Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

SUBJECT	:	GEOGRAPHY
GRADE	:	11
TERM	:	2
TIME	:	3 HOURS
TOTAL	:	150 MARKS
DATE OF IMPLEMENTATION	:	JUNE 2025
TERM WEIGHTING	:	60%
SBA WEIGHTING	:	20%

THIS QUESTION PAPER CONSISTS OF 16 PAGES INCLUDING COVER

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO SECTIONS:

   SECTION A:
   QUESTION 1: The Atmosphere (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 open between sub-sections 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 2331 CC Phalaborwa and a 1: 10 000 orthophoto map 2331 CC 18 Phalaborwa (North) are provided.
15. The area demarcated in RED/BLACK on the topographic map represents the area covered by the orthophoto map.
16. Show ALL calculations. Marks will be allocated for this.
17. You must hand in the topographic and the orthophoto map to the invigilator at the end of this examination session.

SECTION A: CLIMATE AND WEATHER AND GEOMORPHOLOGY

QUESTION 1: THE ATMOSPHERE

1.1 Refer to the two air pressure cells. Match the descriptions below with either Diagram **A** or Diagram **B**. Write only the question numbers (1.1.1 to 1.1.7) in the ANSWER BOOK, e.g. 1.1.8 B

DIAGRAM A

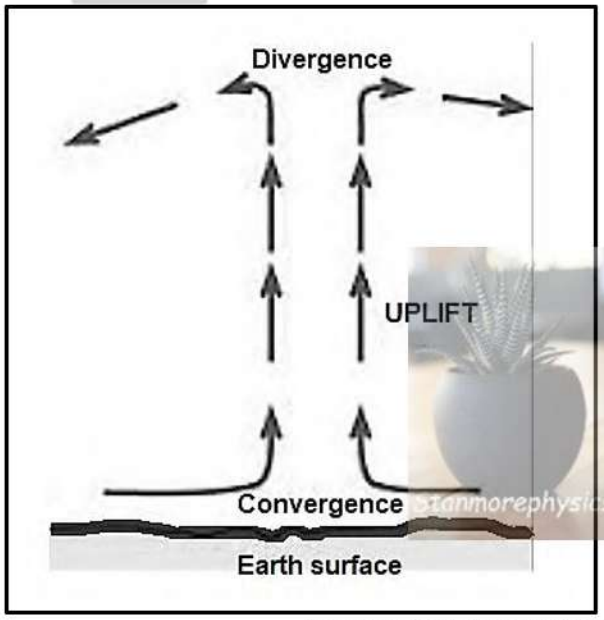
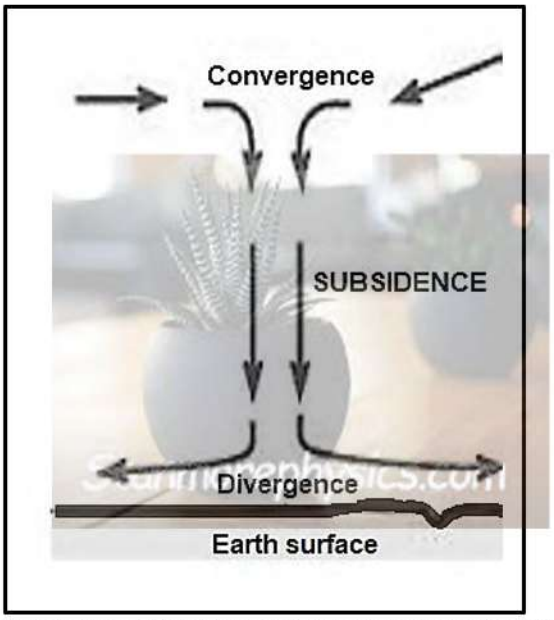


DIAGRAM B



[Source:https://www.shsu.edu/~dl_www/bkonline/131online/f04pressure/04index.htm]

1.1.1 This pressure cell is dominant over the interior of South Africa during winter.

1.1.2 The pressure cell is associated with stable conditions.

1.1.3 The pressure cell is associated with clouds.

1.1.4 This pressure cell is associated with an anticlockwise rotation of air in the Northern Hemisphere.

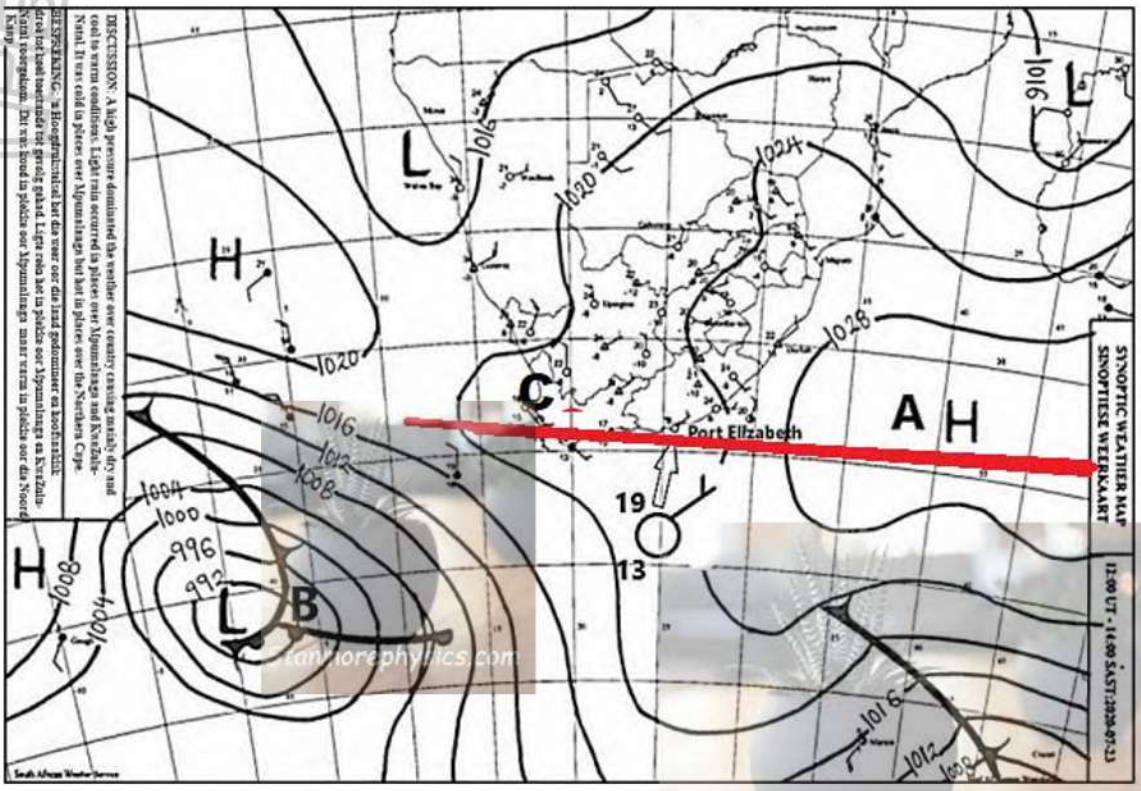
1.1.5 This pressure cell is associated with the Dry Adiabatic Lapse Rate (DALR.)

