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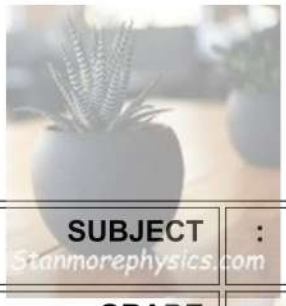


SUBJECT	:	GEOGRAPHY
GRADE	:	11
TOTAL TIME	:	3 hours
TOTAL MARKS	:	150
DATE OF IMPLEMENTATION	:	JUNE 2024

INSTRUCTIONS AND INFORMATION

1. This question paper consists of TWO sections and 14 pages.

SECTION A

QUESTION 1: THE ATMOSPHERE (60 MARKS)

QUESTION 2: GEOMORPHOLOGY (60 MARKS)

SECTION B

QUESTION 3: GEOGRAPHICAL SKILLS AND TECHNIQUES (30 MARKS)

Answer ALL THREE questions.

2. All diagrams are included in the QUESTION PAPER.
3. Leave a line between subsections of questions you answer.
4. Start EACH question at the top of a NEW page.
5. Number the answers correctly according to the numbering system used in this question paper.
6. Do NOT write in the margins of the ANSWER BOOK.
7. Draw fully labelled diagrams when instructed to do so.
8. Answer in FULL SENTENCES, except where you have to state, name, identify
9. Units of measurement MUST be indicated in your final answers, e.g. or list. 1 020 hPa, 14 °C and 45 m.
10. You may use a non-programmable calculator.
11. You may use a magnifying glass.
12. Write neatly and legibly.

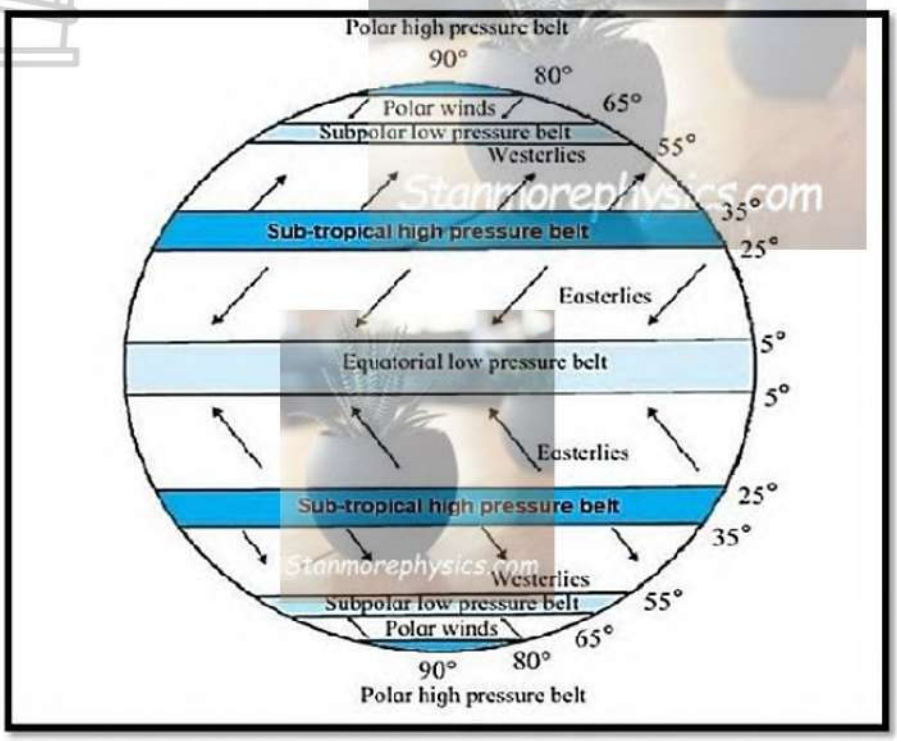
SPECIFIC INSTRUCTIONS AND INFORMATION FOR SECTION B

14. A 1:50 000 topographic map of 3126DD QUEESTOWN and a 1:10 000 orthophoto Map 3126 DD1 QUEENSTOWN 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.

SECTION A: CLIMATOLOGY & GEOMORPHOLOGY

QUESTION 1

1.1 **The FIGURE shows global air circulation**. Match the descriptions below with a Term/concept from the diagram. You may use a term/concept more than once. Write only the term/concept next to question numbers (1.1.1 to 1.1.7) in the ANSWER BOOK, for example 1.1.8 polar belt.



