyclone (1.3) were particularly challenging for our candidates.

(a) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Question 1.1 – Synoptic Weather Maps (Short Objective Questions)
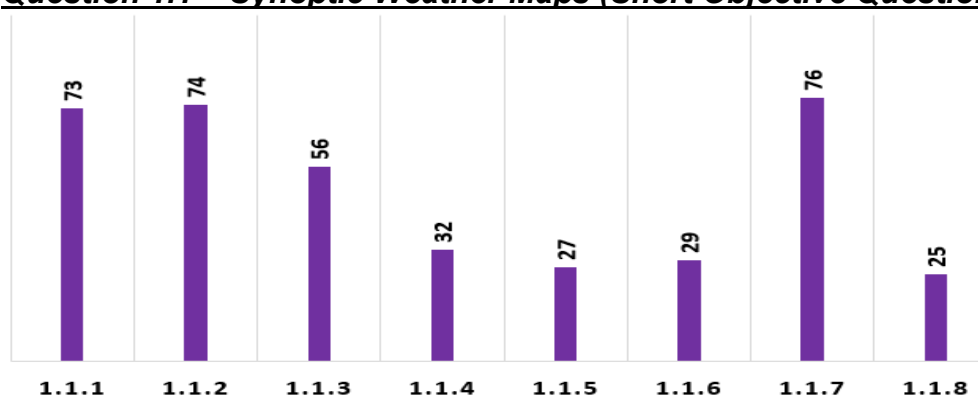
This question had an average % of 49.
Candidates struggled with synoptic weather reading. The application questions were very poor answered. The was a definite content gap in the learners and MUST be rectified sooner rather than later.
Questions 1.1.4 and 1.1.5 with averages of 32 % and 27% respectively, dealt with isobaric readings and weather feature identification. These basic skills have been neglected, hence the poor performance.
Questions 1.1.6 and 1.1.8 are combination multiple choice questions and candidates lost marks due to not being exposed to such questions.

Question 1.2 – Urban Climate – Average % of 63%
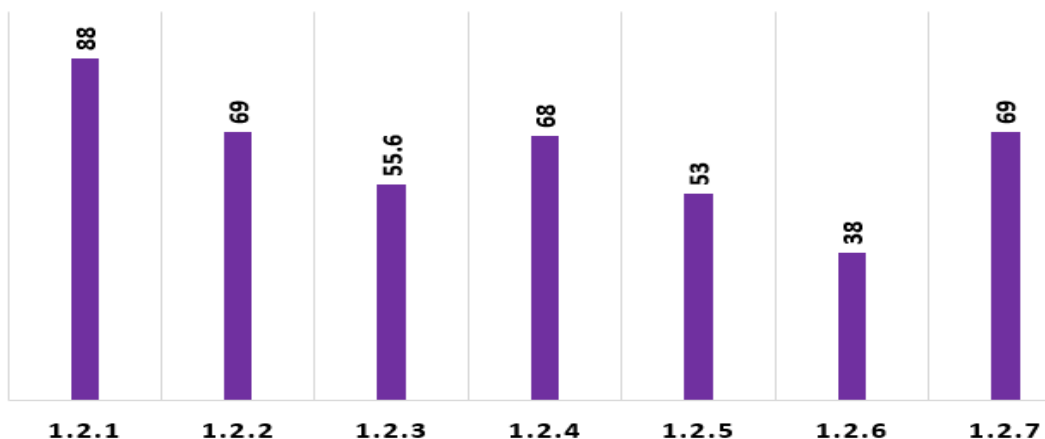
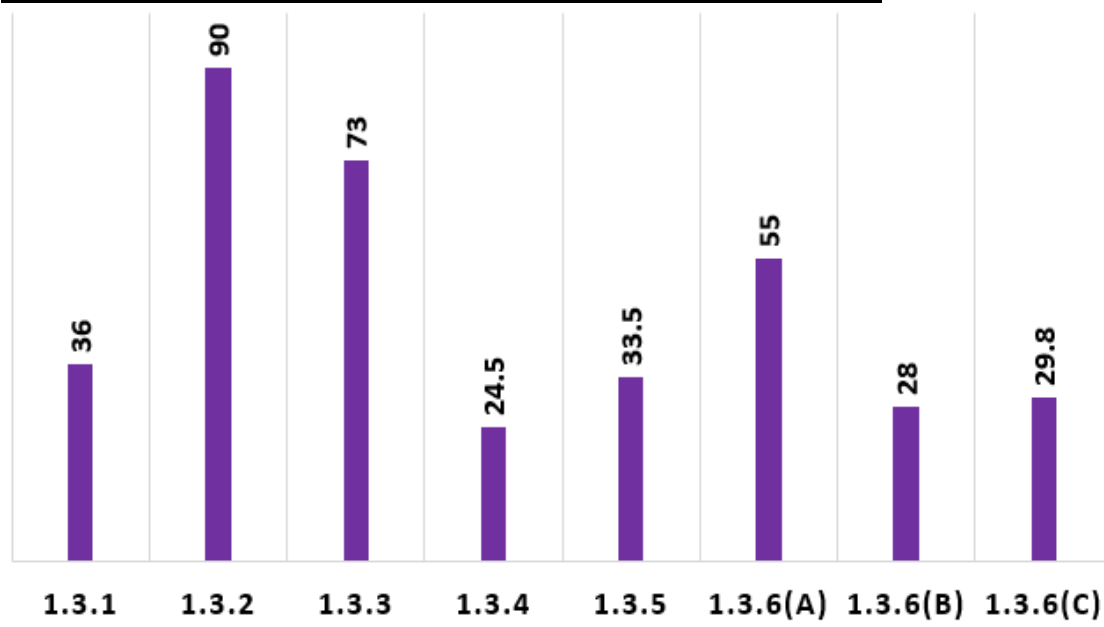This column A and B short objective question was reasonably well answered. Question 1.2.6 (Ave % = 38) had the word 'frequency' in the sentence and this seemed to have confused candidates.

Question 1.3 – Mid-Latitude Cyclones – Average % of 40%

The candidates performed the worst in this question. Only the lower order questions 1.3.2 and 1.3.3 performed at an acceptable percentage. This question examined origin, movement, and the occlusion stage of mid latitude cyclones. Background knowledge of the Tri-cellular arrangement and Global air circulation was needed by learners to be able to answer the questions adequately. Candidates did not understand the difference between closing the gab between fronts and undercutting.

The development of the occlusion stage was no properly explained.

This section of mid latitude cyclones (occlusion stage) is definitely neglected by educators.

Question 1.4 – Tropical Cyclones – Average % = 51%

Bar chart:
- 1.4.1: 67
- 1.4.2: 36
- 1.4.3: 39
- 1.4.4: 64
- 1.4.5: 54.3
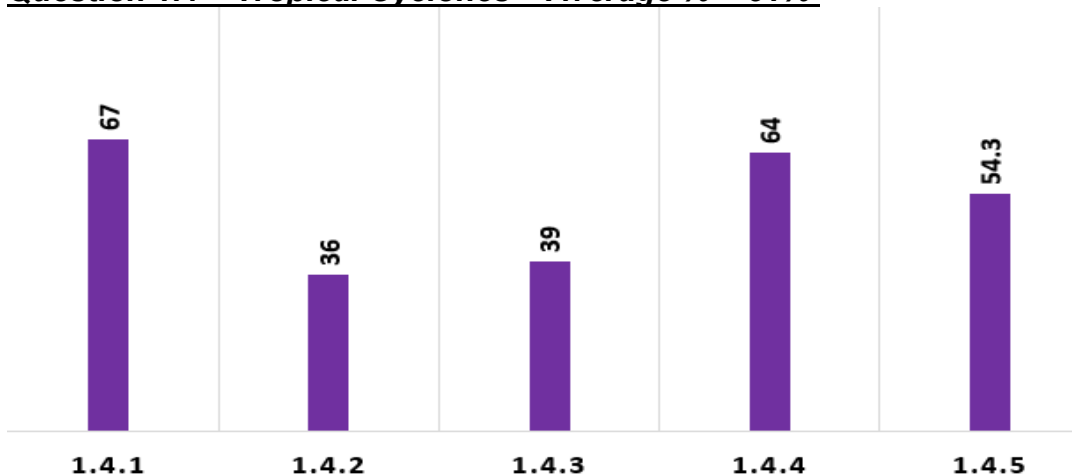
The infographic was better used in this examination. It seemed to assist the candidates as well as the manner in which impact (1.4.4) and monitoring (1.4.5) was examined. The average percentages for these questions were reasonably high. (64% and 54.3% respectively).

Furthermore, it seemed in some situations that learners are treating the infographic as a comprehension with sketches. Linking the different information to the topic is a short coming. (1.4.2 and 1.4.3) Only continuous practice will improve the skill to use infographics properly.

Question 1.5 – Inversion Over South Africa – Average % = 52%

Bar chart:
- 1.5.1: 72
- 1.5.2: 69.5
- 1.5.3: 59
- 1.5.4: 8
- 1.5.5: 54.3
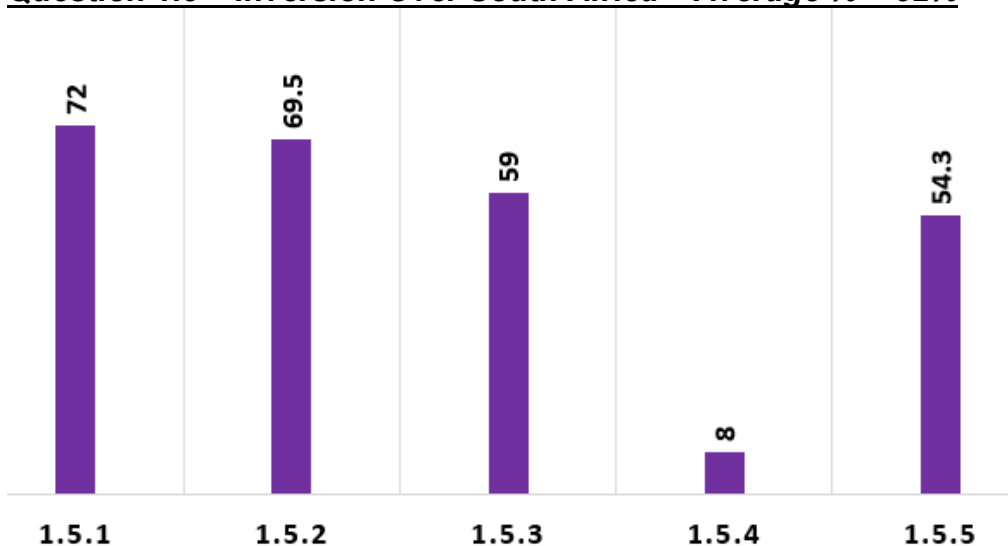
The averages for this question were seriously influenced by question 1.5.4 (8%). Question 1.5.4 is the worst answered question for the entire paper. Question 1.5.4 dealt with the specific development of the inversion layer over South Africa and candidates confused the question with the position of the inversion layer. The rest of the question was fairly well answered by the candidates. They used the resources well, which helped them to extract responses.

QUESTION 2 - GEOMORPHOLOGY

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average Performance per sub- question
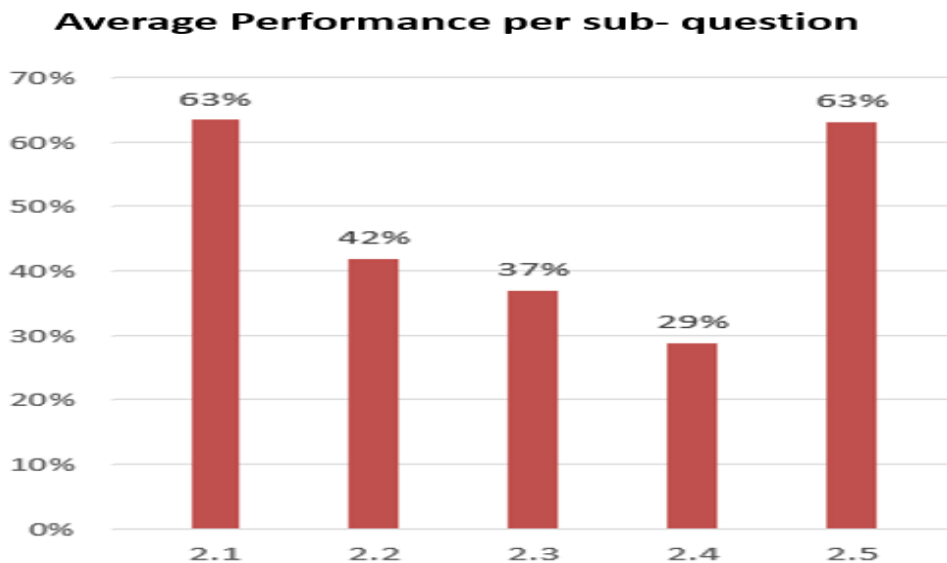
Candidates performed at an Average of 46% for Question 2, which is 4% lower than Question 1.
They struggled with the multiple-choice questions of 2.2 (river capture) as well as Questions 2.3 and 2.4. Respective averages of 37 and 29 was recorded in questions 2.3. and 2.4.

