GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PREPARATORY EXAMINATION

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10781

GEOGRAPHY

PAPER 1

TIME: 3 hours

MARKS: 225

17 pages + an addendum of 14 pages

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Answer ANY THREE questions of 75 marks each.
3. All diagrams are included in the ADDENDUM.
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. Number the answers in the CENTRE of the line.
7. Do NOT write in the margins of the ANSWER BOOK.
8. Illustrate your answers with labelled diagrams, where possible.
9. Write neatly and legibly.

SECTION A: CLIMATE, WEATHER AND GEOMORPHOLOGY

QUESTION 1

1.1 Refer to FIGURE 1.1, showing a cross section of a tropical cyclone. Choose the correct word(s) from those given in brackets to make the statements TRUE. Write only the word(s) next to the question numbers (1.1.1 to 1.1.7) in the ANSWER BOOK, for example 1.1.8 Rising air.

1.1.1 The pressure system depicted in FIGURE 1.1 is a (high pressure / low pressure) system.

1.1.2 The sea surface temperature to sustain this pressure system would need to be (above / below) 27 degrees Celsius.

1.1.3 The cyclonic surface flow indicates that this pressure system occurred in the (northern / southern) hemisphere.

1.1.4 The general direction of movement of this pressure system is (west to east / east to west).

1.1.5 The cloud formation in the dangerous semi-circle (forward left hand quadrant) are (cumulonimbus / cirrus) clouds.

1.1.6 Clear conditions in the eye of the cyclone results from the (subsidence / rising) of air.

1.1.7 This pressure system is in the (mature / initial) stage of development.

(7 x 1) (7)

1.2 The following descriptions indicate factors which influence the development of specific drainage patterns. Indicate which drainage pattern refers to each of the following descriptions. Write only the question numbers (1.2.1 to 1.2.8) and the answer in your ANSWER BOOK.

1.2.1 The drainage pattern that develops in areas of alternating soft and resistant rock.

1.2.2 The drainage pattern where tributaries flow into a basin.

1.2.3 A drainage pattern that is generally found in areas of inclined rock strata, which causes the tributaries to meet the main stream at right angles.

1.2.4 A drainage pattern that develops when tributaries join the main river at acute angles.

1.2.5 A dome causes the development of this drainage pattern.

1.2.6 A drainage pattern that is found in areas of steeply folded bedrock.

1.2.7 Highly jointed bedrock causes the formation of this drainage pattern.

1.2.8 The drainage pattern that develops when a pre-existing drainage pattern is disrupted, e.g. by glaciers. (8 x 1) (8)

1.3 FIGURE 1.3 shows the location of anti-cyclones over South Africa.

1.3.1 Identify the anti-cyclonic systems labelled **A** and **B** in FIGURE 1.3. (2 x 1) (2)

1.3.2 Describe the change in location of these anti-cyclonic systems from summer to winter. (1 x 2) (2)

1.3.3 Explain the impact that the position of anti-cyclonic system **A** will have on rainfall over the Western Cape in winter. (2 x 2) (4)

1.3.4 Evaluate the positive and negative impact that rainfall conditions during winter will have on eco-tourism in the Western Cape region. (3 x 2) (6)

1.4 Refer to FIGURE 1.4 showing temperature differences between a rural an urban area.

1.4.1 Define the term *urban heat island.* (1 x 1) (1)

1.4.2 Identify a structural (building) characteristic of the urban area that will influence the development of an urban heat island. (1 x 1) (1)

1.4.3 Differentiate between the heat absorption in the city and the rural area. (1 x 2) (2)

1.4.4 Explain how the structural (building) characteristics mentioned in QUESTION 1.4.2 results in the difference in heat absorption and retention between rural and urban areas. (2 x 2) (4)

1.4.5 In a paragraph of approximately EIGHT lines, discuss how heat absorption in the city impacts negatively on the health of its inhabitants (people living in the city) and give sustainable solutions to these negative impacts. (4 x 2) (8)

1.5 FIGURE 1.5 is an illustration of a fluvial feature.

1.5.1 In which stage of a river do rapids mainly occur? (1 x 1) (1)

1.5.2 Name the dominant type of erosion that occurs at this stage of a river, identified in QUESTION 1.5.1. (1 x 1) (1)

1.5.3 Explain the effect that the type of erosion that you have identified in QUESTION 1.5.2 will have on the shape of the river valley. (1 x 2) (2)

1.5.4 Why is a rapid described as a temporary base level of erosion? (1 x 2) (2)

1.5.5 Describe what would happen to the temporary base level if the rate of erosion continues. (1 x 2) (2)

1.5.6 In a paragraph of approximately EIGHT lines, suggest ways in which rapids can be exploited for economic gain. (4 x 2) (8)

1.6 FIGURE 1.6 shows the process of river capture over a long period of time.

1.6.1 Define the term *river capture.* (1 x 1) (1)

1.6.2 Indicate which river illustrated in FIGURE 1.6 is the captor and captured stream respectively. (2 x 1) (2)

1.6.3 (a) Name the type of erosion that lengthened the captor stream. (1 x 1) (1)

(b) Describe how the erosion mentioned in QUESTION 1.6.3(a) lengthened the captor stream. (1 x 2) (2)

1.6.4 Explain the impact of river capture on the volume of water in the Dawson River. (2 x 2) (4)

1.6.5 Comment on the impact that the change in velocity will have on the rate of deposition in the Dawson River. (2 x 2) (4)

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QUESTION 2

2.1 Refer to FIGURE 2.1 showing an extract from a synoptic weather map. Provide a term / phrase for the following climatological descriptions. Write only the question numbers 2.1.1 to 2.1.8 and the answer in your ANSWER BOOK, for example 2.1.9 High Pressure.