[Source: studyhash.com]

1.1.1 The Ferrell cell is associated with these winds.

1.1.2 ITCZ is associated with this pressure belt.

1.1.3 Very cold winds.

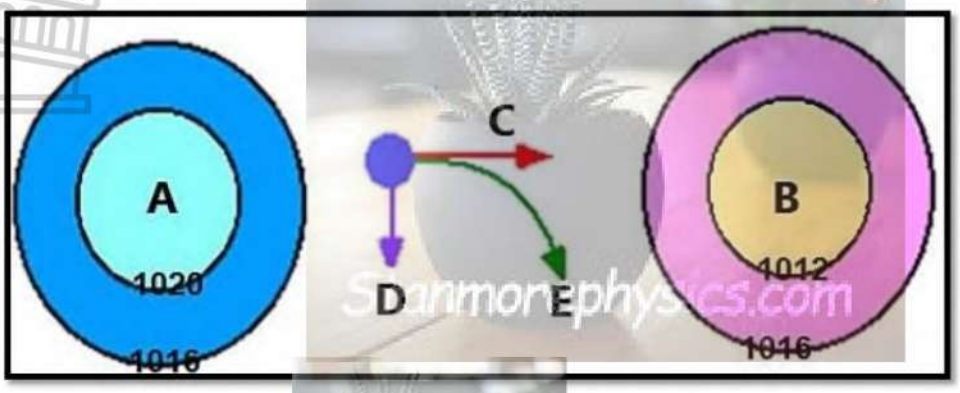
1.1.4 The Hadley cell is associated with these winds.

1.1.5 Very low temperatures in this pressure belt results in snow.

1.1.6 This pressure belt is located between 25 – 35 degrees.

1.1.7 Winds converge at this pressure belt resulting to thunderstorms. (7x1) **(7)**

1.2 Study the FIGURE that shows the relationship between pressure gradient and Coriolis force. Choose the correct word(s)/letters from those given in brackets which will make each statement geographically CORRECT. Write only the word(s)/ letter next to the question numbers (1.2.1 to 1.2.8) in the ANSWER BOOK).



[Source: wwzoloatmos.vicc.ede]

1.2.1 Winds blow from (A to B/ B to A).

1.2.2 (Coriolis/pressure gradient) force determines the speed at which air moves.

1.2.3 A (Coriolis/pressure gradient) force causes wind to be deflected or change direction.

1.2.4 In the northern hemisphere winds deflect to the (left/right).

1.2.4 Subsidence is associated with the (low/high) pressure.

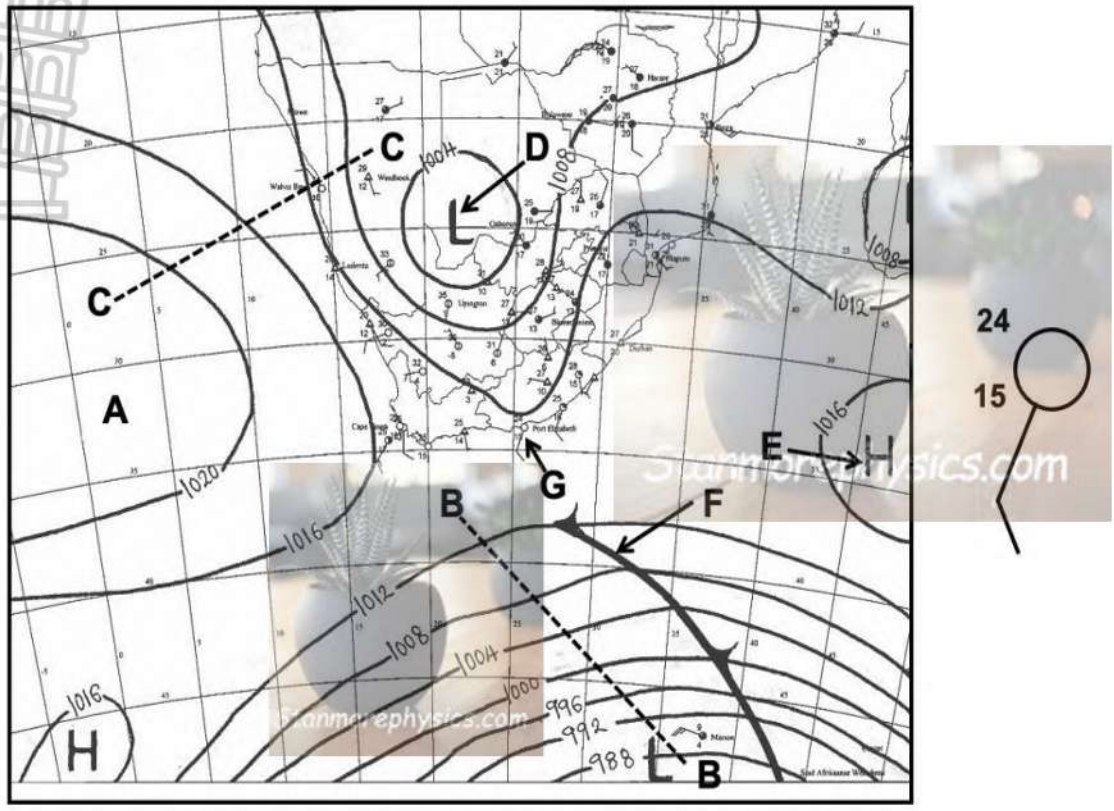
1.2.6 A (geostrophic/berg) wind blows when the pressure gradient and the Coriolis force is equal in strength.