(a) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Question 2.1 – Drainage Density – Average % = 63%
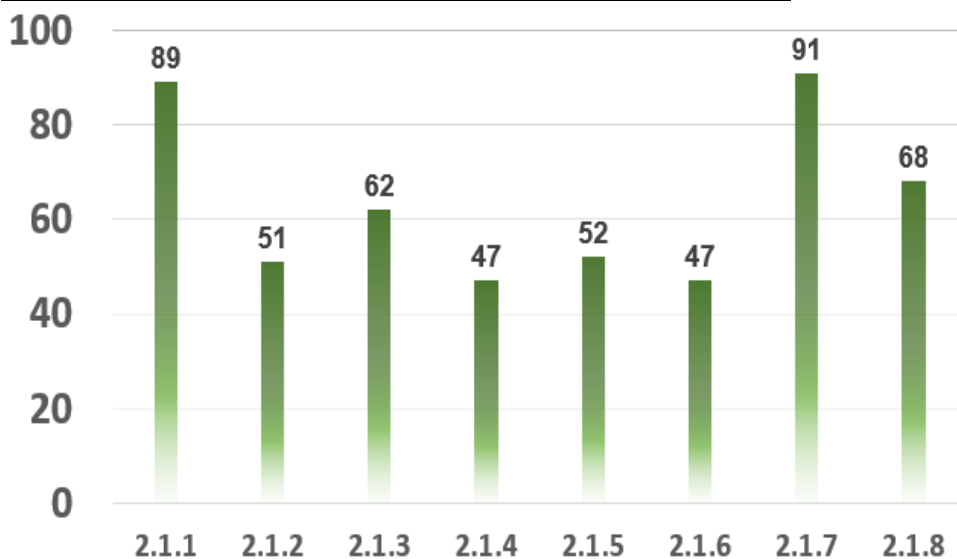
Choosing between Letters A and B favoured the candidates.
They struggled with words like 'soil moisture content (2.1.4); 'degree of permeability' (2.1.6). The averages in both questions were 47%, which is 16% below the average % for this sub-question.

Question 2.2 - River Capture – Average % = 42
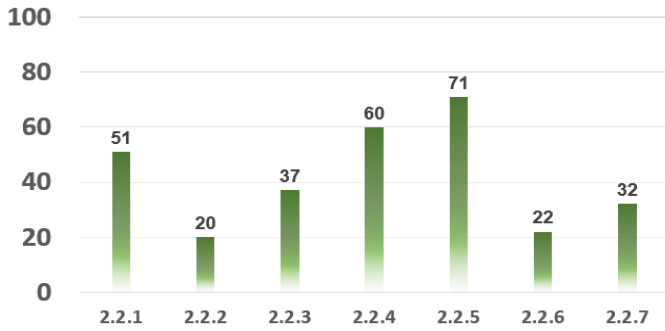
This was a multiple-choice question, based on river capture. The questioning style by the examiners did not suit the candidates. They only performed well in 2.2,4 and 2.2.5. Again, combination questions scored the lowest marks, which clearly indicated that the learners were not properly prepared.

Question 2.3 – Concepts of a drainage basin – Average % - 37%

The candidates answered these questions extremely poorly. The integrated nature of the questions caused problems for candidates.

They could only answer questions 2.3.1 and 2.3.4(a) adequately, because these questions had choices in them.

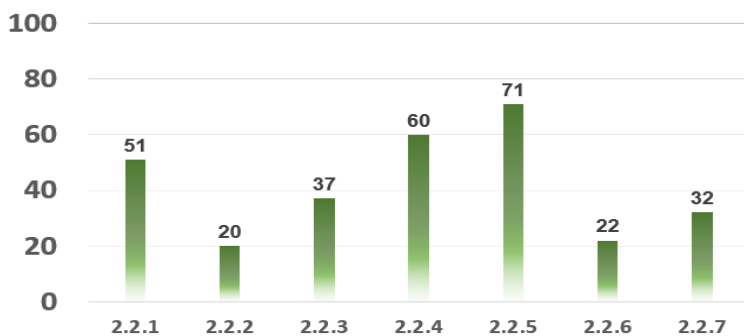Application of River Systems (2.3.2); Run off (2.3.3); water table (2.3.4) and Type of rivers (2.3.5 (b) could not be fully comprehended by the candidates.

Question 2.4 – Fluvial Landforms – Average % - 29%
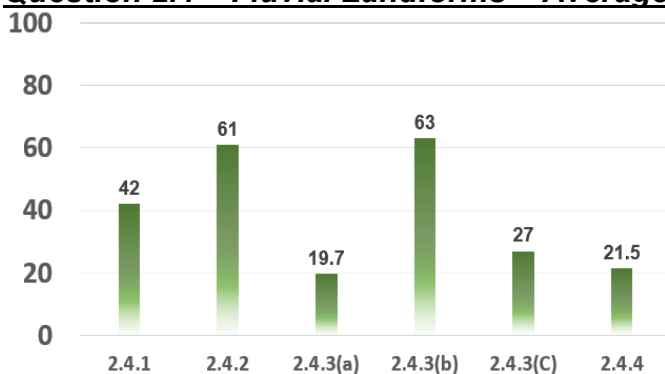
The responses by candidates for this sub-question was very disappointing. Candidates seemed not to understand the stages of the river, especially the different characteristics of each stage. More disturbing is the fact that they cannot explain the development of fluvial landforms. We got the impression that these landforms were never properly taught during teaching and learning, because candidates could identify the meander and oxbow-lake but could not explain its development.

Drawing, which is a fundamental skill for a geography learner, is seriously lacking. A worrying average % of 19,7 was obtained by candidates for 2.4.3(a). The low average % for 2.4.3(a) is evidence of their inability to describe or explain geomorphological processes.

Question 2.5 – Drainage Basin and River Management – Average % - 63%
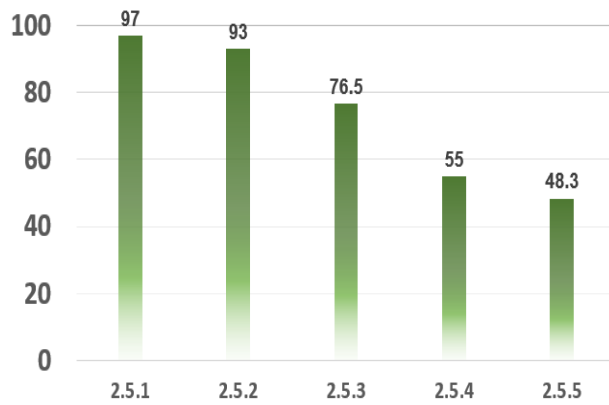
This question was very well answered, and candidates generally obtained higher marks here. In fact, this sub-question might be the reason why the pass% in geography has improved. Most candidates achieved more that 55% in this question. However, their inability to express themselves together with a lack of writing skills hampered their responses in 2.5.5, where a average % of 48.3% was recorded.

QUESTION 3 – MAPWORK

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Average Performance per sub- question
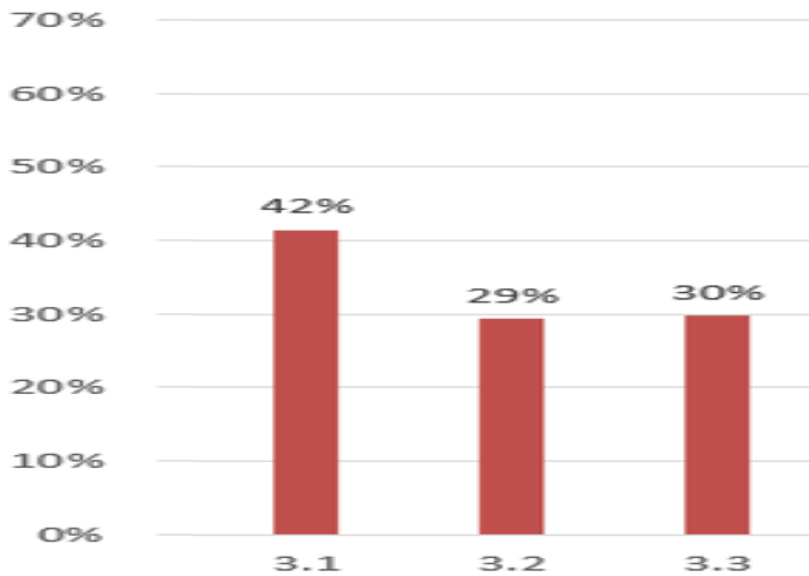
The marks obtained by candidates were disappointing to say the least. The fact that candidates could not answer basic map reading questions is an indication that covid 19 had a very big impact on the growth and development of our learners. Skills and knowledge that should have been acquired in Grade 10 and 11 in 2020 and 2021 was seriously lacking. e.g., reading of contours, slopes, and landforms, understanding the reference key on topographic maps, etc. This struggle with mapwork could even be noticed in top performing candidates, where they missed a level 7 due to a below average performance in Question 3.

Question 3.1 – Map skills and Calculations – Average % - 42%
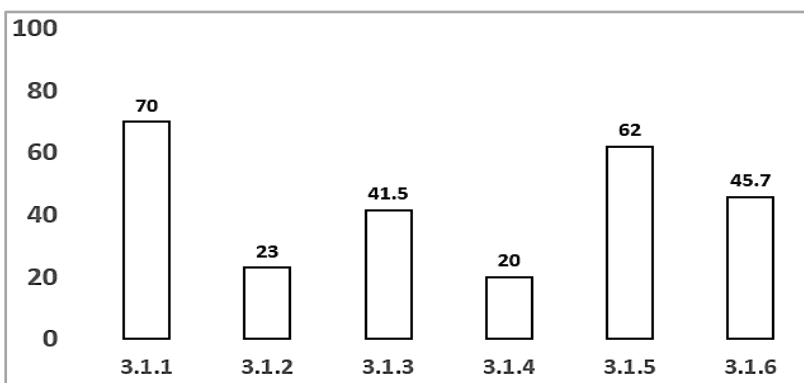
Scale (3.1.2), Straight line distance (3.1.3), drawing of a free-hand cross-sections (3.1.4) really hampered the results of the candidates.
Candidates was careless in the following:
- Measurements
- Providing the correct units to the final answer
- Expressing the final answer in 3.1.6 as only 'west' and not as 'west of true north' (WTN).
- Forgetting to indicate the plus (+) sign when calculating the Magnetic declination
- Calculating from the incorrect map.

Question 3.2 – Map Interpretation – Average % - 29%
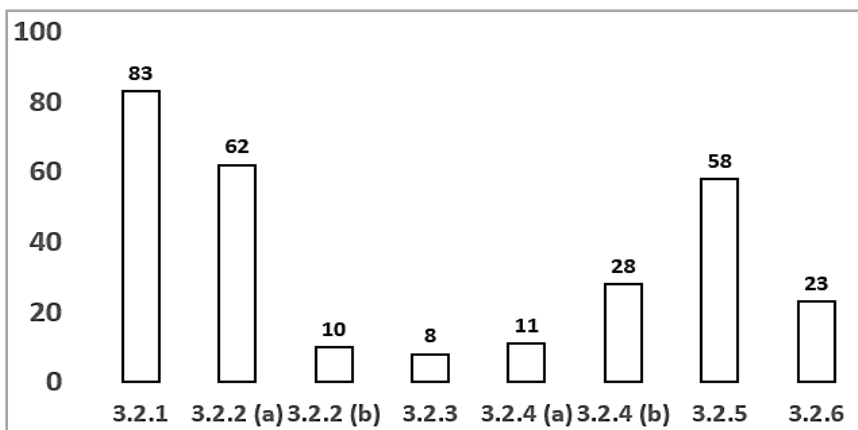
It is seriously back to the drawing board for educators. All candidates struggled with this section of map work. Map work is clearly not integrated and part of the normal teaching and learning at the moment. As previously mentioned, if the candidates cannot read contour lines and understand the reference key, they are doomed in map work. The average % in the graph is evidence that we as a geography fraternity has a long way to go if we want to rectify this serious content and skills gap.