1.1.6 This pressure cell is associated with ridging.

1.1.7 This pressure cell is located closer to the Inter Tropical Convergence Zone (ITCZ).

(7 x 1) (7)

1.2 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 number (1.2.1–1.2.8) in the ANSWER BOOK, e.g. 1.2.9 A.



[Source: www.weathersa.co.za]

1.2.1 The term *isobar* is best described as …

A the line that joins places with the same rainfall
B the line that joins places with the equal temperature
C the line that joins places with the same air pressure above sea level
D a line drawn on a topographic map to indicate ground elevation or depression

1.2.2 The isobaric interval on the synoptic weather map is …

A 2 hPa
B 4 hPa
C 6 hPa
D 8 hPa

1.2.3 The name of the high-pressure cell at **A** is the …

A South Atlantic Anticyclone
B Kalahari Anticyclone
C South Indian Anticyclone
D Mid-Latitude Cyclone

1.2.4 Line **C** represents a …

A ridge.
B saddle.
C trough.
D isobaric interval.

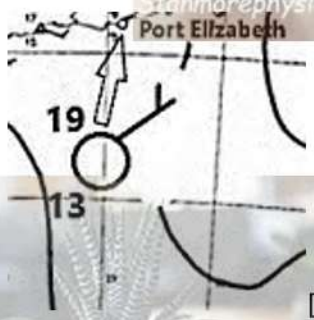
1.2.5 Weather phenomenon **B** is known as a …

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

1.2.6 The movement of air around weather phenomenon **B** is …

A subsidence, convergence, clockwise rotation.
B uplift, divergence, anticlockwise rotation.
C uplift, convergence, clockwise rotation.
D subsidence, divergence, anticlockwise rotation.

1.2.7 The weather conditions at Port Elizabeth are:



[Source: www.weathersa.co.za]

(i) Temperature 13°C, Dew point temperature 19°C
(ii) Wind direction – NW, Wind direction – 5 knots
(iii) Low humidity, Clear sky, no precipitation
(iv) Temperature 19°C, Dew point temperature 13°C

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

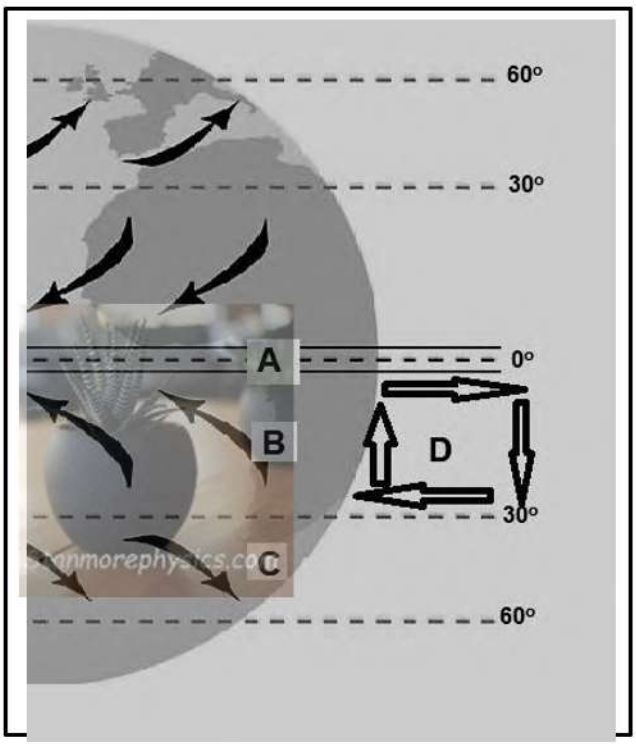
1.2.8 Study the isobars at **B** and describe the pressure gradient and wind speed:

(i) Steep pressure gradient
(ii) Gentle pressure gradient
(iii) High wind speed
(iv) Low wind speed

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

(8 x 1) (8)

1.3 Refer to the diagram on the tri-cellular circulation



[Source:https://www.tutor2u.net/geography/reference/aqa-gcse-geography-weather-hazards-global-pressure-and-surface-winds]