1.2.7 Convergence is associated with a (low/high) pressure.

1.2.8 The pressure gradient is (steep/gentle) when isobars are far apart.

(8x1) **(8)**

1.3 **Refer to the diagram 1.3 below showing SYNOPTIC WEATHER MAP on South Africa.**



Adapted from www.saws.co.za

1.3.1 Does this synoptic weather map show winter or summer conditions? (1x1) (1)

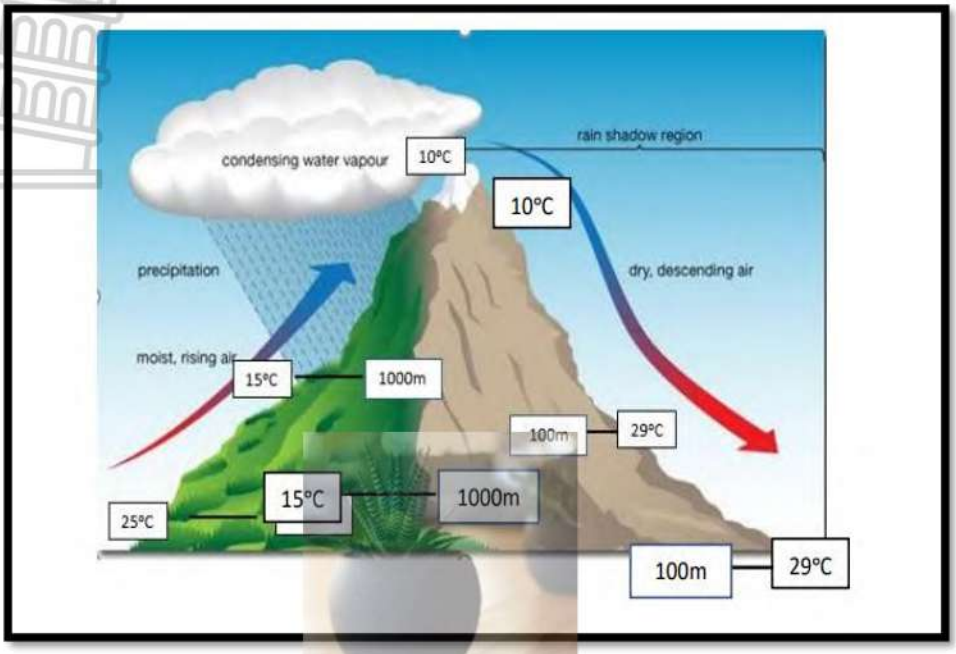
1.3.2 Give TWO reasons for your answer in Question 1.3.1. (2x2) (4)

1.3.3 Is A a high or low pressure? (1x1) (1)
A) Give ONE reason for your answer. (1x2) (2)
B) Identify the pressure gradient at B-B and C-C. (2x1) (2)

1.3.4 Give the following information in regard to weather station G. the station is enlarged on the right side of the synoptic weather map: (5x1) (5)
(a) Cloud cover
(b) Wind direction
(c) Wind speed
(d) Air temperature
(e) Dew point temperature

(15)