Question 3.3. – Geographical Information Systems – Average % - 30%
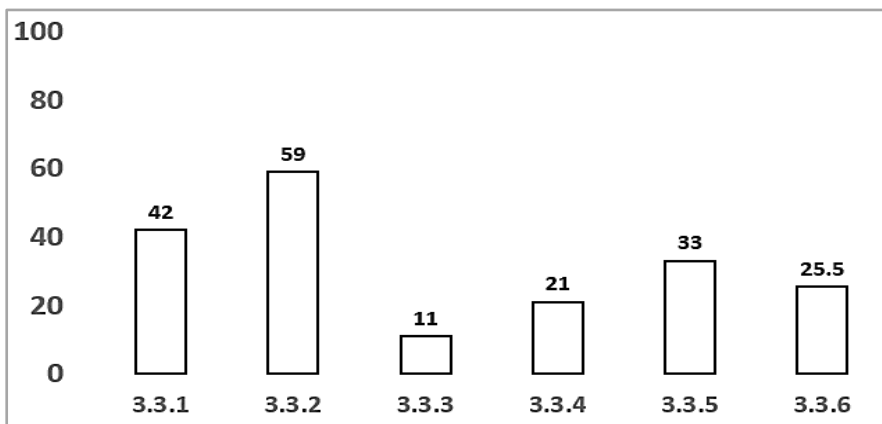
Marks in GIS continue to be very low. The concept of resolution (3.3.3 and 3.3.4) was not understood by candidates. Layering, Data Integration and Paper GIS was a disaster to the least.

(c) Provide suggestions for improvement in relation to Teaching and Learning

- Varied teaching techniques should be employed by educators, like drawings, video presentations and power point presentations.
- The use of graphs and especially infographics in all content has become very important as learners really struggled to use all the information adequately.
- It seemed that learners rushed into answering the question paper and should be taught to analyse all information/sources first. Therefore, go to the sketches/infographic/graph and clarify your understanding about the topic being tested in a question.
- The deeper understanding of processes should be emphasised as learners struggled with relating content to real-life situations.
- Frequent revision and testing of Physical Geography in important because these topics are already finalised in term 1. Learners struggled to recall basic content.
- A lot of resources are available, so educators should plan how to utilise them properly throughout the year.
- All content and topics as prescribed in the Exam guidelines must be adequately covered during the academic year. If topics haven't been examined in the past few years, it does not mean it will not be examined.
- Teaching must be innovative and creative as the rigid and structured manner of teaching is clearly disadvantaging our learners. An integrated approach is advised.
- Teachers should always bear in mind that whatever process is taught, learners should understand the practical and real-life implication, either positive or negative. That is what OUTCOMES BASED EDUCATION is all about.
- High skills imply that all types of teaching methodology must be explored e.g., group work, case study analysis, fieldwork, collecting and analysing data, etc.
- The 'old' method of 'talk and chalk' should be integrated with new technology like power points, video, etc., to make sure the learners observe drawings, as this skill is totally neglected, and learners lost marks in Question 2.5.3.

(d) Describe any other specific observations relating to responses of learners and comments that are useful to teachers, subject advisors, teacher development etc.

- There is a definite need to integrate both physical and geographical features. Providing evidence for observations and findings must be re-emphasised. The 'WHY' question when analysing sources should be instilled into learners. They should frequently ask 'WHY' in order to clarify sources and processes.
- The is a definite gap between teaching methodology and assessment. Assessment tasks, tests and exams seemed to raise the bar higher and higher, whereas teaching methodology is stagnating. This difference is clearly indicated by the answers/responses of candidates to the innovative questions posed by examiners.
- Monthly revision must be implemented by educators.
- Subject advisors must try to standardise the SBA tasks and make sure that all tasks are CAPS compliant and with the correct cognitive balance
- Lessons plans should be clearly outlines, to make sure that all the work/content are covered throughout the year.
- Content gap workshops by subject advisors should be frequently held, in order to build capacity in educators.
- The use of old question papers in revision is imperative.

- Learners frequently provide half of the responses needed for total marks. This just illustrates the lack of examination grooming by educators. E.g., (2 x 2) = (4) means TWO facts for TWO marks each. The candidates generally provided ONE fact.
- The use of geographical language is problematic.
- Educators must explain and relate concepts properly. These concepts provide the basis for the 'language of geography'. This will improve the candidates' grasp of concepts and how to apply them. Geography educators need to expose candidates to contemporary extracts, where they can practice the art of comprehending and synthesizing from the extracts.
- Fieldwork for all grades must be compulsory – hence candidates will have primary information regarding land uses, issues, and solutions/strategies.
- Many educators at the marking centre believe common text books would remedy many of the inconsistencies in teaching. This is possibly something that subject advisors need to look at.
- We cannot over emphasize the need for workshops, to gain a common understanding of processes and the way it should be taught.

NATIONAL
SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1

NOVEMBER 2022

MARKS: 150

TIME: 3 hours

This question paper consists of 20 pages.

INSTRUCTIONS AND INFORMATION

1.   This question paper consists of TWO SECTIONS.

        SECTION A
        QUESTION 1: CLIMATE AND WEATHER (60)
        QUESTION 2: GEOMORPHOLOGY (60)

        SECTION B
        QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES (30)

2.   Answer ALL THREE questions.

3.   All diagrams are included in the QUESTION PAPER.

4.   Leave a line between the subsections of questions answered.

5.   Start EACH question at the top of a NEW page.

6.   Number the answers correctly according to the numbering system used in this
        question paper.

7.   Do NOT write in the margins of the ANSWER BOOK.

8.   Draw fully labelled diagrams when instructed to do so.

9.   Answer in FULL SENTENCES, except when you have to state, name, identify
        or list.

10.   Units of measurement MUST be indicated in your final answer, e.g. 1 020 hPa,
        14 °C and 45 m.

11.   You may use a non-programmable calculator.

12.   You may use a magnifying glass.

13.   Write neatly and legibly.

SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

14.   A 1 : 50 000 topographic map 2930CA MERRIVALE and a 1 : 10 000
        orthophoto map 2930 CA 5 MERRIVALE are provided.

15.   The area demarcated in RED/BLACK on the topographic map represents the
        area covered by the orthophoto map.

16.   Marks will be allocated for steps in calculations.

17.   You must hand in the topographic and orthophoto map to the invigilator at the
        end of this examination session.

Please turn over

SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1   Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (1.1.1 to 1.1.8) in the ANSWER BOOK, e.g. 1.1.9 D.

   1.1.1   Lines that join places of equal atmospheric pressure on a synoptic weather map are known as …

            A   isolines.
            B   isotherms.
            C   isohyets.
            D   isobars.

   1.1.2   The wind direction represented by the station model below is …
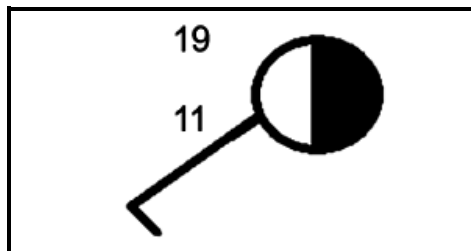
            A   north-west.
            B   south-west.
            C   south-east.
            D   north-east.

   1.1.3   Which ONE of the station models below shows drizzle as a form of precipitation?

Refer to the sketch below to answer QUESTIONS 1.1.4 to 1.1.6.
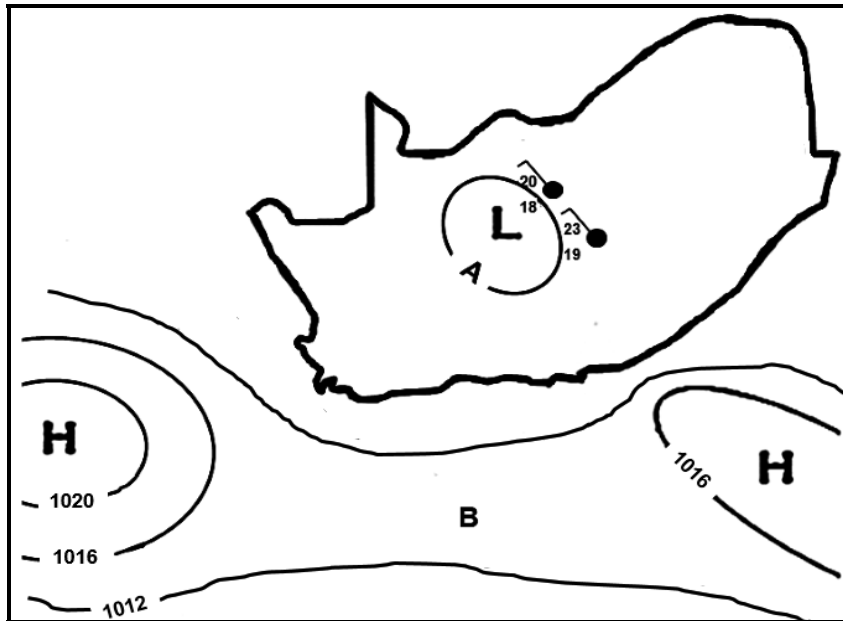
[Source: Examiner's own sketch]

1.1.4   The atmospheric pressure reading at **A** is … hPa.

A   1004
B   1008
C   1012
D   1016

1.1.5   Feature **B** is known as a …

A   ridge.
B   trough.
C   wedge.
D   saddle.

1.1.6   The low-pressure cell over the interior has caused north-westerly winds because of … circulation and overcast conditions due to … of air.

(i)   clockwise
(ii)   anticlockwise
(iii) descending
(iv)   ascending

A   (i) and (iii)
B   (ii) and (iv)
C   (i) and (iv)
D   (ii) and (iii)

Refer to the sketch below to answer QUESTIONS 1.1.7 and 1.1.8.
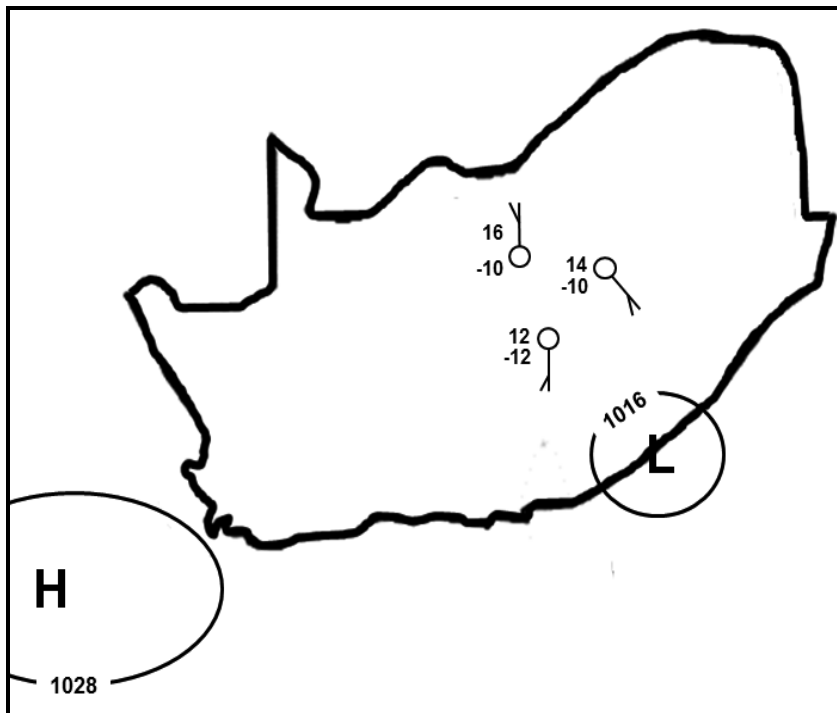
[Source: Examiner's own sketch]

1.1.7   The low-pressure cell in the sketch is a …

A   mid-latitude cyclone.
B   tropical depression.
C   coastal low.
D   thermal low.

1.1.8   The interior of South Africa experiences … conditions with a greater
temperature variation due to … climatic conditions.