1.3.1 Is the pressure belt at **A** a *high-pressure* or *low-pressure* zone? (1 x 1) (1)

1.3.2 Give TWO reasons for your answer to QUESTION 1.3.1. (2 x 2) (4)

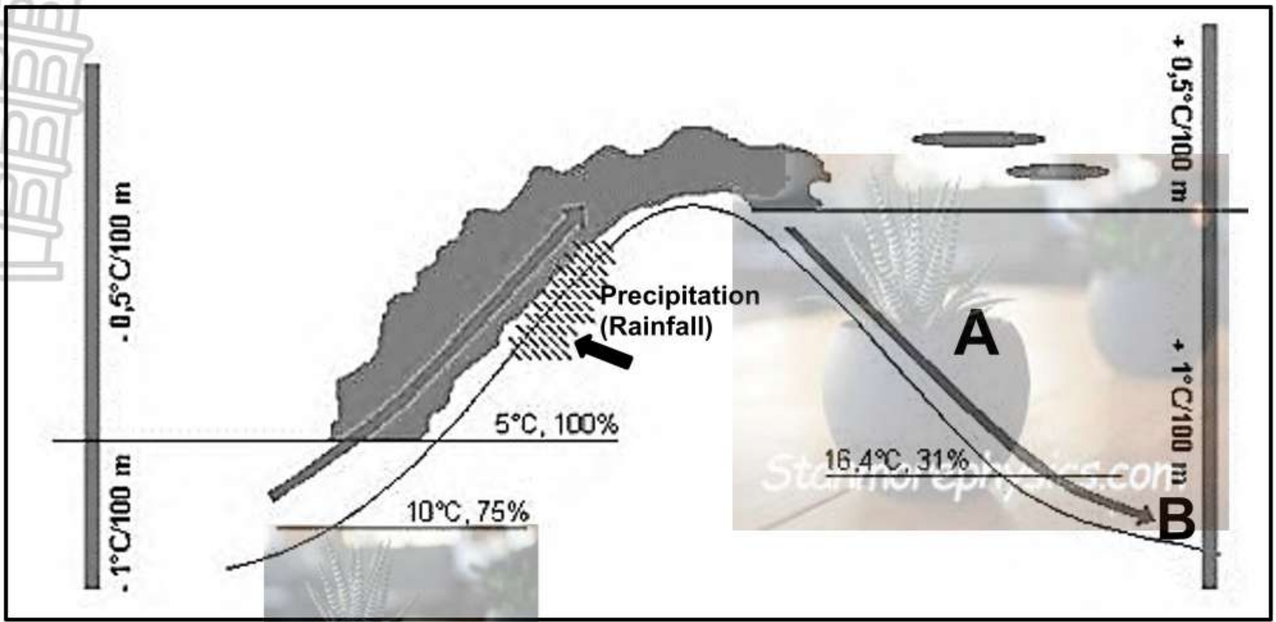
1.3.3 Name the winds marked **B** and **C** (2 x 1) (2)

1.3.4 Describe the vertical movement of air within cell **D**. (1 x 2) (2)

1.3.5 Explain how the wind labelled **C** influences the weather conditions in the Western Cape of South Africa. (3 x 2) (6)

[15]

1.4 Refer to the sketch of a Föhn wind.



[Source: https://sageography.co.za/wiki/grade-11-caps/grade-11-caps-climate-and-weather/2-global-air-circulation/6-winds-related-to-regional-and-local-air-movements-monsoons-and-fohn/]

1.4.1 Define the concept *Föhn wind*. (1 x 2) (2)

1.4.2 Provide the name for a similar wind found in South Africa. (1 x 1) (1)

1.4.3 Account for the formation of precipitation (rainfall) on the windward side of the mountain. (2 x 2) (4)

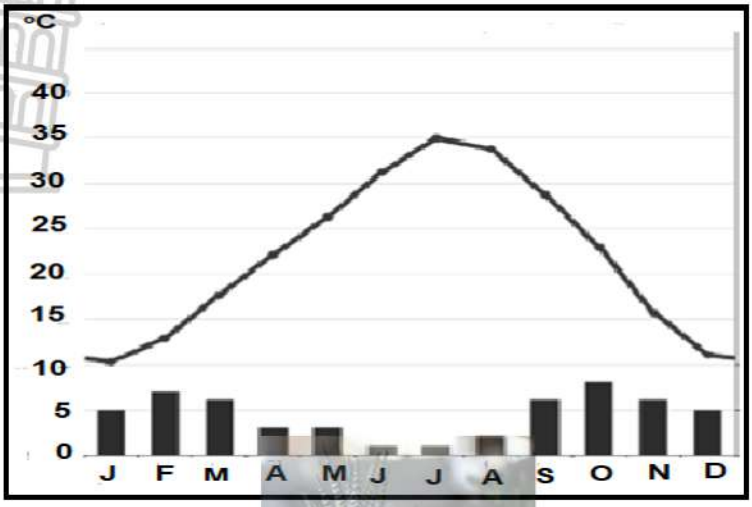
1.4.4 Explain the characteristics of wind **B** as it descends on side **A** of the mountain. (2 x 2) (4)

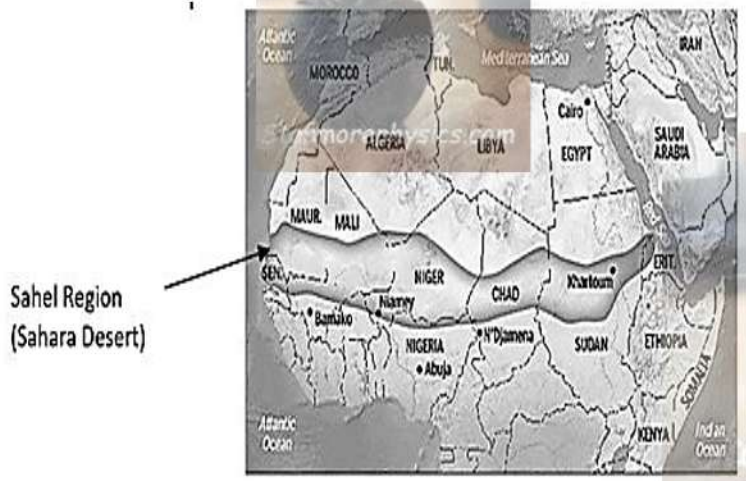
1.4.5 Discuss the weather conditions expected on side **A** of the mountain due to the influence of wind **B.** (2 x 2) (4)

[15]

1.5 Refer to the infographic on desertification.

GRAPHS FOR WEATHER & CLIMATE





Sahel Region (Sahara Desert)

[Source: Adapted https://en.climate-data.org/africa/morocco/]

AFRICA'S AMBITIOUS GREEN BELT PROJECT

The 15 kilometre (9,3 mile) wide Great Green Wall project stretches over 7 775 km from Senegal on the Atlantic to Eritrea on the Red Sea. The aim was to curb the Sahara Desert's spread. But major challenges remain. The change in climate and weather patterns is triggering a rapid spread of the Sahara Desert, invading into lands and surrounding huge lakes, according to climate scientists.