1.4 Refer to the diagram 1.4 below showing FOHN winds in ASIA and answer the questions that follow.



Adapted from focus on geography

1.4.1 Define the term Fohn wind. (1x2) (2)

1.4.2 What is the rate of cooling of air as it is evident along the windward side? (1x1) (1)

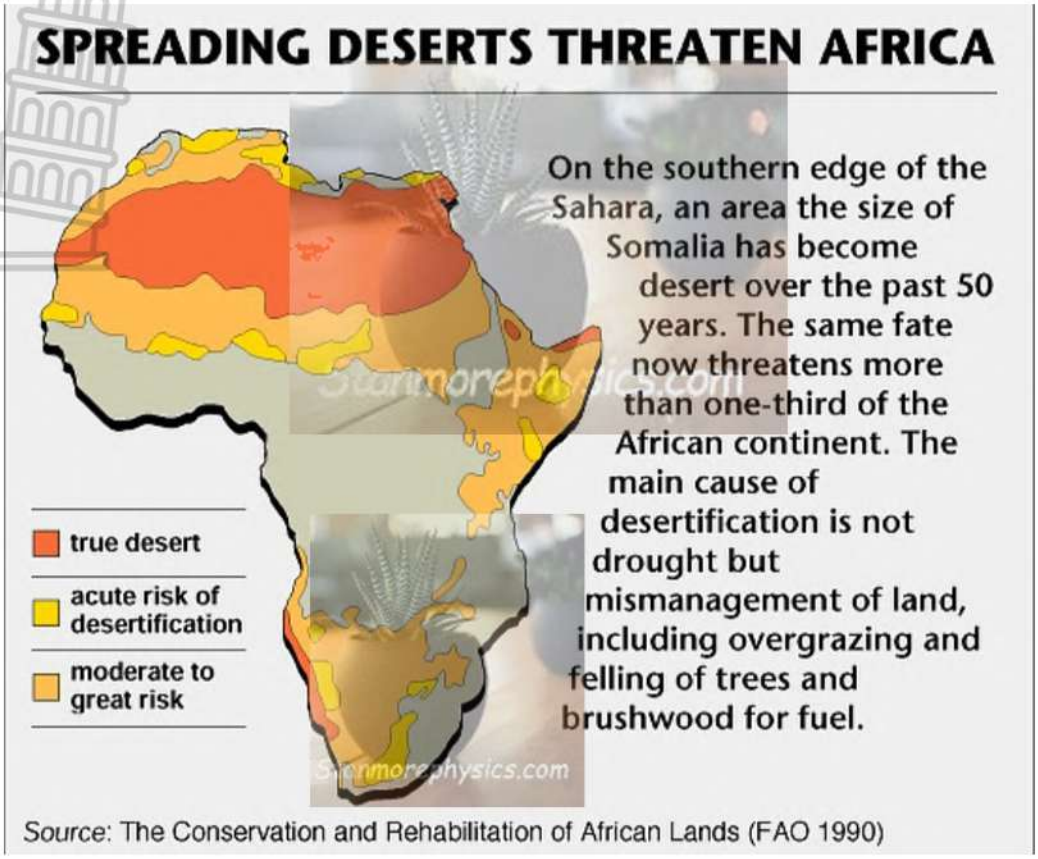
1.4.3 Calculate the difference in tempreture of the fohn wind at the base of the mountain on the windward side and leeward side. (1X2) (2)

1.4.4 Give TWO reasons for the warm air prevailing on the leeward side of the mountain. (2x2) (4)

1.4.5 Account for the precipitation that is experienced on the windward side. (3x2) (6)

(15)

1.5 Refer to the diagram 1.5 below showing desertification on South Africa.



1.5.1 What is desertification? (1X2) (2)

1.5.2 State one way in which humans contribute to desertification. (1x1) (1)

1.5.3 Discuss TWO effects of desertification on the economy of South Africa. (2x2) (4)

1.5.4 Write a paragraphy of approximately EIGHT lines in which you suggest sustainable ways to prevent and reverse desertification in Africa. (4x2) (8)

[60]

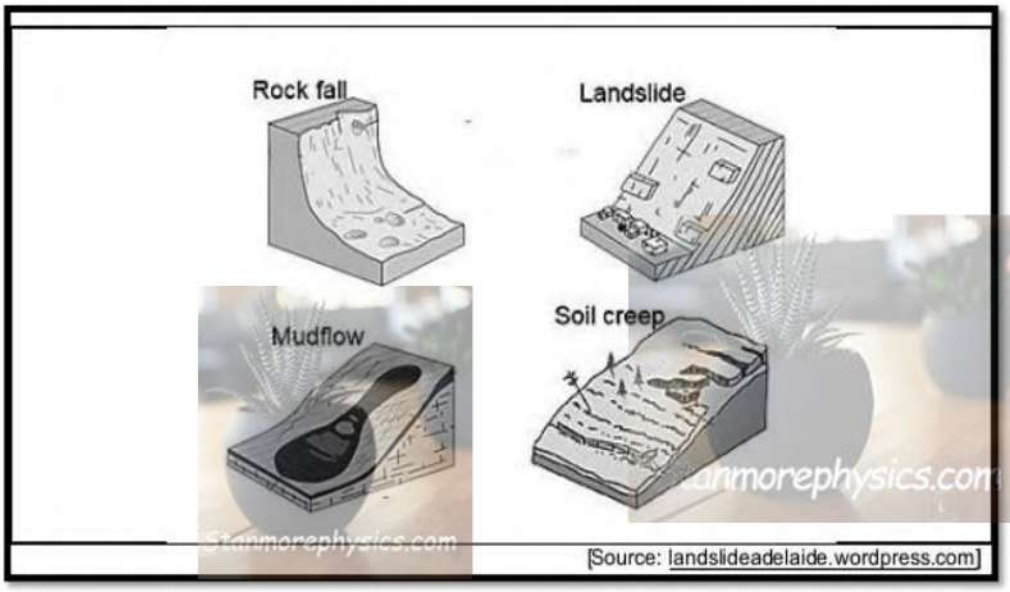
QUESTION 2

2.1. Choose a term in COLUMN B that matches the description of the topography associated with the inclined strata in COLUMN A. Write only the letter (A-H) next to the question numbers (2.1.1 to 2.1.7) in the answer book, for example 2.2.8 Z.