(i)   unstable
(ii)   stable
(iii)   continental
(iv)   maritime

A   (i) and (iii)
B   (ii) and (iv)
C   (i) and (iv)
D   (ii) and (iii)   (8 x 1)   (8)

1.2 Complete the statements in COLUMN A with the options in COLUMN B. Write down only **Y** or **Z** next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK, e.g. 1.2.8 Y.

COLUMN A		COLUMN B	
1.2.1	Increased absorption of heat in urban areas is due to … surfaces.	**Y** **Z**	natural artificial
1.2.2	The intensity of multiple reflections of heat is increased due to the … dimension of buildings.	**Y** **Z**	vertical horizontal
1.2.3	The air pressure will generally be … in urban areas than in rural areas.	**Y** **Z**	lower higher
1.2.4	The wind speed in urban areas is … than in rural areas.	**Y** **Z**	faster slower
1.2.5	The relative humidity over urban areas is lower than over rural areas due to … evaporation.	**Y** **Z**	more less
1.2.6	Urban areas have a higher frequency of precipitation than rural areas due to …	**Y** **Z**	hygroscopic particles building structures
1.2.7	Temperature graph … represents the change in temperature from the urban areas (**S**) to the rural areas (**T**).	**Y** **Z**	

(7 x 1) (7)

 Please turn over

1.3   Refer to the sketches below on a mid-latitude cyclone.

PLAN VIEW   **CROSS-SECTIONS**
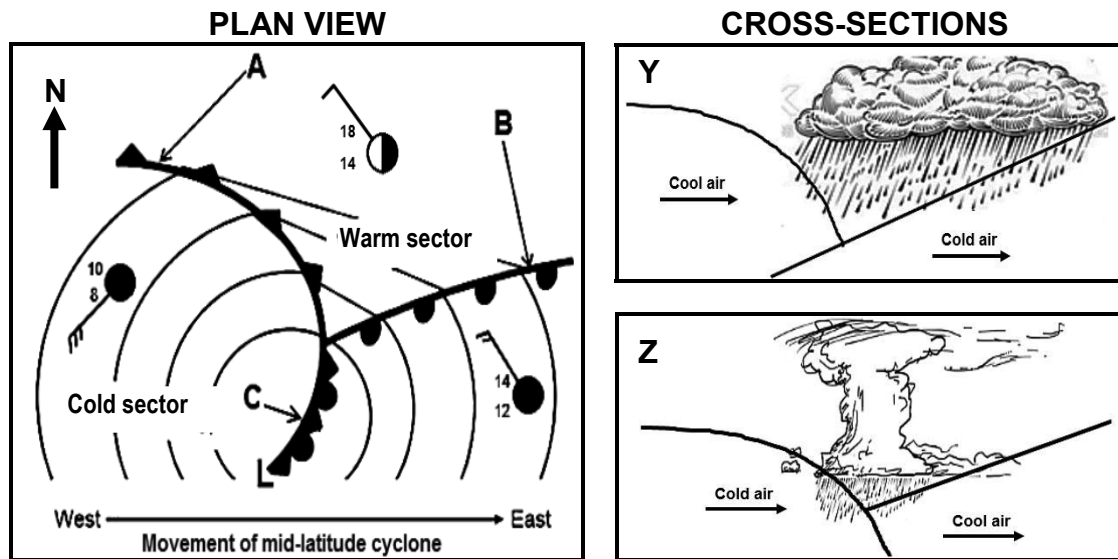
[Source: Examiner's own sketch]

1.3.1   Name the wind belt that causes the easterly movement of the
          mid-latitude cyclone.   (1 x 1)   (1)

Refer to the plan view.

1.3.2   Identify front **A**.   (1 x 1)   (1)

1.3.3   Which ONE of fronts **A** or **B** is moving faster?   (1 x 1)   (1)

1.3.4   Give a reason for your answer to QUESTION 1.3.3.   (1 x 2)   (2)

1.3.5   Give evidence from the sketch that the mid-latitude cyclone is found
          in the Southern Hemisphere.   (1 x 2)   (2)

Refer to the cold front occlusion **C** and the cross-sections.

1.3.6   (a)   Which ONE of the cross-sections **Y** or **Z** represents the cold
                 front occlusion at **C**?   (1 x 2)   (2)

         (b)   Give evidence that **C** is a cold front occlusion. (1 x 2)   (2)

         (c)   Explain how the cold front occlusion developed.   (2 x 2)   (4)

1.4   Refer to the infographic below on Tropical Cyclone Batsirai.

Satellite image of Tropical Cyclone Batsiria	Path of Tropical Cyclone Batsiria
[Adapted from https://twitter.com/kwang/poon/status]	[Source: Examiner's own sketch]
Tropical Cyclone Batsirai – February 2022 Tropical Cyclone Batsirai intensified and moved westward across the South Indian Ocean. The forward movement was approximately 19 kilometres per hour (km/h). Batsirai made landfall on Saturday night. Tropical Cyclone Batsirai's wind and rains caused considerable damage to roads and transport links, leaving some of the hardest-hit areas inaccessible. In addition, Tropical Cyclone Batsirai caused storm surges. [Adapted from https://reliefweb.int/disaster/tc-2022-000160-mdg]	**Wind speed associated with Tropical Cyclone Batsirai** [Source: Examiner's own sketch]

1.4.1   Give the date on which Tropical Cyclone Batsirai reached the mature stage.   (1 x 1)   (1)

1.4.2   According to the infographic, Tropical Cyclone Batsirai moved westward across the South Indian Ocean. Give ONE reason for this movement.   (1 x 2)   (2)

1.4.3   Suggest TWO reasons for the large decrease in wind speed between 20 and 25 February 2022.   (2 x 2)   (4)

1.4.4   How could storm surges negatively impact the physical environment on the east coast of Madagascar?   (4)

1.4.5   Explain the importance of monitoring tropical cyclones like Batsirai for Madagascar.   (2 x 2)   (4)

1.5 Refer to the sketches below showing the changes in the position of the inversion layer over South Africa.

A Weak descending air

Inversion layer

Wet conditions

Plateau

Cold ocean current Warm ocean current

B Strong descending air

Inversion layer Dry conditions Inversion layer

Plateau

Cold ocean current Warm ocean current
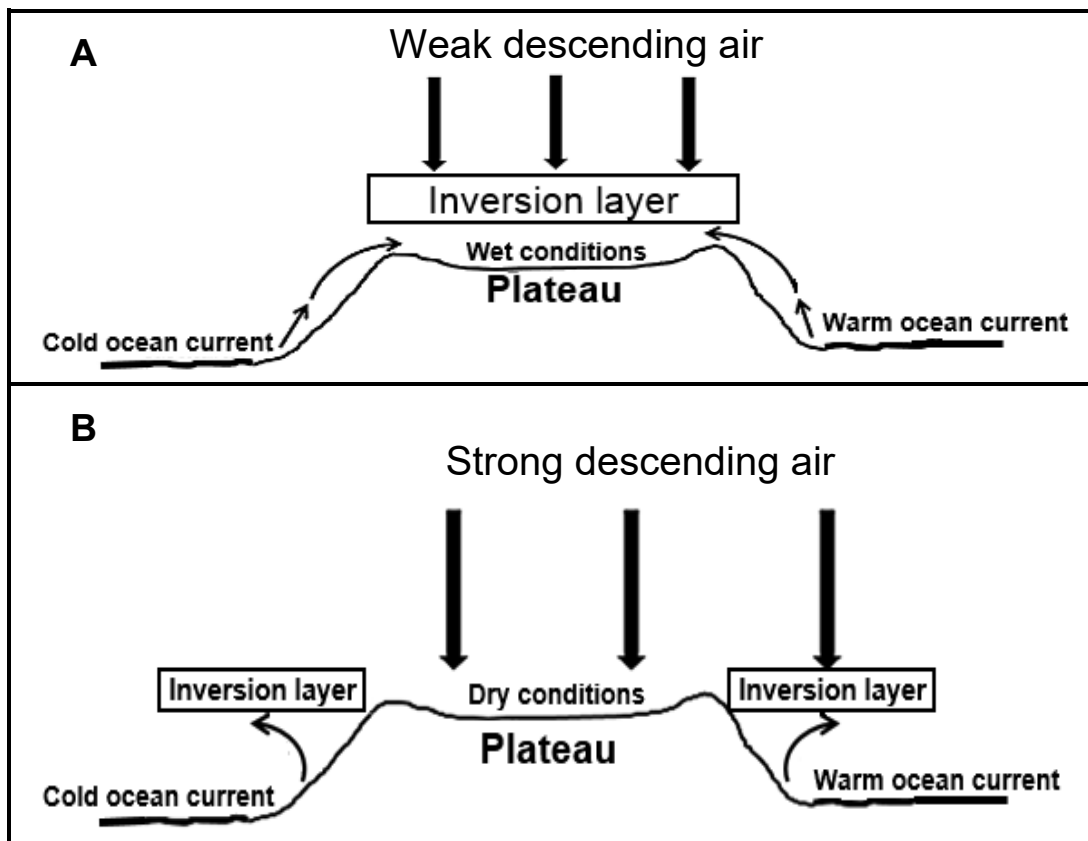
[Source: Examiner's own sketch]

Refer to sketch **A**.

1.5.1 Identify the season illustrated in sketch **A**. (1 x 1) (1)

1.5.2 Give a reason for your answer to QUESTION 1.5.1. (1 x 2) (2)

Refer to sketch **B**.

1.5.3 Identify TWO factors, visible in the sketch, which influence the climate of South Africa. (2 x 1) (2)

1.5.4 Explain the role played by descending air in the development of the inversion layer. (1 x 2) (2)

Refer to sketches **A** and **B**.

1.5.5 In a paragraph of approximately EIGHT lines, describe how the position of the inversion layer in sketches **A** and **B** influences the amount of rainfall in the interior of South Africa. (4 x 2) (8)

[60]

QUESTION 2: GEOMORPHOLOGY

2.1   Refer to drainage basins **A** and **B** below which have different drainage densities. Match the descriptions in QUESTIONS 2.1.1 to 2.1.8 with **A** and **B**. Write down only **A** or **B** next to the question numbers (2.1.1 to 2.1.8) in the ANSWER BOOK, e.g. 2.1.9 **A**.

[Source: https://www.google.com/search?q=drainage basins]
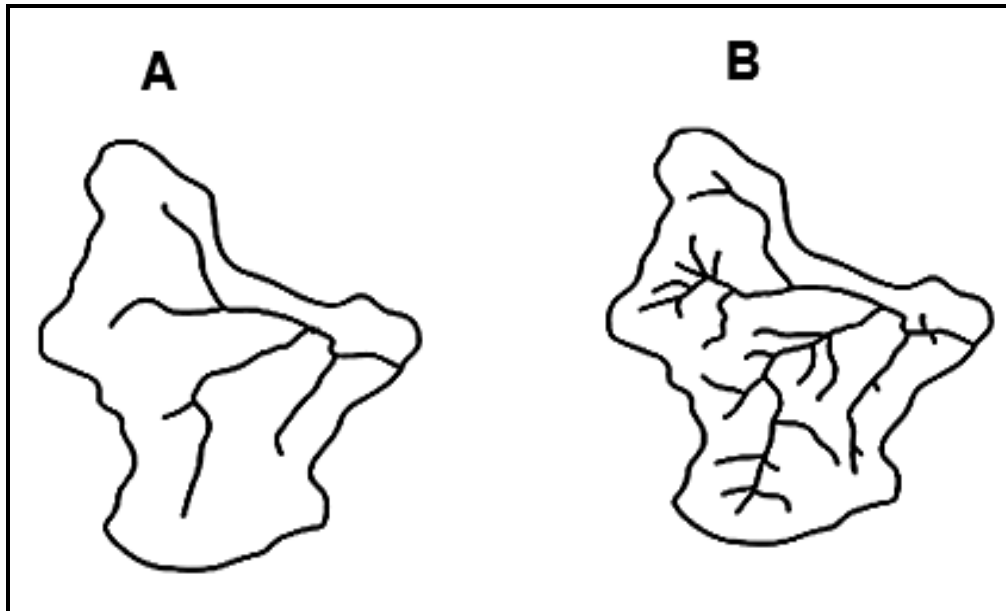
2.1.1   Higher drainage density

2.1.2   Lower infiltration rate

2.1.3   Denser vegetation

2.1.4   Higher soil moisture content

2.1.5   Developed on the least resistant (soft) rock

2.1.6   Lower degree of permeability

2.1.7   Higher stream order

2.1.8   The graph below represents this drainage basin.
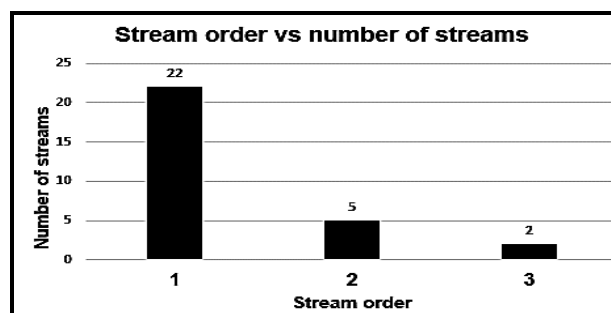
(8 x 1)   (8)

2.2 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (2.2.1 to 2.2.7) in the ANSWER BOOK, e.g. 2.2.8. D.