Seven countries of the Sahel region, an area located just south of the Sahara, therefore initiated a project that will see billions of trees planted across 11 countries by 2030, which will serve as buffer zones to stop the desertification.

[Source: from uit www.dw.com]

1.5.1 Define the term *desertification.* (1 x 2) (2)

1.5.2 According to the infographic, what is the main aim of the Great Green Wall project? (1 x 1) (1)

1.5.3 What is the main cause of the rapid spreading of the Sahara Desert? (1 x 1) (1)

1.5.4 Calculate the temperature range (°C) between January and July using the provided climate graph. (1 x 1) (1)

1.5.5 Name TWO human activities that contribute to desertification. (2 x 1) (2)

1.5.6 In a paragraph of approximately EIGHT lines, explain how the Great Green Wall project will have a positive impact on the people living in this region. (4 x 2) (8)

[15]

TOTAL QUESTION: [60]

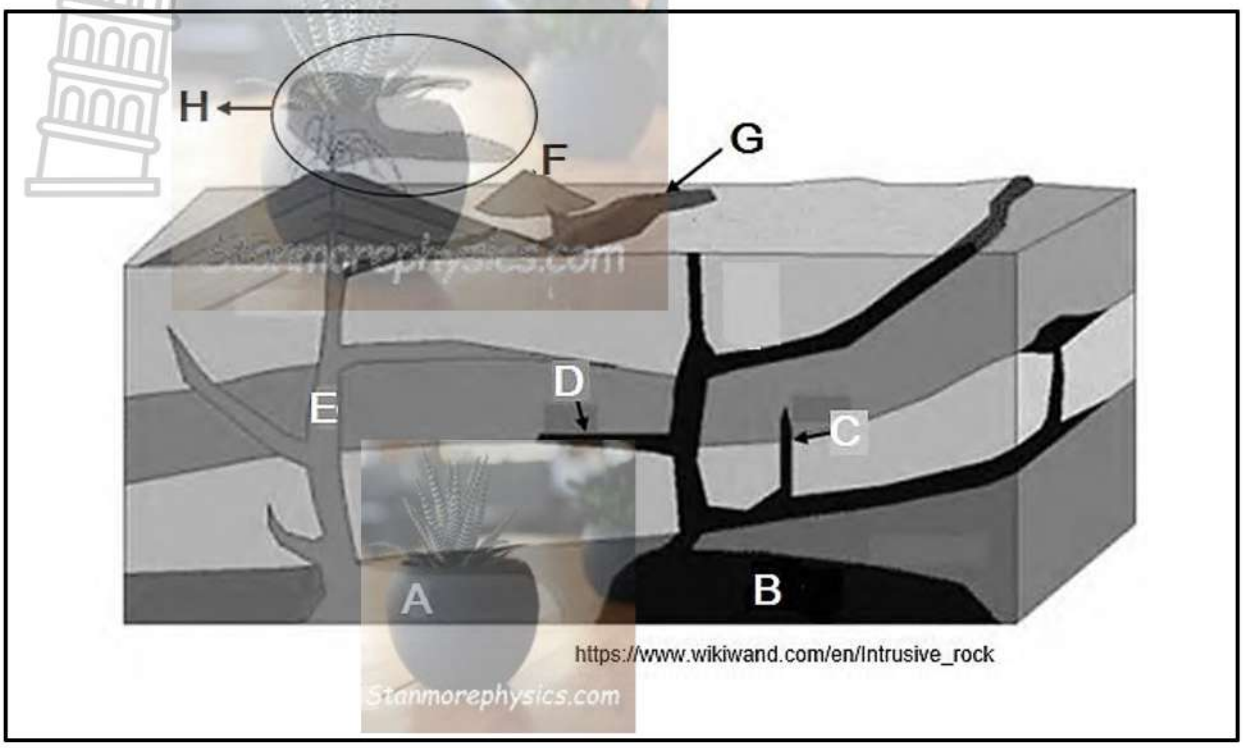
QUESTION 2: GEOMORPHOLOGY

2.1 Choose a term in COLUMN B that matches the description of topography associated with inclined strata in COLUMN A. Write only the letters (A-H) next to the question numbers (2.1.1 to 2.1.7) in the ANSWER BOOK, for example 2.1.8 I.

COLUMN A	COLUMN B
2.1.1 Shows the direction in which the rock layers' dip.	A. Hogsback
2.1.2 Where the layers' dip very gradually at 10º to 25º.	B. Cuesta basin
2.1.3 The scarp slopes face downward, and the dip slopes is directed inward.	C. Scarp slope
2.1.4 It is very steep and forms a cliff face.	D. Cuesta dome
2.1.5 Dipping strata is from 25º to 45º.	E. Homoclinal ridge
2.1.6 The scarp slopes face inward and the dip slopes face outward.	F. Resistant strata
2.1.7 Dipping strata is greater than 45º.	G. Dip slope
	H. Cuesta

(7 x 1) (7)

2.2 Refer the diagram showing igneous intrusions. Match the letters **A** to **H** to each description below. Write down the LETTERS next to the question numbers (2.2.1 – 2.2.8) in your ANSWER BOOK, e.g. 2.2.9 I.