	COLUMN A	**COLUMN B**
2.1.1	Scarp slope faces inwards, and the dip slope faces outwards.	A) Homoclinal shifting
2.1.2	Steep slope of a homoclinal ridge.	B) Cuesta
2.1.3	Dipping strata is more than 45°.	C) Cuesta dome
2.1.4	Gentle slope of a homoclinal ridge.	D) Scarp
2.1.5	Yields groundwater if rocks are permeable.	E) Dip
2.1.6	Describes a asymmetrical ridge.	F) Cuesta basin
2.1.7	Dipping strata lies at an angle of 10° – 25°.	G) Hogback
		H) Homoclinal ridge

(7 x 1) **(7)**

2.2. Refer to the FIGURE below, which shows different types of mass movement. Match the descriptions below with the kinds of mass movements in the sketch. Choose the answer and write only the kind of mass movement next to the question numbers (2.2.1 to 2.2.8) in the ANSWER BOOK, for example 2.2.9 SOIL CREEP. You may choose the same kind of mass movement more than once.



2.2.1 Rapid flow of mixtures of rock or soil and water

2.2.2 Curved tree trunks and tilted fences are the effects

2.2.3 Most rapid kind of mass movement

2.2.4 Common in arid and semi- arid areas

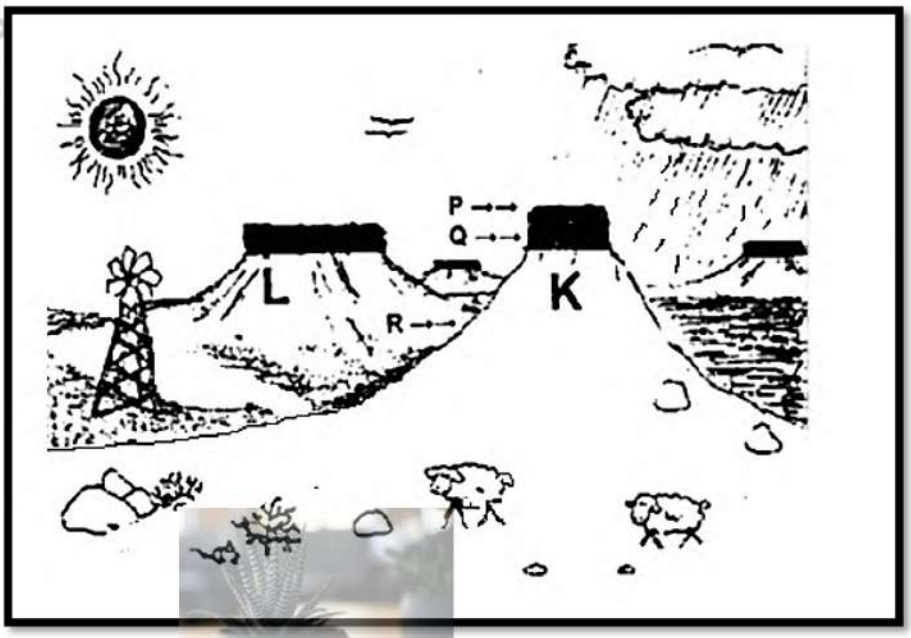
2.2.5 Earthquakes can trigger this kind of mass movement

2.2.6 Slowest kind of mass movements

2.2.7 A combination of slumps and debris flow

2.2.8 Originates at steep cliff faces (8x1) **(8)**

2.3 Refer to figure 2.3 below showing landforms associated with horizontal strata and answer the following questions.



Examiner's sketch

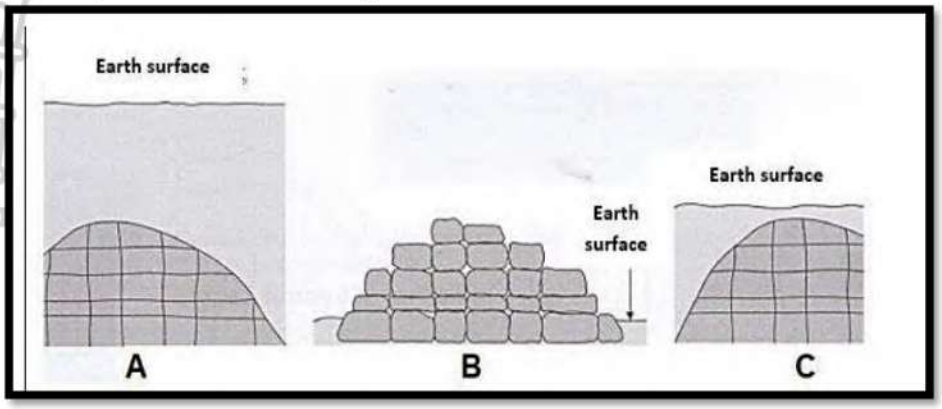
2.3.1 Identify landforms K and L respectively. (1x2) (2)