Refer to the sketch below to answer QUESTIONS 2.2.1 to 2.2.3.
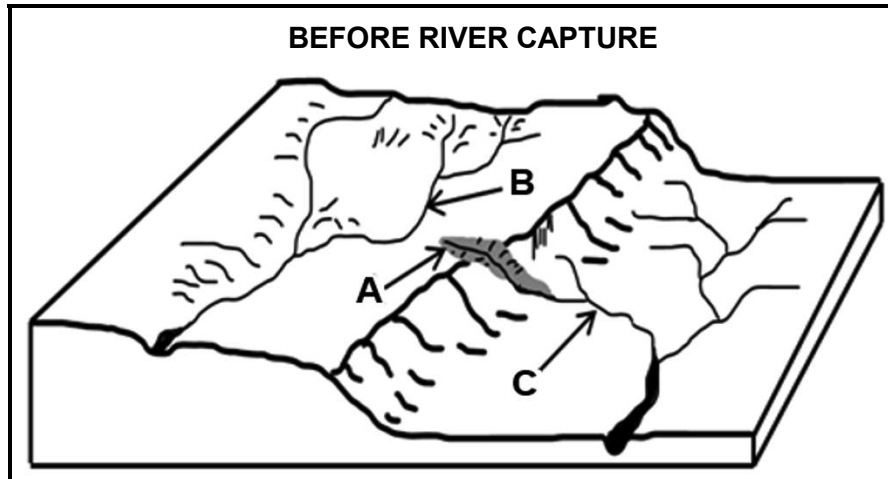
[Source: Examiner's own sketch]

2.2.1 … erosion at **A** is responsible for the lengthening of the river.

A Vertical
B Lateral
C Sheet
D Headward

2.2.2 The landform caused by the type of erosion in QUESTION 2.2.1 is a …

A spur.
B rapid.
C gorge.
D meander.

2.2.3 River **C** will eventually capture river **B** because it flows on a … gradient and over … rock.

(i) gentler
(ii) steeper
(iii) softer
(iv) harder

A (i) and (iii)
B (i) and (iv)
C (ii) and (iii)
D (ii) and (iv)

Refer to the sketch below to answer QUESTIONS 2.2.4 to 2.2.7.
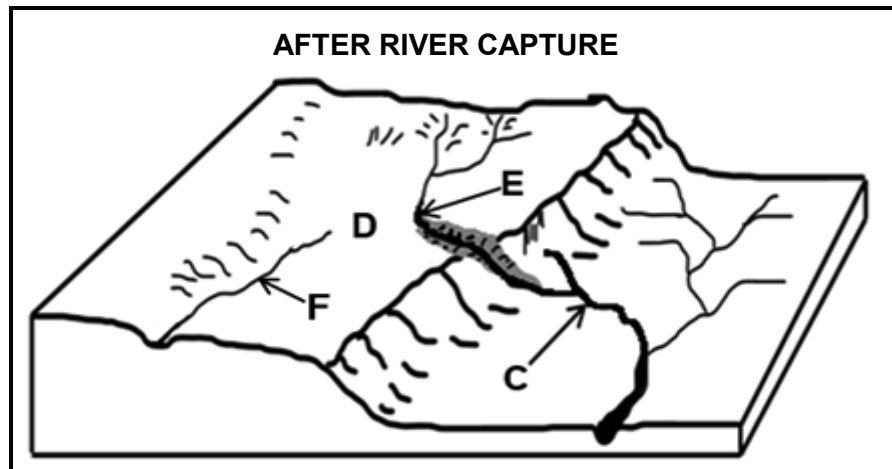
[Source: Examiner's own sketch]

2.2.4   River **C** is known as the … stream.

         A   captive
         B   captor
         C   captured
         D   misfit

2.2.5   Feature **D** is referred to as …

         A   a waterfall.
         B   river gravel.
         C   a wind gap.
         D   an elbow of capture.

2.2.6   The resultant fluvial landform of river capture at **E** is a/an …

         A   meander.
         B   waterfall.
         C   misfit stream.
         D   oxbow lake.

2.2.7   The characteristics of river **F** are that it flows in a … valley and the
         volume of water …

         (i)   wide
         (ii)   narrow
         (iii) increases
         (iv)   decreases

         A   (i) and (iii)
         B   (ii) and (iv)
         C   (i) and (iv)
         D   (ii) and (iii)   (7 x 1)   (7)

2.3   Refer to the drainage basin below.

[Adapted from https://www.buddinggeographers.com/rivers/]
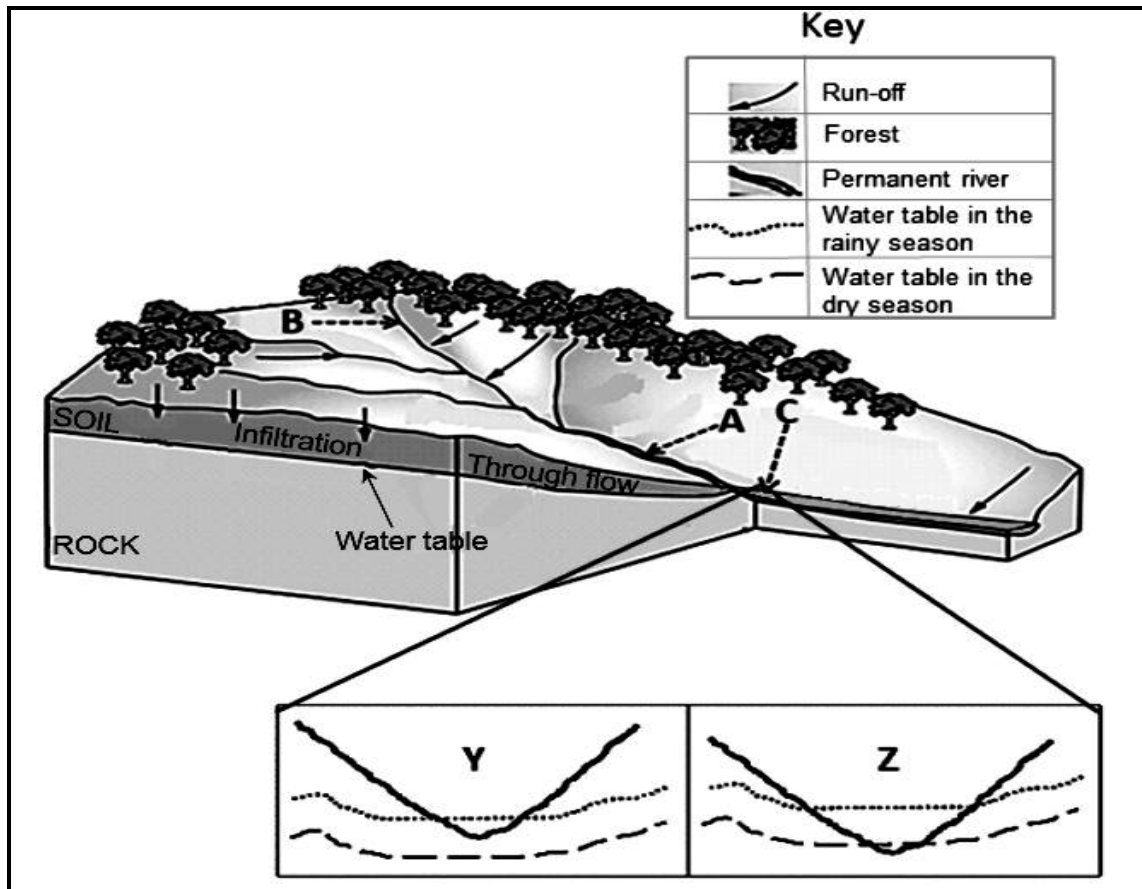
2.3.1   The river illustrated in the sketch is (permanent/periodic).   (1 x 1)   (1)

2.3.2   State TWO characteristics of the river system evident in the sketch.
                                                                            (2 x 1)   (2)

2.3.3   Give evidence from the sketch that the surface run-off is greater at **A**
        than at **B**.   (2 x 2)   (4)

2.3.4   Refer to **C**.

        (a)   Which ONE of the cross-sections **Y** or **Z** represents the river
                at point **C**?   (1 x 2)   (2)

        (b)   Give a reason for your answer to QUESTION 2.3.4(a).   (1 x 2)   (2)

2.3.5   How will a decrease in precipitation affect the following:

        (a)   Water table   (1 x 2)   (2)

        (b)   Type of river   (1 x 2)   (2)

2.4   Refer to the sketch on fluvial landforms below.

Key
→ Direction of river flow
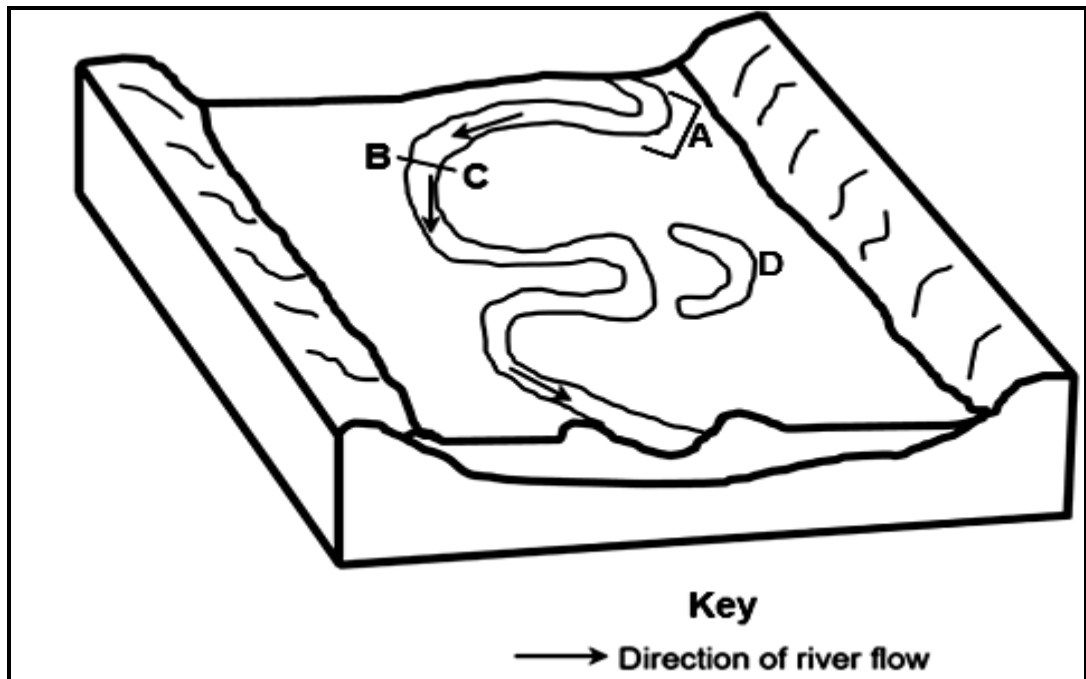
[Source: Examiner's own sketch]

2.4.1   The fluvial landforms, illustrated in the sketch, are mainly found in
          the (middle/lower) course.   (1 x 1)   (1)

2.4.2   Identify fluvial landform **A** on the sketch.   (1 x 1)   (1)

2.4.3   (a)   Draw a rough cross-section from **B** to **C**.   (2 x 1)   (2)

          (b)   Will erosion take place at **B** or **C**?   (1 x 1)   (1)

          (c)   Give a reason for your answer to QUESTION 2.4.3(b). (1 x 2)   (2)