2.2.1 Forms when an enormous mass of magma pushes upwards and solidifies under the earth's surface.

2.2.2 Circular or oval feature made up of small fragments of lava from a single vent.

2.2.3 Consists of fragments of rocks, minerals, and volcanic glass ranging in size.

2.2.4 A horizontal rock layer formed as magma spreads between existing layers of rock.

2.2.5 A large underground pool of molten rock beneath the Earth's surface.

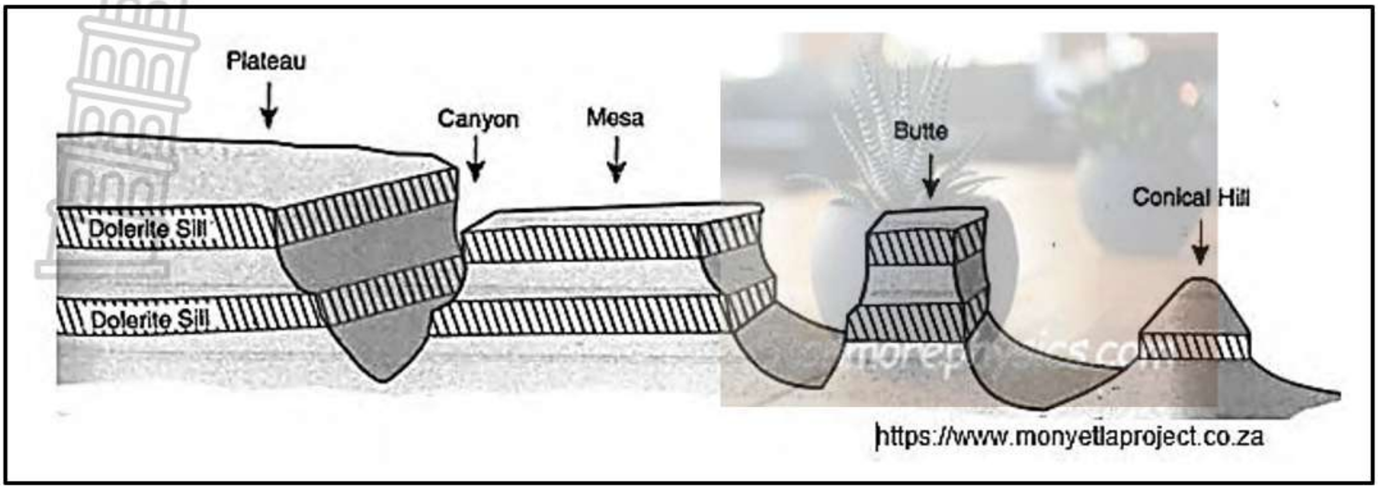
2.2.6 A pipe-like structure through which magma can move, often to the surface.

2.2.7 Molten rock that flows out through fissures or volcanic vents.

2.2.8 A wall-like intrusion that cuts almost vertically across existing rock layers.

(8 x 1) (8)

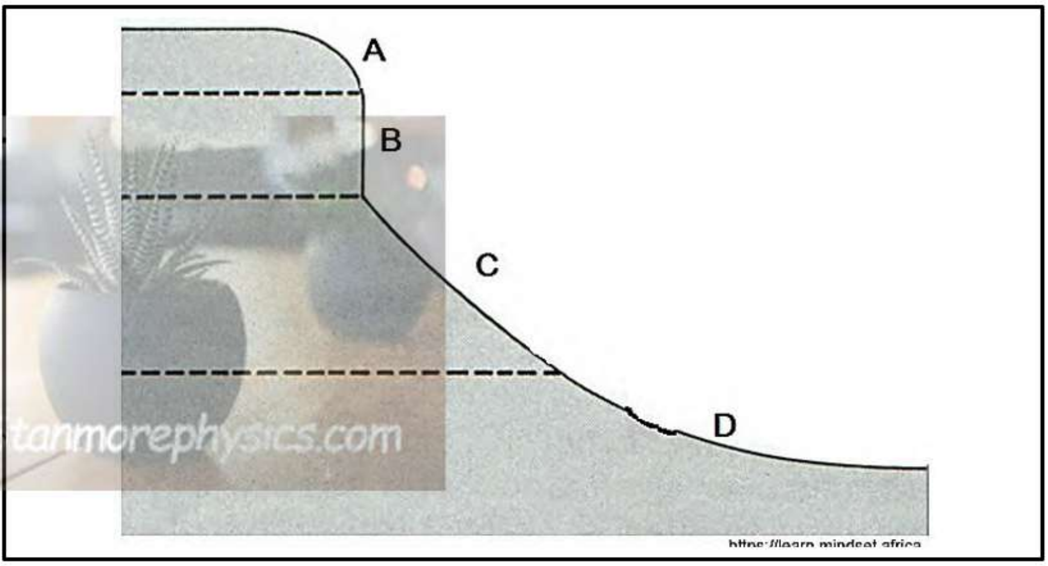
2.3 Refer to the sketch showing horizontal landforms.



2.3.1	Define the concept *canyon*.	(1 x 2)	(2)
2.3.2	Identify the type of rock the cap rock is made off in the sketch.	(1 x 1)	(1)
2.3.3	Give TWO characteristics of a plateau shown in the sketch.	(2 x 1)	(2)
2.3.4	How can people use a plateau?	(1 x 2)	(2)
2.3.5	What is the difference between a *mesa* and a *butte*?	(2 x 2)	(4)
2.3.6	Describe the process involved in the formation of a butte.	(2 x 2)	(4)

[15]

2.4 Refer to the sketch showing slope elements.



2.4.1	What are the names of slope **A** and slope **B**?	(2 x 1)	(2)
2.4.2	Why does slope **A** have only a thin covering of soil?	(1 x 2)	(2)

2.4.3 Why is slope **B** described as being steep? (1 x 2) (2)

2.4.4 (a) Name the slope at point **C**. (1 x 1) (1)

(b) Explain the formation of slope **C.** (1 x 2) (2)

2.4.5 What effect would slope retreat have on slope element **D**? (1 x 2) (2)

2.4.6 Suggest why slope element **D** is suitable for the growth of vegetation. (2 x 2) (4)

[15]

2.5 Refer to the photographs showing igneous features.

Source: https://wcedonline.westerncape.gov.za/documents

2.5.1 Identify the rock type responsible for the formation of the landforms in the photographs. (1 x 1) (1)

2.5.2 Name the volcanic feature labelled as **A**. (1 x 1) (1)

2.5.3 (a) Is the feature at **A** *intrusive* or *extrusive*? (1 x 1) (1)

(b) Provide a reason for your answer to QUESTION 2.5.3 (a). (1 x 2) (2)

2.5.4 Describe the characteristics of feature **B.** (1 x 2) (2)

2.5.5 In a paragraph of approximately EIGHT lines, explain how feature **B** was formed. (4 x 2) (8)

[15]

TOTAL QUESTION: 60

TOTAL SECTION A: [120]

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUE

BACKGROUND INFORMATION ON PHALABORWA

Coordinates: 23°52' S; 31°04' E

Phalaborwa is a town in Limpopo, South Africa. It is located near the confluence of the Ga-Selati River and the Oliphants River, along the western border of the Kruger National Park in the Lowveld. Tourism and wildlife play dominant roles in the life of this town. Attractions, such as the Blyde River Canyon, the Three Rondavels, God's Window, Bourke's Luck Potholes and river cruises on the Oliphants River, make Phalaborwa an important tourist destination in this province.