2.3.2 Compare landform K and L with one another. Indicate ONE similarity and ONE difference between the two. (2x2) (4)

2.3.3 How does basaltic plateaus originate? (2x2) (4)

2.3.4 Evaluate the economic importance of horizontal landscapes like basaltic plateaus. (2x2) (4)

2.4 Refer to figure 2.4 below showing structural landscapes that developed from massive igneous strata.



Examiner's sketch

2.4.1 Predict which TWO types of weathering processes may be responsible for the formation of tors. (2x1) (2)

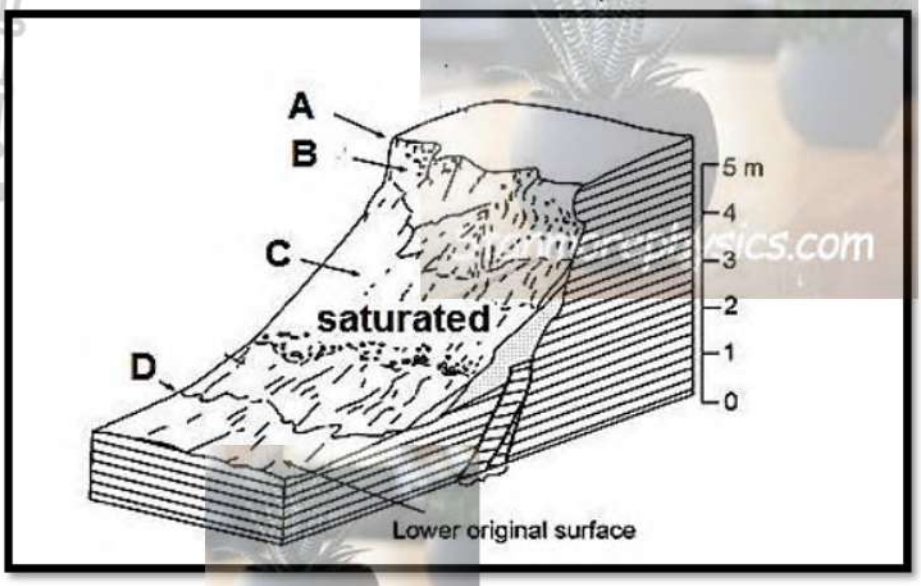
2.4.2 Describe TWO characteristics of the granite rock from which the above-mentioned landform developed. (2x2) (4)

2.4.3 Organise the THREE stages from FIGURE 2.4 in the correct order of development, by writing down only the alphabetical letters. (1x2) (2)

2.4.4 Describe ONE way in which this landscape can be used economically. (1x2) (2)

2.4.5 Describe the characteristics of a Tors. (3x2) (6)

2.5 Refer to FIGURE 2.5 below that shows the typical SLOPE ELEMENTS/FORMS associated with a slope.



Examiner's sketch

2.5.1 Name the slope elements A to D. (4x1) (4)

2.5.2 What caused the different slope elements to develop? (1x1) (1)

2.5.3 A farmer bought a farm with a butte with prominent slope elements. Advise the developer how can he utilise slope element B to generate tourism activities on the farm. (1x2) (2)

2.5.4 Discuss **ONE** characteristic of **EACH** of the slope elements. (4x2) (8)

[60]

SECTION B: GEOGRAPHICAL SKILLS AND TECHNIQUES

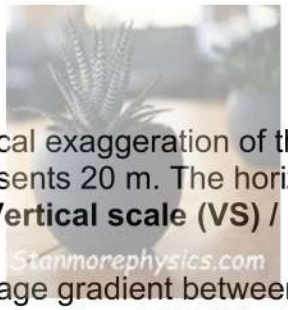
QUESTION 3: MAP SKILLS AND CALCULATIONS

3.1.1 The map index west of the topographic map 3126 DD Queenstown is … (1x1) (1)

A 3126 DB
B 3126 DA
C 3126 DC
D 3126 CD

3.1.2 The largest rectangular feature F in block E3 on the orthophoto map is a/an … (1x1) (1)

A industrial building
B school building
C police station
D farm building.



3.1.3 Calculate the vertical exaggeration of the map if the vertical scale of the map is 1 cm represents 20 m. The horizontal scale is 1:50 000. (3x1) (3)
Use the formula: **Vertical scale (VS) / Horizontal scale**

3.1.4 Calculate the average gradient between spot height 1567 (Block D2) and Contourline 1420 (Block D4) on the orthophoto map. State the meaning of the gradient answered.

Show ALL calculations. Marks will be awarded for calculations.
Formula: **Average gradient = vertical interval (VI) / Horizontal equivalent (HE)**

(5x1) (5)

3.2 MAP INTERPRETATION

Various options are provided as possible answers to QUESTIONS 3.2.1 and 3.2.2. Choose the answer and write only the letter (A–D) next to the question numbers (3.2.1 and 3.2.2) in the ANSWER BOOK.