2.4.4   In a paragraph of approximately EIGHT lines, describe the
          processes that resulted in the change of fluvial landform **A** to an
          ox-bow lake at **D**.   (4 x 2)   (8)

2.5   Refer to the case study below on catchment and river management.

MOOI RIVER CATCHMENT AREA
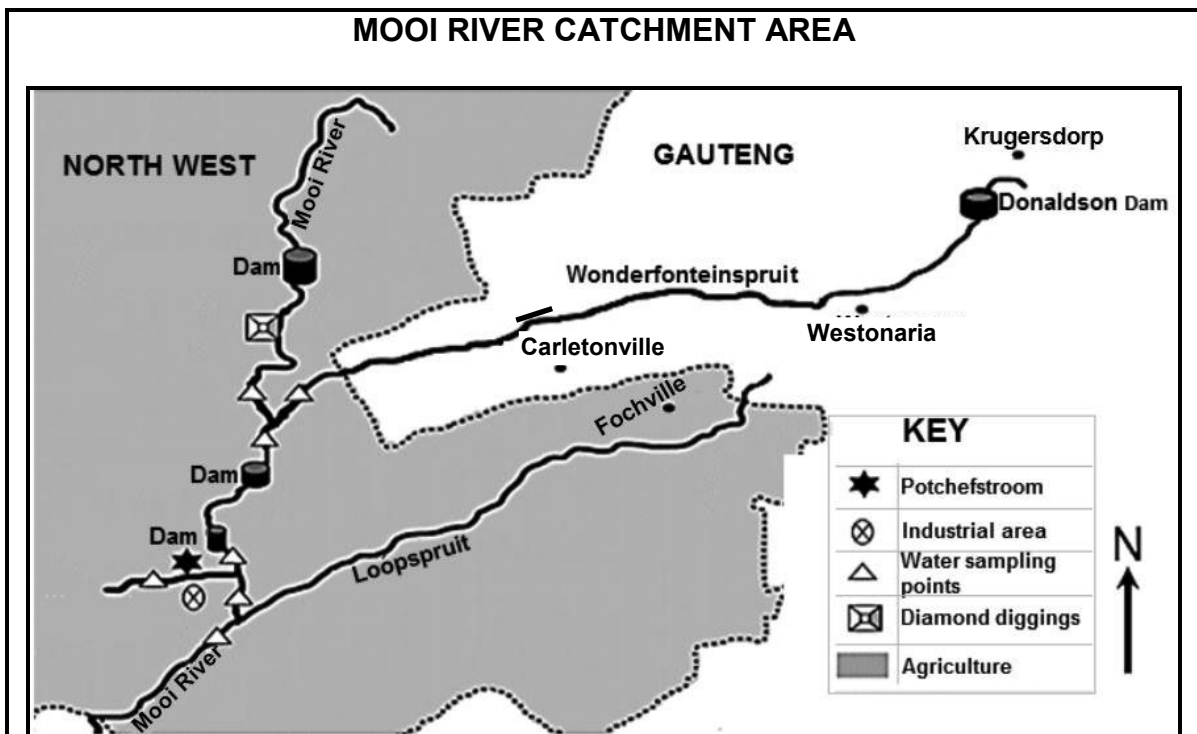
The Mooi River has two major tributaries, namely Wonderfonteinspruit and Loopspruit. The Donaldson Dam in the upper Wonderfonteinspruit receives water from various sources, such as sewage facilities, mining areas and informal settlements, that has a negative impact on the quality of water.

The Mooi River flows south, through agricultural land, from where it eventually joins the Vaal River. The main types of land use in the Mooi River catchment area are crop farming and grazing.

According to the Department of Water Affairs (DWA), irrigation and farming are the two major activities polluting the waters of the Mooi River drainage basin, following the removal of natural vegetation. Some small-scale diamond diggings also occur along the Mooi River, destroying the flood plain and riparian (wetlands next to river banks) habitats.

[Adapted from a case study by S Barnard, A Venter and CE van Ginkel]

2.5.1   What does the abbreviation *DWA* in the extract stand for?   (1 x 1)   (1)

2.5.2   Refer to the case study and identify TWO sources that negatively impact the quality of water of the Donaldson Dam.   (2 x 1)   (2)

2.5.3   Why are the water sampling points (testing points) important?   (1 x 2)   (2)

2.5.4   How do agricultural practices in the Mooi River catchment area cause water pollution of the river system?   (2 x 2)   (4)

2.5.5   Suggest THREE sustainable strategies that can be implemented in order to maintain the quality of water in the Mooi River catchment area.   (3 x 2)   (6)
                                                                                                          [60]

                                                                              TOTAL SECTION A: 120

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

GENERAL INFORMATION ON MERRIVALE

Coordinates: 29°31'S; 30°14'E

Merrivale is a town in the Umgungundlovu District Municipality in KwaZulu-Natal. It is 145 km north-west of Durban and 5 km south-east of Howick.

Merrivale experiences warm wet summers and dry winter seasons. The temperatures between winter and summer range from 5 °C to 32 °C. The topography within the surroundings of Merrivale varies in elevation from 1 018 metres to 2 308,8 metres above sea level.

[Adapted from https://en.wikipedia.org/wiki/Merrivale]

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

ENGLISH	AFRIKAANS
Diggings	Delwery
Mooi River	Mooirivier
Sewerage Works	Rioolwerke
Nature Reserve	Natuurreservaat

3.1   **MAP SKILLS AND CALCULATIONS**

   3.1.1   Study the information below. The orthophoto index map sheet west
            of 2930 CA 5 is …

2930 AC 24	2930 AC 25	2930 AD 21
2930 CA 4	2930 CA 5	2930 CB 1
2930 CA 9	2930 CA 10	2930 CB 6

29°30'

30°15'

            A   2930 CB 1.
            B   2930 CA 4.
            C   2930 CB 6.
            D   2930 CA 9.   (1 x 1)   (1)

   3.1.2   The scale of 1 **:** 50 000 shows a … area and … detail as it is a
            smaller scale than 1 **:** 10 000.

            (i)   larger
            (ii)   smaller
            (iii) less
            (iv)   more

            A   (i) and (iii)
            B   (i) and (iv)
            C   (ii) and (iii)
            D   (ii) and (iv)   (1 x 1)   (1)

Refer to the orthophoto map.

   3.1.3   Calculate the straight-line distance in metres (m) that the power line
            covers from **6** in block **B3** to **7** in block **C5**.

            Formula: **Actual Distance** = **Map distance x Map scale**   (2 x 1)   (2)

Refer to the topographic map.

3.1.4   Draw a freehand cross-section from the recreation facility at point **F** in block **D2** to point **G** in block **D3**. Indicate **F** and **G** on your cross-section.   (2 x 1)   (2)

3.1.5   Is the recreation facility at **F** in block **D2** intervisible from point **G** in block **D3**?   (1 x 1)   (1)

3.1.6   Calculate the magnetic declination for 2022. The difference in years is 6 years and the annual change is 9' westwards.   (3 x 1)   (3)

3.2   MAP INTERPRETATION

3.2.1   The wind that blows during the night in block **C2** on the orthophoto map is a/an ... wind.

     A   anabatic
     B   valley
     C   katabatic
     D   slope   (1 x 1)   (1)

Refer to block **D4** on the orthophoto map.

3.2.2   (a)   Which time of the day (morning/afternoon) was the photograph taken?   (1 x 1)   (1)

     (b)   Give a reason for your answer to QUESTION 3.2.2(a).   (1 x 2)   (2)

3.2.3   Give a climatological reason for the large number of perennial water sources (dams) and furrows found on the topographic map.   (1 x 2)   (2)

Refer to river **H** in block **B1** on the topographic map.

3.2.4   (a)   River **H** in block **B1** generally flows in a north-easterly direction. Give map evidence to support this statement.   (1 x 1)   (1)

     (b)   Give evidence why the type of flow of river **H** is associated with laminar flow.   (1 x 2)   (2)

3.2.5   The drainage pattern **I** encircled in blocks **C3** and **D3** on the topographic map is …

     A   trellis.
     B   dendritic.
     C   radial.
     D   rectangular.   (1 x 1)   (1)

3.2.6   Describe the underlying rock structure that is responsible for the drainage pattern (answer to QUESTION 3.2.5).   (1 x 2)   (2)

3.3   **GEOGRAPHICAL INFORMATION SYSTEMS (GIS)**

Refer to the photograph below that shows an environmental issue in block **C2** on the topographic map.

[Source :https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=5574]

3.3.1   Which symbol represents the environmental issue depicted in the photograph?
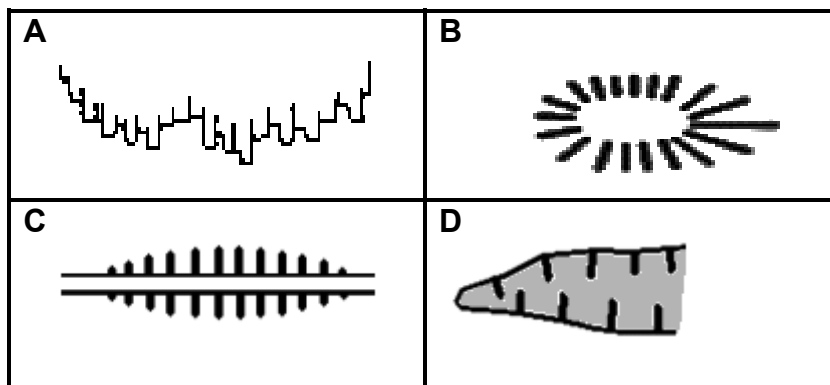
(1 x 1)   (1)

3.3.2   Classify the photograph as either primary or secondary data. (1 x 1)   (1)

3.3.3   Give a reason for the high resolution of the photograph.   (1 x 1)   (1)

3.3.4   How would the high resolution of the photograph assist a GIS specialist to find a solution to the environmental issue depicted (answer to QUESTION 3.3.1)?   (1 x 2)   (2)

Refer to the sketch below of the infrastructure data layer in block **C3** on the orthophoto map.

Infrastructure data layer
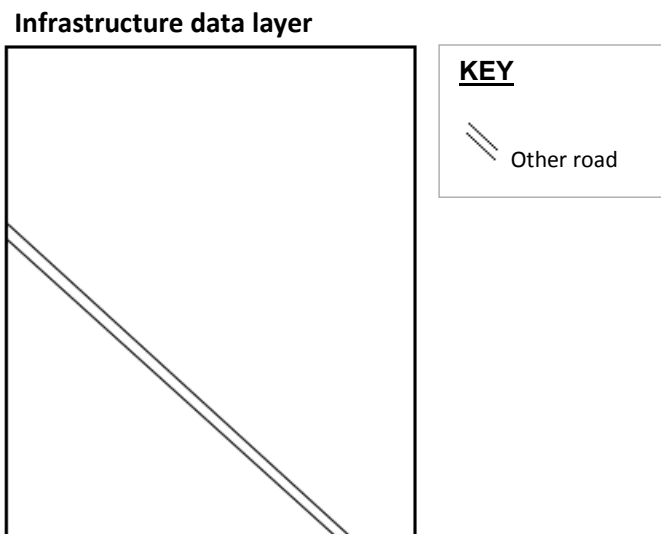
3.3.5   Identify the missing infrastructure data layer, excluded (not indicated) on the sketch above.   (1 x 1)   (1)

3.3.6   Using the correct reference symbol, redraw the sketch and insert the infrastructure data layer identified in QUESTION 3.3.5.   (2 x 1)   (2)

TOTAL SECTION B: 30
GRAND TOTAL: 150

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1

NOVEMBER 2022

MARKING GUIDELINES
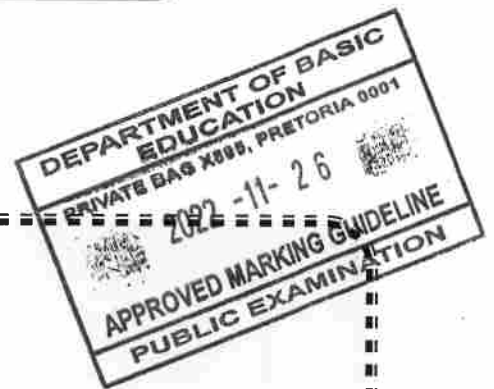
MARKS: 150

Name	Designation	Signature	Date
Mrs. ZPL SHABALALA	Umalusi External Moderator		26.11.2022
Mr. GD SAMAAI	Umalusi External Moderator		26.11.2022
Ms. T MAGSON	DBE Internal Moderator		26.11.2022
Mr. R DAVECHAND	DBE Internal Moderator		26.11.2022

These marking guidelines consist of 13 pages.