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

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

ENGLISH	AFRIKAANS
Diggings	Uitgrawings
Golf course	Gholfbaan
River	Rivier
Sewerage works	Rioolwerke
Estate	Landgoed
Salt pan	Soutpan
Nature reserve	Natuurreservaat

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 Phalaborwa is located in the … province.

A Mpumalanga
B Northwest
C Gauteng
D Limpopo (1 x 1) (1)

3.1.2 23 on the index 2331 CC refers to …

A longitude.
B latitude.
C meridian.
D map code. (1 x 1) (1)

3.1.3 Refer to the trigonometrical station in **block E3** on the topographic map. Give the height of the trigonometrical station. (1 x 1) (1)

3.1.4 Refer to the trigonometrical station 6 in **block E3** and the spot height 449 in **block E4** on the topographic map. Calculate the difference in height between the trigonometrical station and the spot height. (1 x 1) (1)

The Question 3.1.4 is Trig station 5 in block E3 and Spot height 499 in block E4 .

3.1.5 Calculate the horizontal distance in meters between the trigonometrical station and spot height mentioned in QUESTION 3.1.4. (2 x 1) (2)

3.1.6 Using the answers from QUESTIONS 3.1.4 and 3.1.5, calculate the average gradient between the two spot heights

Formula: Gradient = Difference in height / VI
Horizontal Distance HE (2 x 1) (2)

3.1.7 Compare your answer to QUESTION 3.1.6 and state the gradient. (1 x 2) (2)

3.2 MAP INTERPRETATION

Refer to natural and constructed features in block **D2** on the topographic map.

3.2.1 (a) Constructed features are (*created by nature* **or** *created by humans*). (1 x 1) (1)

(b) Identify ONE constructed feature found in block **D2** on the topographic map. (1 x 1) (1)

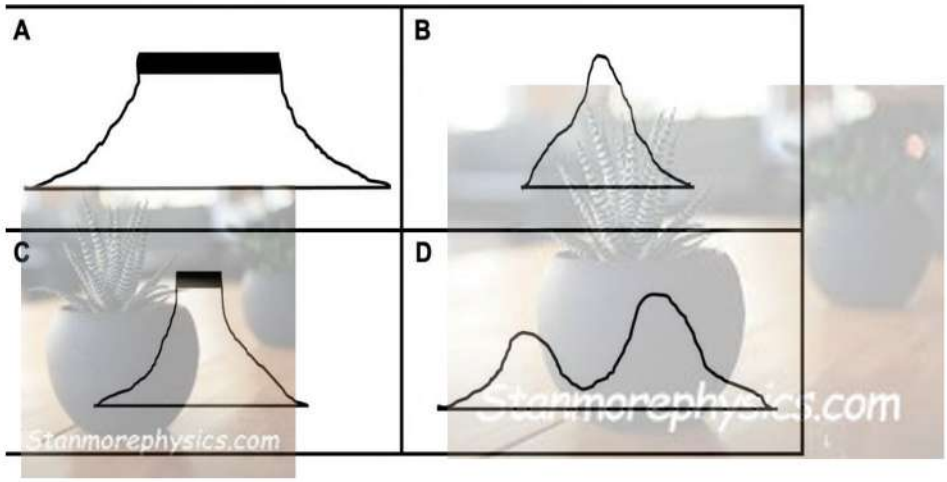
(c) Explain the use/importance of the constructed feature identified in QUESTION 3.2.1 (b). (1 x 2) (2)

Refer to block **E4** on the topographic map.

3.2.2 (a) Is there intervisibility between spot heights **499** and **491** in block **E4.** (1 x 1) (1)

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

3.2.3 Match landform **8** in block **C1** on the orthophoto map with the correct freehand cross-section below (1 x 1) (1)



3.2.4 The landform at QUESTION 3.2.3 is formed from …

A inclined
B vertical
C horizontal
D tilted (1 x 1) (1)

3.2.5 (a) Give the name of landform **8** in block **C1** on the orthophoto map. (1 x 1) (1)

(b) Give the use of the landform evident in QUESTION 3.2.5 (a). (1 x 1) (1)

3.2.6 Give ONE tourist attraction located in the Phalaborwa region. (1 x 1) (1)

3.3 GEOGRAPHIC INFORMATION SYSTEMS (GIS)

3.3.1 ***"Orthophoto images have become one of the most preferred remote sensing methods"***

(a) Define the term *remote sensing*. (1 x 2) (2)

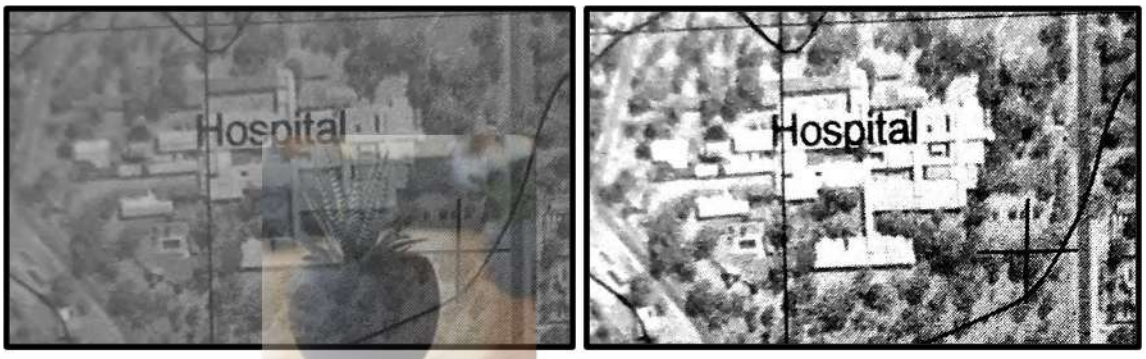
(b) Identify TWO types of technologies that can be used by GIS specialists to capture images during remote sensing. (2 x 1) (2)

Refer to the demarcated area in red of the Orthophoto Map on the topographic map and choose the correct answer for QUESTIONS 3.3.2 (a) and QUESTION 3.3.2 (b).