3.2.1 What is the feature in block E5 marked 11 on the orthophoto map? (1x1) (1)

A Sewage works
B Dam
C Sports ground
D Cemetery

3.2.2 a) The general direction in which the river in block C1 on the topographic map flows is … (1x1) (1)

A south
B north
C north-east
D south-west.

b) Give a reason for your answer to the above (3.2.2 a) question (1x2) (2)

3.2.3 The mapped area receives seasonal rainfall. Give ONE piece of evidence from the topographic map to substantiate the statement. (1x1) (1)

3.2.4 a) Which cell in the tri-cellular model of the global air circulation affects the climate of Queenstown? (1x1) (1)

b) Give a reason for your answer to QUESTION 3.2.4(a). (1x2) (2)

3.2.5 a) What type of mass movement could possibly take place in block D1 on orthophoto map? (1x1) (1)

b) Suggest ONE SOCIAL IMPACT that can be caused by the mass movement named in QUESTION 3.2.5(a). (1x2) (2)

3.3 **GEOGRAPHICAL INFORMATION SYSTEMS**

3.3.1 Is this topographical map a vector or Raster data? (1x1) (1)

3.3.2 Give a reason for your answer on question 3.3.1. (1x2) (2)

3.3.3 Identify the following spatial objects in block A2:
A Lines
B Points
C Polygons (1x3) (3)

3.3.4 How can GIS assist the farmers about the climate of QUEENSTOWN? (1x2) (2)

[30]

END

basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

EASTERN CAPE PROVINCE

NATIONAL SENIOR CERTIFICATE

GRADE 11

GEOGRAPHY JUNE EXAMINATION

2024

MARKING GUIDELINE

TOTAL MARKS: 150

THIS MARKING GUIDELINE CONSISTS OF 8 PAGES INCLUDING THE COVER PAGE.

QUESTION 1

1.1 Global air circulation

1.1.1 westerlies (1)
1.1.2 equatorial low pressure belt (1)
1.1.3 polar winds (1)
1.1.4 tropical easterlies (1)
1.1.5 polar high pressure belt (1)
1.1.6 subtropical high pressure belt (1)
1.1.7 equatorial low pressure belt (1) (7)

1.2 Relationship between pressure gradient and Coriolis force

1.2.1 A to B (1)
1.2.2 pressure gradient (1)
1.2.3 Coriolis (1)
1.2.4 Right (1)
1.2.5 High (1)
1.2.6 Geostrophic (1)
1.2.7 Low (1)
1.2.8 Gentle (1)

(8)

1.3 SYNOPTIC WEATHER MAP on South Africa

1.3.1 Summer (1) (1)
1.3.2 1. thermal low in the interior (2)
2. high pressure ridging away from continent (2)
3. cold front moving away from continent (2)
(Any TWO) (4)
1.3.3 a) High pressure (1) (1)
b) Isobaric intervals are increasing towards the center (2) (2)
c) (b-b steep), (c-c- gentle) (2) (2)

1.3.4 Cloud cover = 0/8 (1)
Wind direction = south west (1)
Wind speed = 10 knots (1)
Air temperature = 24 degrees Celsius (1)
Dew point temperature = 15 degrees Celsius (1) (5)

1.4 FOHN winds

1.4.1 Are winds that are warm, dry and gusty that blow from the windward side of the mountain (high pressure) to the leeward side of the mountain (low pressure) (2) (2)

1.4.2 10 degrees Celsius / 5 degrees Celsius (1)

1.4.3 Windward side = 10 degrees Celsius (1) (1)
Leeward side 19 degrees Celsius (1) (1)

1.4.4 As the air descends, it is heated by the dry adiabatic lapse rate (1 degree / 100m) (2)
The air is also compressed at the leeward side as it moves downwards (2) (4)

1.4.5 -The warm moist air that comes from the ocean rises on the windward side of the mountain at the DALR of (1 degree Celsius after every 100m rise) (2)
-It cools to a point where dew point temperature is reached, which is where condensation (cloud formation) occurs (2)
-After dew point temperature is reached, the air cools at the WALR (0,5 degrees Celsius after every 100m rise) (2)
-When the condensation and WALR occur, rain fall occurs on the windward side (2)
(Any THREE) (6)

1.5 Desertification on South Africa

1.5.1 The process which turns productive land into non-productive desert because of poor land-management (2) (2)

[Concept]

1.5.2 - Overgrazing (1)
- Constructing boreholes, windmills and water points (1)
- Farming marginal land (1)
- Poor grazing management (1)

- Incorrect irrigation practices (1)
- Population increase the amount of water usage (1)

(Any ONE) (1)

1.5.3 - Desertification reduces the ability of land to support life (2) (2)
- Affect domestic animals and agricultural crops (2) (2)
- Reduction food (2) (2)
- Poverty sets in (2) (2)

(Any TWO)

1.5.4 - The number of animals on the land must be reduced (2)
- Reseeding may be necessary in badly degraded areas (2)
- Farmers should change farming methods to suit the land and soil (2)
- Good land management in semi-arid areas (2)
- Take part in the activities of conservation groups. (2)
- Bring overgrazing and land mismanagement to the attention of authorities (2) (8)
- Set up schemes to save water in your community (2)