MARKING PRINCIPLES FOR GEOGRAPHY- NSC NOVEMBER 2022 AND NSC/SC JUNE 2023

The following marking principles have been developed to standardise marking in all provinces.

MARKING

- ALL questions MUST be marked, irrespective of whether it is correct or incorrect $\text{\Large\textcircled{M}}$
- Where the maximum marks have been allocated for a particular question, place an over the remainder of the text to indicate the maximum marks have been achieved.
  - A clear, neat tick must be used: ✓
  - If ONE mark is allocated, ONE tick must be used: ✓
  - If TWO marks are allocated, TWO ticks must be used: ✓✓
  - The tick must be placed at the FACT that a mark is being allocated for
  - Ticks must be kept SMALL, as various layers of moderation may take place
- Incorrect answers must be marked with a clear, neat cross: ✗
  - Use MORE than one cross across a paragraph/discussion style questions to indicate that all facts have been considered
  - Do NOT draw a line through an incorrect answer
  - Do NOT underline the incorrect facts

For the following action words, ONE word answers are acceptable: **list, name, state, identify**
For the following action words, a FULL sentence must be written: **describe, explain, evaluate, analyse, suggest, differentiate, distinguish, define, discuss, why, how**
The following action words need to be read within its context to determine whether a ONE- word answer or FULL sentence is required: **provide, what, tabulate** and **give**

NOTE THE FOLLOWING

- If the numbering is incorrect or left out, as long as the sequence of answers to questions is followed candidates can be credited
- Spelling errors if recognisable, award the marks provided the meaning is correct.
- Be sensitive to the sense of an answer, which may be stated in a different way
- In questions where a letter is the accepted response, but the learner writes the actual answer- award marks.
- There will be additional guidelines for the marking of certain questions. (*)

TOTALLING AND TRANSFERRING OF MARKS

- Each sub-question must be totalled
  - Questions in Section A has five sub-sections, therefore five sub-totals per question required. Section B has three sub-sections and three sub-totals.
  - Sub-section totals to be written in the right-hand margin at the end of the sub-section and underlined
  - Sub-totals must be written legibly
  - Leave room to write in moderated marks on different levels
- Total sub-totals and transfer total to top left-hand margin next to question number
- Transfer total to cover of answer book
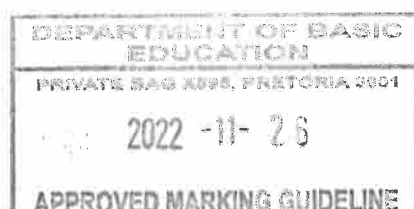
30   QUESTION 1

1.1.1   A (South Atlantic High) (1)   ✓
1.1.2   B (Kalahari High) (1)   ✓
1.1.3   B (South Indian) (1)   ✗   **2**

1.2.1   Melting snow   ✓
1.2.2   Mouth ✗
1.2.3   Third order ✓   **2**

1.3.1   Katabatic ✗
1.3.2   **1** occurs during the day while **2** occurs at night   ✓✓

1.3.3   Cold air rolls down✓into the valley and forms an inversion

— Air flows downslope ✓✓

                                                                               6

1.4.1   Shape of front concave   ✗
         Steep gradient of front   ✓

1.4.2   Warm air undercuts the cold air   ✗

1.4.3   Air behind the cold front is colder than the air in front. Cold air moves faster than
         warm air ahead of it. Cold front catches up with the warm front.   ✓✓ ✓✓   **7**

1.5.1   (a) A river that only flows all year round   ✗

         (b) The river channel is wide   ✗

         (c) Regularity ✓✓ of rainfall and the soil type ✓✓ over which the streams flow.

1.5.2   Gauteng ✓ and the Eastern Cape ✗

1.5.3   The cost of food production will increase at it is costly to buy purified water. Farmers
         will have to buy more chemicals ✓ to purify water. Chemicals cost a lot and this ✓ will
         increase production costs. It will be costly to purify water ✓ for use in electricity
         generation. These costs will be included in electricity prices. Costs will increase the
         price of electricity during production.(MT)here will be less clean water to generate
         hydro- electricity.
                                                                               13
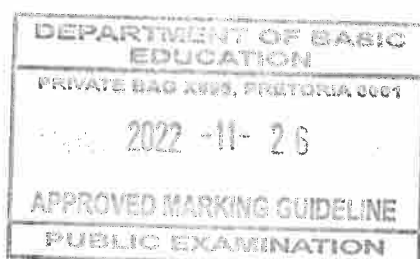
SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: CLIMATE AND WEATHER

1.1   1.1.1   D (1)

    1.1.2   B (1)

    1.1.3   A (1)

    1.1.4   B (1)

    1.1.5   D (1)

    1.1.6   C (1)

    1.1.7   C (1)

    1.1.8   D (1)   (8 x 1)   (8)

1.2   1.2.1   Z (1)

    1.2.2   Y (1)

    1.2.3   Y (1)

    1.2.4   Z (1)

    1.2.5   Z (1)

    1.2.6   Y (1)

    1.2.7   Z (1)   (7 x 1)   (7)

1.3   1.3.1   Westerlies (1)   (1 x 1)   (1)

       1.3.2   Cold front (1)   (1 x 1)   (1)

       1.3.3   A (1)   (1 x 1)   (1)

       1.3.4   The windspeed behind the cold front is faster (30 knots) (2)
       GIVE   A   The windspeed behind the warm front is slower (10 knots) (2)
       REASON FOR
       YOUR ANSWER   Ahead of the cold front the air is warmer/less dense/lighter (2)
       TO QUESTION
       1.3.3.   Ahead of the warm front the air is colder/denser/heavier (2)
                     Warm front use energy to move forward and rise (2)
                     The pressure gradient associated with the cold front is steeper (2)
                     [ANY ONE]   (1 x 2)   (2)

       1.3.5   Clockwise circulation of air (2)
       GIVE   Position of the low pressure is south of the system (2)
       EVIDENCE
       FROM   THE   Warm sector / Cold front is to the north (2)
       SKETCH THAT THE
       MID-   Cold sector / Warm front is to the south (2)
       LATITUDE
       CYCLONE IS   Backing of the wind occurs (2)
       FOUND   IN
       THE   Apex is to the south (2).
       SOUTHERN
       HEMISPHERE   **[ANY ONE]**   (1 x 2)   (2)

       1.3.6   (a)   Z (2)   (1 x 2)   (2)

       GIVE   (b)   The air behind the cold front is colder (10°C) than the cool air in front
       EVIDENCE
       THAT C IS A   of the warm front (14°C) (2)
       COLD FRONT
       OCCLUSION.   The cold front symbol is at the apex of the mid-latitude cyclone (2)
                           Cold front touches the surface (2)
                           Cold front has uplifted the warm front (2)
                           Cumulonimbus clouds evident (2)
                           [ANY ONE]   (1 x 2)   (2)

       EXPLAIN HOW   (c)   The cold front which is moving faster undercuts/overtakes ($\sqrt{}$) the
       THE   COLD
       FRONT   warm front (2)
       OCCLUSION
       DEVELOPED.   The warm air is forced to rise ($\sqrt{}$), resulting in the narrowing of the
       *   warm sector (2)
                           The cool air (in front of the warm front) ($\sqrt{}$) is completely uplifted (2)
                           [ANY TWO – Accept 2 x 1 if not qualified]   (2 x 2)   (4)
                           Part marking guideline
                           Process: 1. undercutting
                                   2. Upliftment
                                   3. Position

1.4   1.4.1   20 February (1)   (1 x 1)   (1)

       1.4.2   Batsirai is located in the tropical easterly wind belt (2)
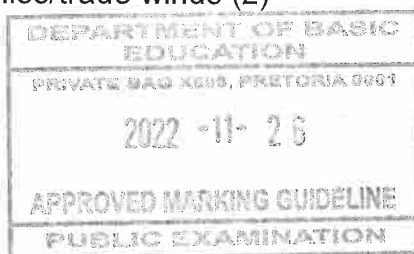   GIVE   ONE   Driven by the easterlies/trade winds (2)
       REASON FOR
       THIS   **[ANY ONE]**   (1 x 2)   (2)
       MOVEMENT.

1.4.3
SUGGEST TWO REASONS FOR THE LARGE DECREASE IN WIND SPEED BETWEEN 20 AND 25 FEBRUARY 2022.

The tropical cyclone reached the land (Madagascar) (2)
Frictional drag over Madagascar (2)
Decrease in moisture content (2)
Less latent heat available (2)
The tropical cyclone entered higher latitudes/cooler waters (2)
Atmospheric pressure increases (2)
[ANY TWO]   (2 x 2)   (4)

1.4.4
HOW COULD STORM SURGES NEGATIVELY IMPACT THE PHYSICAL ENVIRONMENT ON THE EAST COAST OF MADAGASCAR?

Coastal areas would be flooded (2)
Re-shaping of coastline (accept examples) (2)
Increased soil erosion (2)
Possibility of mass movement (accept examples) (2)
Destruction of biodiversity (accept examples)(2)
Destruction of habitats (accept examples) (2)
Pollution of water sources (2)
Pollution of soil (2)
(Accept) Damage to Infrastructure (accept examples) (2)
[ANY TWO]   (2 x 2)   (4)

1.4.5
EXPLAIN THE IMPORTANCE OF MONITORING TROPICAL CYCLONES LIKE BATSIRAI FOR MADAGASCAR.

The area is prone to tropical cyclones (2)
To observe the **path** of a tropical cyclone (2)
To observe the **development** of a tropical cyclone (2)
Enables advanced weather **predictions** (2)
Enables the **collection** of data on rainfall rates/wind speed (2)
Effective in providing early **warning systems** (2)
To **reduce the level of impact** of the system (accept examples) (2)
To be prepared and **limit possible damages** (accept examples) (2)
To have enough **time to evacuate** (2)
To **plan/prepare emergency** procedures (accept examples) (2)
[ANY TWO]   (2 x 2)   (4)

1.5   **1.5.1**   Summer (1)   (1 x 1)   (1)

1.5.2
GIVE A REASON FOR YOUR ANSWER TO QUESTION 1.5.1

Weak descending air (2)
The inversion layer is above the escarpment/plateau (2)
Moist (onshore) winds will reach the interior (2)
Wet conditions over the interior (2)
[ANY ONE]   (1 x 2)   (2)

1.5.3
IDENTIFY TWO FACTORS, VISIBLE IN THE SKETCH, WHICH INFLUENCE THE CLIMATE OF SOUTH AFRICA.

Plateau (1)
Height above sea level (1)
Ocean currents (1)
Inversion layer (1)
Descending air/Kalahari HP (Anticyclonic movement) (1)
Distance from the ocean (1)
[ANY TWO]   (2 x 1)   (2)
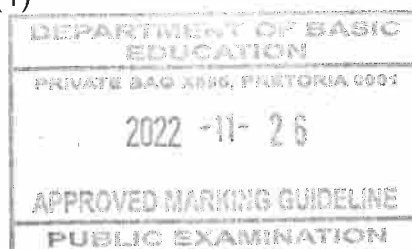
1.5.4
EXPLAIN DESCENDING AIR IN THE DEVELOPMENT OF THE INVERSION LAYER.

As air subsides it **compresses and heats** up (2)
Adiabatic heating due to subsiding air (2)
**[ANY ONE]**   (1 x 2)   (2)

1.5.5
IN A PARAGRAPH OF APPROXIMATELY EIGHT LINES, DESCRIBE HOW THE POSITION OF THE INVERSION LAYER IN SKETCHES A AND **B** INFLUENCES THE AMOUNT OF RAINFALL IN THE INTERIOR OF SOUTH AFRICA.