3.3.2 (a) The hospital is an example of a (*point, line* or *polygon*) feature. (1 x 1) (1)

(b) The location of the hospital is representing (spatial/attribute) data. (1 x 1) (1)

Refer to feature **A** and **B** below.



(c) Between feature **A** and **B** which one represents a higher resolution? (1 x 1) (1)

(d) Give a reason for your answer for QUESTION 3.3.2.(c) (1 x 1) (1)

TOTAL SECTION B: [30]

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MARKING GUIDELINE

THIS MARKING GUIDE CONSIST OF 8 PAGES INCLUDING COVER

QUESTION 1: CLIMATE AND WEATHER

1.1 Pressure cells

1.1.1 B
1.1.2 B
1.1.3 A
1.1.4 A
1.1.5 B
1.1.6 B
1.1.7 A (7 x 1) **[7]**

1.2 Synoptic weather map

1.2.1 C
1.2.2 B
1.2.3 C
1.2.4 A
1.2.5 D
1.2.6 C
1.2.7 D
1.2.8 C (8 x 1) **[8]**

1.3 Tri-cellular circulation

1.3.1 Low pressure (1) (1 x 1) (1)

1.3.2 Air is converging on the surface (2)
Rising air (2)
Air is diverging in the upper air (2) (2 x 2) (4)

1.3.3 **B** – Tropical Easterlies (trade winds) (1)
C – Westerlies winds (tropical westerlies) (1) (2 x 1) (2)

1.3.4 **Vertically:** Warm air rises at the equator due to intense solar heating, creating low pressure (2) (1 x 2) (2)

1.3.5 The westerlies blow between the sub-tropical HP and the Subpolar LP (2)
North westerly – winds in Southern Hemisphere (2)
Blow at a gale force speed (2)
Blow from warm to colder region and increase the temperature of the coastal areas (2)
With the migration of winds during winter (ITCZ), the western Cape is under the influence of the Sub polar LP and SW-winds bring rain to the area (2)
Cause the mid-latitude cyclone (frontal rain) to move over the Western Cape (2)
As the moist air meets the Cape Fold Mountains, it rises and cools, causing orographic rainfall (2)
[Any THREE] (3 x 2) (6)
[15]

1.4 Föhn wind

1.4.1 Warm and dry winds that descends from the leeward slope of the mountain (2)
[CONCEPT] (1 x 2) (2)

1.4.2 Berg wind (1) (1 x 1) (1)

1.4.3 On the windward slope, warm moist air rises over the mountain range and cools down adiabatically (temperature decreases) (2)
As it cools, it reaches the dew point, condensation occurs, and clouds form, resulting in rainfall on the windward side (2) (2 x 2) (4)

1.4.4 Wind **A** is warm and dry (2)
Air is descending at DALR/ as air descends temperature rises with 1°C for every 100m that the air descending (2)
Wind **B** becomes **warmer** as it descends due to adiabatic heating (compression of air) (2).
It also becomes **dry**, since most moisture was lost on the windward side during precipitation (2) (2 x 2) (4)
[Any TWO]

1.4.5 People will experience warm dry weather/ no rain (2)
The leeward side experiences **dry** and **warm** weather due to the descending, heated air (2)
These conditions may lead to **clear skies** and **low humidity**, and in some cases, increased fire risk (2)
[Any TWO] (2 x 2) (4)
[15]

1.5 Desertification

1.5.1 The process where once fertile areas become arid (2) (1 x 2) (2)
[CONCEPT]

1.5.2 … to curb the Sahara Desert spread (1) (1 x 1) (1)

1.5.3 'The change in climate and weather patterns…'(1) (1 x 1) (1)

1.5.4 35°C – 10°C = 25°C (1 x 1) (1)

1.5.5 Overgrazing (1)
Over cultivation (1)
Deforestation (1)
Poor irrigation practice (1)
Subsistence farming (1)
[Any TWO] (2 x 1) (2)

1.5.6 It would restore millions of hectares of fertile lands (2)
Improve the livelihoods of people in area (2)
This would decrease food insecurity / famine in the Sahel (2)
There would be a reduction in land degradation (2)
It would help to reduce conflict in the area (2)
Reduce poverty by creating green jobs planting trees, farming.
There would be jobs created / multiplier effect (2)
It would reduce mass migration from countries in the Sahel to other parts of Africa (2)
It would reduce carbon dioxide and increase oxygen (2)
[Any FOUR] (4 x 2) (8)
[15]

TOTAL QUESTION 1: 60

QUESTION 2: GEOMORPHOLOGY

2.1 Landscapes Features

2.1.1 G
2.1.2 H
2.1.3 B
2.1.4 C
2.1.5 E
2.1.6 D
2.1.7 A (7 x 1) (7)

2.2 Igneous Intrusions

2.2.1 B
2.2.2 F
2.2.3 H
2.2.4 D
2.2.5 A
2.2.6 E
2.2.7 G
2.2.8 C (8 x 1) [8]

2.3 Horizontal landforms

2.3.1 **A canyon** is a deep, narrow valley with steep sides, usually formed by the erosive action of a river cutting through rock over a long period. (2) (1 x 2) (2)

2.3.2 Dolerite (1) (1 x 1) (1)

2.3.3 Hard cap rock (1)
Flat and elevated above sea level (1)
Uniform in their resistance to erosion resulting in flat plateau (1)
Often has steep sides or cliffs (1)
[Any TWO] (2 x 1) (2)

2.3.4 Process fertile soils rich in iron (2)
Tourist attraction for economical gain (2)
Plateaus can be used for farming, livestock grazing, mining (2) (1 x 2) (2)
Recreational activities (zip-line, paragliding accept examples) (2)
[Any ONE]

2.3.5 **A mesa** has a width that is greater than its height (2)
A butte has a height that is greater than it width (2) (2 x 2) (4)