[Any FOUR. Accept other sustainable strategies]

QUESTION 2

2.1 Topography associated with the inclined strata

2.1.1 Cuesta dome (C) (1)
2.1.2 Scarp (D) (1)
2.1.3 Hogsback (G) (1)
2.1.4 Dip (E) (1)
2.1.5 Cuesta basin (F) (1)
2.1.6 Homoclinal ridge (H) (1)
2.1.7 Cuesta (B) 91) (7)

2.2. Mass movement

2.2.1 Mudflow (1)
2.2.2 Soil creep (1)
2.2.3 Landslide (1)
2.2.4 Soil creep (1)
2.2.5 Rock fall (1)

2.2.6 Soil creep (1)

2.2.7 Landslide (1)

2.2.8 Rockfall (1)

(8)

2.3 Landforms associated with horizontal strata

2.3.1 K – butte (1) (1)

L – mesa (1) (1)

2.3.2 DIFFERENCES

K – height is longer than width (2) (2)

L – width Is longer than height (2)

SIMILARITIES

Both landforms have flat tops (2) (2)

2.3.3 Layers of rock that are parallel to the earth's surface (2) (2)

Layers are separated by bedding plains (2) (2)

Rock that have many joins (2) (2)

Volcanic eruptions that form layers of successive basaltic lava (2) (2)

(Any TWO)

2.3.4 Tourist attraction (2) (2)

a source of income (2) (2)

2.4 Structural landscapes that developed from massive igneous strata

2.4.1 Chemical (1) (1)

Mechanical (1) (1)

2.4.2 Hard, resistant (2)

Seams and tears occur (2)

Susceptible to weathering (2)

Susceptible to exfoliation or peeling of rock layers (2) (4)

(Any TWO)

2.4.3 A – C – B (2) (2)

2.4.4 Can be used to attract tourists (2) (2)

2.4.5 Isolated, exposed pile of rocks (2)

Rocks are rounded stacked on top of each other (2)

Rocks only joined at bottom (2)

Granite or dolerite (2) (6)

(Any THREE)

2.5 Slope elements

2.5.1 A - crest/waxing slope

B - cliff/free face/scarp

C - talus/scree/debris/constant slope

D - Pediment (4)

2.5.2 Because of the difference in the resistance of the horizontal rock strata (1)

2.5.3 Can be used for mountain climbing, mountain trails, Ab sailing (2)

2.5.4 A – Convex (2)

Soil creep (2)

Top of slope (2)

B – Nearly vertical slope (2)

Exposed rock (2)

C - Consist of weathered material (2)

Angle of approximately 35° (2)

Slope remains constant (2)

D – Bottom of slope (2)

Concave shape (2)

Gentle slope (2)

Covered with soil layer (2)

Fertile soil (2) (8)

(Any ONE of each slope element)

SECTION B: GEOGRAPHICAL SKILLS AND TECHNIQUES

Question 3

3.1 **MAP SKILLS AND CALCULATIONS**

3.1.1 C (1) (1)

3.1.2 D (1) (1)

3.1.3 VE= VS/HS

20m x 100= 2000m (1)

1: 2 000

1:50 000

1/2000

1/50 000

1 x 50 000

2000 X 1 (1)

50 000 / 2000

25 times Bigger than horizontal scale (1)

(3)

3.1.4 Gradient = $\frac{VI}{HE}$

VI = 1567m – 1420m = 147m (1)

HE = 9.6 cm X 100 = 960m (1)

$\frac{147m}{960m} \quad \frac{147m}{147\ m}$ (1) $= \frac{1}{6.5}$ (1)

G =1: 7 (1)

Steep (1)

(5)

3.2 **MAP INTERPRETATION**

3.2.1 C (1) (1)

3.2.2 a) A (1) (1)

b) streams join downstream (2)

Contour lines point upstream (2) (2)

(Any ONE)

3.2.3 Non - Perennial rivers (1) (1)

3.2.4 a) Ferrel cell (1) (1)

b) South Africa lies on the 30° line of latitude, which is mostly influenced by the ferrel cell and westerlies winds (2) (2)

3.2.5 a) Rockfall (very steep slopes) (1) (1)

b) Road closure (2)
Damage properties (cars, settlements, house)
Kill or injure people (2)
(Any ONE) (2)

3.3 GEOGRAPHICAL INFORMATION SYSTEMS

3.3.1 Vector (1) (1)

3.3.2 Uses points, lines and polygons (2) (2)

3.3.3 Point = reservoir (1) Windpump (1)
(Any ONE)
Line = Fence (1) Wall (1) Non-perennial streams (1)
(Any ONE)

Polygon = Perennial water (1) cultivated lands (1)

(3)

3.3.4 Satellite images can inform authorities about upcoming weather conditions using remote sensing (2)

[30]

END