Sketch (A)
Inversion layer is above the level of the plateau/escarpment (2)
Moist air flows into the interior (2)
Unstable conditions cause air to rise (2)
Condensation occurs and clouds form (2)
Results in more rainfall (2)

Sketch (B)
Inversion layer below the level of the plateau/escarpment (2)
Moist air cannot reach the interior (2)
Stable conditions cause clear skies (2)
Less/No condensation occurs (2)
Results in less/no rainfall (2)
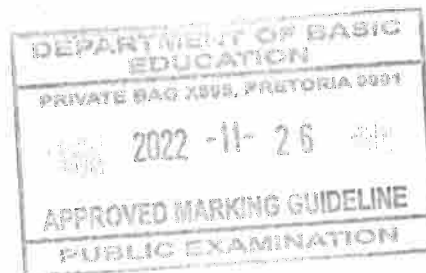**[ANY FOUR – MUST INCLUDE CONDITIONS OF SKETCH A AND
SKETCH B]**   (4 x 2)   (8)
                                                                                                  [60]
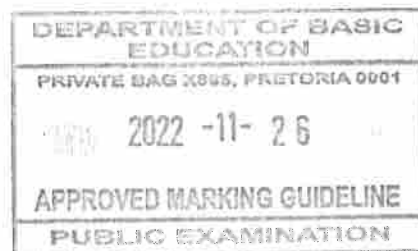
QUESTION 2 - GEOMORPHOLOGY
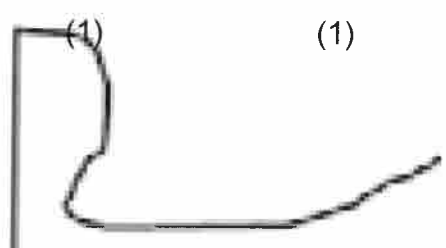
2.1   2.1.1   B (1)

       2.1.2   B (1)

       2.1.3   A (1)

       2.1.4   B (1)

       2.1.5   A (1)

       2.1.6   B (1)

       2.1.7   B (1)

       2.1.8   B (1)   (8 x 1)   (8)

2.2   2.2.1   D (1)

       2.2.2   C (1)

       2.2.3   C (1)

       2.2.4   B (1)

       2.2.5   C (1)

       2.2.6   B (1)

       2.2.7   C (1)   (7 x 1)   (7)

2.3   2.3.1   Permanent (1)   (1 x 1)   (1)

       2.3.2   Dendritic drainage pattern (1)
       STATE TWO CHARACTERISTICS OF THE RIVER SYSTEM EVIDENT IN THE SKETCH   Volume of water increases from source to mouth (1)
           High water table (1)
           Tributaries are divided by Interfluves (1)
           2nd order stream (1)
           Low drainage density (Few tributaries) (1)
           Permanent / Perennial river (1)
           The river intercepts the water table (in wet and dry season) (1)
           Gentle gradient (1)
           The tributaries are joining the mainstream at an acute angle (1)
           [ANY TWO]   (2 x 1)   (2)

2.3.3 **GIVE EVIDENCE FROM THE SKETCH THAT THE SURFACE RUN-OFF IS GREATER AT A THAN AT B**

Less vegetation at A (2)
More tributaries feed the channel at A (2)
The channel at A is wider (2)
Higher volume of water at A (The line indicating the river is thicker at A) (2)
A is in the middle or lower course (2)
Higher stream order at A (2)
[ANY TWO – MAY ANSWER WITH REFERENCE TO B]   (2 x 2)   (4)

2.3.4 (a)   Z (2)   (1 x 2)   (2)

      (b)   The river intercepts the wet and dry water tables (2)   (1 x 2)   (2)

2.3.5 **HOW WILL A DECREASE IN PRECIPITATION AFFECT THE FOLLOWING**

      (a) **WATER TABLE**   It will **lower** the water table (2)   (1 x 2)   (2)

HOW WILL A DECREASE IN PRECIPITATION AFFECT THE FOLLOWING

      (b) **TYPE OF RIVER**   It changes to a periodic or episodic river (non-perennial) (2)
                 The type of the river remains unchanged (permanent) (2)
                 [ANY ONE]   (1 x 2)   (2)

2.4.1 Lower (1)   (1 x 1)   (1)

2.4.2 Meander (1)   (1 x 1)   (1)

2.4.3 (a) **DRAW A ROUGH CROSS-SECTION FROM B TO C**

(1)

          Marks to be allocated for the correct shape of the undercut (steep)
          and the slip-off slopes (gentler)   (2 x 1)   (2)

      (b)   B (1)   (1 x 1)   (1)

      (c) **GIVE A REASON FOR YOUR ANSWER TO QUESTION 2.4.3(b).**   The river **flow is faster** (at the outer bank) (2)
                 The river has **more energy** (2)
                 [ANY ONE]   (1 x 2)   (2)

2.4.4 *IN A PARAGRAPH OF APPROXIMATELY EIGHT LINES, DESCRIBE THE PROCESSES THAT RESULTED IN THE CHANGE OF FLUVIAL LANDFORM A TO AN OX-BOW LAKE AT D.*

The outer bank of the river gets eroded (2)
Deposition takes place on the inner bank (2)
Continuous erosion and deposition cause the neck to become narrower (2)
Meander loop develops (2)
During flooding, the river cuts through the meander neck (2)
Deposition occurs at the neck of the meander loop (2)
The meander loop is now separated from the main stream forming an oxbow lake (2)
[ANY FOUR] (4 x 2) (8)

2.5 2.5.1 Department of Water Affairs (1) (1 x 1) (1)

2.5.2 *IDENTIFY TWO SOURCES THAT NEGATIVELY IMPACT THE QUALITY OF WATER OF THE DONALDSON DAM.*

Sewage facilities (1)
Mining areas (1)
Informal settlements (1)
[ANY TWO] (2 x 1) (2)

2.5.3 *WHY ARE THE WATER SAMPLING POINTS (TESTING POINTS) IMPORTANT?*

Test / monitor the water quality (2) (accept examples)
Identify the origin of the water pollution (2)
Check the level of water pollution (2)
Ensure that the ecosystem remains healthy (2)
Ensure that the ecosystem remains in balance (2)
Preserve the biodiversity (2)
To do ongoing research and predictions (2)
To ensure water is safe for people to use (2)
To assist with proper water management (2)
To avoid people getting (waterborne) diseases (2) (accept examples)
[ANY ONE] (1 x 2) (2)

2.5.4 *HOW DO AGRICULTURAL PRACTICES IN THE MOOI RIVER CATCHMENT AREA CAUSE WATER POLLUTION OF THE RIVER SYSTEM?*

The pesticides/herbicides end up in the rivers (2) (accept examples)
The cattle droppings/waste is washed into rivers (2)
Fertilizers end up in the rivers (2)
Poor farming methods cause soil erosion (2) (accept examples)
Removing of vegetation increases run-off of more polluted material in water (2)
Irrigation/farming pollute the water (2)
[ANY TWO] (2 x 2) (4)
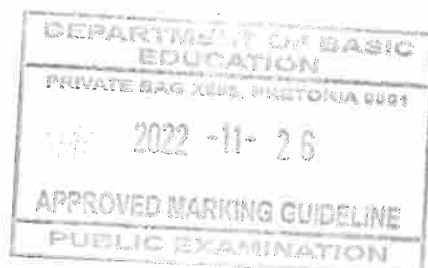
2.5.5
SUGGEST THREE SUSTAINABLE STRATEGIES THAT CAN BE IMPLEMENTED IN ORDER TO MAINTAIN THE QUALITY OF WATER IN THE MOOI RIVER CATCHMENT AREA

Decrease the use of pesticides/herbicides (2)
Buffering of the Mooi River catchment area (2)
Practice green agriculture (accept examples) (2)
Close the mines along the banks (2)
Manage dumping of industrial waste (accept examples) (2)
Reduce deforestation (2)
Reduce pollution of (ground) water (2)
Implement legislation (accept examples) (2)
Provide incentives (accept examples) (2)
Create awareness (accept examples) (2)
Implement wastewater treatment (2)
Ensure stormwater management (2)
Ensure conservation of wetlands (2)
Proper land use planning (accept examples) (2)
Regular testing (accept examples) (2)
Improve infrastructure in informal settlements (accept examples) (2)
Maintain water purifying plants (2)
Regular environmental impact assessment studies (2)
Afforestation / Recover the flood plain/riparian zone (2)
[ANY THREE]   (3 x 2)   (6)

                                                                         [60]

TOTAL SECTION A: **120**
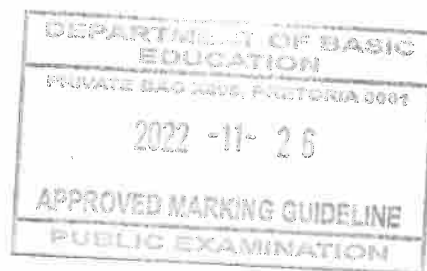
SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1   3.1.1   B (1)   (1 x 1)   (1)

      3.1.2   A (1)   (1 x 1)   (1)

      3.1.3   Distance = **Map distance x Map scale**

                       = 9 (1) cm x 100 (Range 8.9 to 9.1)

                       = 900 m (1) (Range 890 m to 910 m)   (2 x 1)   (2)

      3.1.4   (1)
      DRAW A
      FREEHAND
      CROSS-
      SECTION
      FROM THE
      RECREATIO
      N FACILITY
      AT POINT F
      IN BLOCK D2
      TO POINT G
      IN BLOCK
      D3.
      INDICATE F   (1)
      AND G ON   **[AWARD 1 MARK FOR CORRECT SHAPE WITHOUT LABELS]** (2 x 1)   (2)
      YOUR
      CROSS-
      SECTION.

      3.1.5   Yes (1)   (1 x 1)   (1)

      3.1.6   Total change: 9' x 6 years = 54' (1)
      CALCULATE THE   Magnetic declination for 2022:   24° 42'
      MAGNETIC
      DECLINATION   +(1) 54'
      FOR 2022. THE   _____
      DIFFERENCE IN   24° 96'
      YEARS IS 6 YEARS
      AND THE   25° 36' west of true north (1) (3 x 1)   (3)
      ANNUAL
      CHANGE IS 9'
      WESTWARDS.

3.2   3.2.1   C (1)   (1 x 1)   (1)

      3.2.2   (a)   morning (1)   (1 x 1)   (1)

              (b)   The shadows fall in a south-westerly direction (2)   (1 x 2)   (2)

      3.2.3   Rainfall is seasonal (2)   (1 x 2)   (2)

      3.2.4   (a)   The river flows towards the dam (1)
      RIVER H IN   The V-shape contour lines point in a south-westerly direction (1)
      BLOCK B1   Height decreases in a northerly direction (1)
      GENERALLY   **[ANY ONE]**   (1 x 1)   (1)
      FLOWS IN A
      NORTH-
      EASTERLY
      DIRECTION.
      GIVE MAP
      EVIDENCE TO
      SUPPORT THIS
      STATEMENT.

      GIVE EVIDENCE (b)   Flat/Gently sloping (2)
      WHY THE TYPE   Widely spaced contour lines (2)
      OF FLOW OF   **[ANY ONE]**   (1 x 2)   (2)
      RIVER H IS
      ASSOCIATED
      WITH LAMINAR
      FLOW

3.2.5   B (1)   (1 x 1)   (1)

3.2.6   Uniform/homogenous resistance (2)
        Horizontally layered (2)
        [ANY ONE]   (1 x 2)   (2)

3.3   3.3.1   D (1)   (1 x 1)   (1)

      3.3.2   primary (1)   (1 x 1)   (1)

      3.3.3   Higher number of pixels was used (1)
              The pixels are smaller (1)
              Close up view (1)
              Better quality camera or lens used (1)
              [ANY ONE]   (1 x 1)   (1)

      3.3.4   Features are clearly visible (accept examples) (2)   (1 x 2)   (2)

      3.3.5   Power line (1)
              Buildings (1)
              [ANY ONE]   (1 x 1)   (1)

      3.3.6   Infrastructure data layer
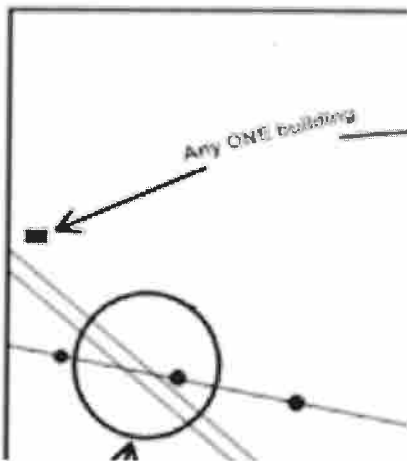
              1 mark for correct reference symbol (relating to QUESTION 3.3.5).
              1 mark for redrawing the power line crossing the road /1 mark for the
              correct position of the building   (2 x 1)   (2)

                                                      TOTAL SECTION B: 30
                                                      GRAND TOTAL: 150