2.3.6 A plateau is first weathered and eroded over time, forming a mesa (2)
Continued erosion around the edges of the mesa reduces its size, eventually forming a narrow, steep-sided butte with a cap rock that resists erosion (2)
Cap rock is reduced from the sides (2)
Back-wasting occurs / parallel retreat of slopes (2)
Undercutting of softer shale under dolerite (2)
Slope erodes parallel to original slope (2)
Slope retains the height (2)
[ANY TWO] (2 x 2) (4)
[15]

2.4 Slope Elements

2.4.1 **A**: Crest/ waxing slope (1) (1 x 1) (1)
B: Cliff/ free face (1) (1 x 1) (1)

2.4.2 It experiences soil creep (2)
The soil/ weathered materials moves downhill under gravity (2)
The soils tend to be washed down the slope by wind and water erosion (2)
[ANY ONE] (1 x 2) (2)

2.4.3 Slope B is a cliff or scarp, formed by weathering and the collapse of material, resulting in a steep vertical or near-vertical angle (2) (1 x 2) (2)

2.4.4 a) Talus/ Scree/ debris (1) (1 x 1) (1)

b) Slope C forms from weathered rock and debris falling from the cliff above and accumulating at the base of the cliff through gravity (2) (1 x 2) (2)

2.4.5 The slope element D (pediment) would increase in length (2)
Slope retreat would cause element D (pediment or lower slope) to extend upslope, making it broader and more gently sloping over time (2) (1 x 2) (2)
[Any ONE]

2.4.6 It is gentle so water infiltrates instead of running off (2)
Soil accumulates here due to downslope movement, providing nutrients and stability for plant growth (fertile soil) (2)
It has more soil accumulated from erosion of other slopes (2)
The gentle gradient enables people to use it for farming (2)
Down the slope where water is available for irrigation (2)
[ANY TWO] (2 x 2) (4)

2.5 **Igneous intrusion and extrusive**

2.5.1 Batholith (1) (1 x 1) (1)
Igneous rock (1)

2.5.2 Granite dome (1) (1 x 1) (1)

2.5.3 a) Intrusive (1) (1 x 1) (1)

b) Intrusive rocks form from molten material (magma) that flows and solidifies underground, where magma cools slowly. Eventfully, the overlying rocks are removed, exposing the granite (2) (1 x 2) (2)

2.5.4 Usually round and smooth when exposed (2)
Consist of core stones (2)
Light in colour (2)
Exposed domes are part of much larger and deeper lying Batholith (2)
[Any ONE] (1 x 2) (2)

2.5.5 Development of tors begins when igneous rock cools down underneath the earth's surface (2)
Crack and joints form when granite cools down (2)
Groundwater seeps through the cracks and chemical weathering takes place during humid conditions (2)
Groundwater also dissolves the mineral in the granite (chemical weathering) (2)
The upper layer is removed (glaciation period), and the core stones of the earth's surface is revealed (2)
Mechanical weathering and erosion remove the surface material, leaving the core stones exposed (2)
Core stones remain on the surface of the earth (2)
[Any FOUR]

(4 x 2) (8)
[15]

TOTAL QUESTION 2: 60

SECTION B
QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES

3.1 MAP SKILLS AND CALCULATIONS

3.1.1 D (1) (1 x 1) (1)

3.1.2 B (1) (1 x 1) (1)

3.1.3 532.2m (1) (1 x 1) (1)

3.1.4 532.2 m – 499 m = 33.2 m (2) (1 x 1) (1)

3.1.5 1.3 cm (1) x 500 m = 650 m (1) RANGE (600 m – 700 m) (2 x 1) (2)

3.1.6 Formula: Gradient = Difference in height / VI
Horizontal Distance / HE

33.2
650 (1) [Substitute Mark]

33.2 / 33.2 1
650 / 33.2 19.57 = 1 : 19,57 (1) (2 x 1) (2)

3.1.7 A gradient of **1:19.57** means that for every **1 unit** of vertical rise, the horizontal distance increases by **19.57 units** (2)/ The slope between the two points is gentle. (1 x 2) (2)

3.2 MAP INTERPRETATION

3.2.1 a) Created by humans (1) (1 x 1) (1)

b) Reservoir (1)
Buildings (1)
Sewage works (1)
Roads (1)
Track and hiking trail (1)
Benchmark (1)
Trig station (1)
Spot height (1)
Powerline (1)
[ANY ONE] (1 x 1) (1)

c) Reservoir store water (1)
Building for shelter (1)
Sewage works for water purification (1)
Roads for transportation (1)
Powerline for electricity (1)
Tracks and hiking trail used when hiking / helps one for finding a way around a place (1)
Trig station and spot height for indication of height (1)

Powerline for carrying electricity (1) (1 x 2) (2)

3.2.2 a) Yes (1) there is intervisibility (1) (1 x 1) (1)

b) There is no obscuring feature (2)
No high lying area/ mountain between the spot height (2)
[Any ONE] (1 x 2) (2)

3.2.3 B (1) (1 x 1) (1)

3.2.4 C (1) (1 x 1) (1)

3.2.5 a) Conical hill (1) (1 x 1) (1)

b) (Kgopolwe) Monument (1) (1 x 1) (1)

3.2.6 Blyde river Canyon / the Three Rondavels (1)
God's window (1)
Bourke's Luck Potholes and river cruises on the Oliphant's river (1)
Kruger National Park (1)
[Any ONE] (1 x 1) (1)

3.3 GEOGRAPHIC INFORMATION SYSTEMS (GIS)

3.3.1 a) Collecting information of the earth without physically contact with the ground (2)
[CONCEPT} (1 x 2) (2)

b) Helicopter (1)
Airplanes (1)
Drones (1)
Satellite (1)
Balloons (1)
[Any TWO] (2 x 1) (2)

3.3.2 a) point (1) (1 x 1) (1)

b) Spatial (1) (1 x 1) (1)

c) B (1) (1 x 1) (1)

d) The image is more clear (1)
Many small pixels (1)
[Any ONE] (1 x 1) (1)
[8]

TOTAL SECTION B: [30]