2.1.1 The type of front indicated at **B**

2.1.2 The type of clouds that generally precede feature **B**

2.1.3 The wind direction in Port Elizabeth

2.1.4 The dew point temperature in Port Elizabeth

2.1.5 The air temperature in Port Elizabeth

2.1.6 The type of low pressured at **D**

2.1.7 The atmospheric pressure reading at **A**

2.1.8 The isobaric pattern indicated by line **C**

(8 x 1) (8)

2.2 Choose the correct word(s) from those given in brackets to make the geomorphological statements TRUE. Write only the word(s) next to the question numbers (2.2.1 to 2.2.7) in the ANSWER BOOK, for example 2.2.8 Fingertip stream.

2.2.1 The renewal of erosion activity in a river is known as (rejuvenation / abstraction).

2.2.2 (Base flow / Sheet flow) is the flow of groundwater in the same direction as the river.

2.2.3 An area drained by a river system is known as a (drainage basin / drainage pattern).

2.2.4 Elevated land that separates tributaries from the main stream is called (interfluves / watersheds).

2.2.5 The (water table / zone of saturation) is the upper limit of water that is found underground.

2.2.6 The lowest point to which a river can erode is called a (knickpoint / permanent base level).

2.2.7 A (delta / confluence) is the intersection point of two rivers. (7 x 1) (7)

2.3 Refer to FIGURE 2.3 which shows a mid-latitude cyclone.

2.3.1 Provide ONE point of evidence visible in FIGURE 2.3 which proves that the mid-latitude cyclone shown is in the mature stage of development. (1 x 1) (1)

2.3.2 Which hemisphere is depicted in FIGURE 2.3? (1 x 1) (1)

2.3.3 Draw a transverse (cross) profile from **E** to **F** in FIGURE 2.3 and indicate the following:

(a) An arrow indicating the direction of movement of the front

(b) Identify and illustrate the cloud formation at **F**

(c) The area of cold air

(d) The area of warm air (4 x 1) (4)

2.3.4 Discuss the likelihood (chance) that expected rainfall at location **A** in FIGURE 2.3 will be a slight drizzle. (2 x 2) (4)

2.3.5 An outdoor music festival is planned at location **D** in FIGURE 2.3 in the next 24 hours. Recommend the rescheduling of the event by providing TWO climatological reasons as to how the music festival could be negatively affected by the expected changes in weather. (2 x 2) (4)

2.4 Refer to FIGURE 2.4, indicating winter conditions over South Africa.

2.4.1 Name the anticyclone labelled **X.** (1 x 1) (1)

2.4.2 Is the local wind at **Y** onshore or offshore? (1 x 1) (1)

2.4.3 Provide climatological evidence from FIGURE 2.4 which indicates that winter conditions are represented on the sketch. (1 x 2) (2)

2.4.4 Account for the position of the inversion layer as indicated in FIGURE 2.4. (2 x 2) (4)

2.4.5 In a paragraph of approximately EIGHT lines, discuss the impact that the position of the inversion layer and local wind **Y,** illustrated in FIGURE 2.4, will have on the amount of rainfall that will be experienced over the interior and the east coast of South Africa. (4 x 2) (8)

2.5 Refer to FIGURE 2.5 which shows the drainage density of two drainage basins.

2.5.1 Define the term *drainage density*. (1 x 1) (1)

2.5.2 Does drainage basin **A** or drainage basin **B** reflect a higher drainage density? (1 x 1) (1)

2.5.3 Provide evidence from FIGURE 2.5 to support your answer to QUESTION 2.5.2 (2 x 1) (2)

2.5.4 Discuss how permeability can influence the drainage density as shown in drainage basin **A**. (2 x 2) (4)

2.5.5 Determine the stream order of the main stream in drainage basin **B**. (1 x 2) (2)

2.5.6 Explain the relationship between deforestation and permeability of the underlying rock structure to the stream order identified in drainage basin **B**. (2 x 2) (4)

2.6 Refer to FIGURE 2.6, an extract on the Vaal River Catchment Management Agency.

2.6.1. Define the term *catchment area.* (1 x 1) (1)

2.6.2 Name ONE secondary economic activity mentioned in the article that uses water from the Vaal River catchment area. (1 x 1) (1)

2.6.3 Discuss TWO impacts that water deterioration will have on the agricultural activities in the region. (2 x 2) (4)

2.6.4 Suggest a reason why it is important to involve the community in the management of the catchment areas. (1 x 2) (2)

2.6.5 In a paragraph of approximately EIGHT lines, recommend sustainable measures that the farming community in the Vaal River catchment region can implement to conserve water. (4 x 2) (8)

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SECTION B: RURAL AND URBAN SETTLEMENTS AND SOUTH AFRICAN ECONOMIC GEOGRAPHY

QUESTION 3

3.1 Refer to FIGURE 3.1 depicting street patterns. Match the descriptions below with street pattern **A**, **B** or **C**. Choose the answer and write only the letter **A, B** or **C** next to the question numbers (3.1.1 to 3.1.8) in the ANSWER BOOK, for example 3.1.9 A.

3.1.1 The street pattern is very easy to plan, construct and extend.

3.1.2 All major roads lead to the central part of a city.

3.1.3 Used in the development of new suburbs and can alleviate traffic congestion.

3.1.4 Many stop streets increase the possibility of accidents.

3.1.5 A hilly environment gives rise to this street pattern.

3.1.6 Few intersections occur in the street pattern.

3.1.7 The street pattern that creates more traffic congestion.

3.1.8 It is easy to get lost with this street pattern. (8 x 1) (8)

3.2 Choose the term from COLUMN B that matches the description of different types of industries in COLUMN A. Write only the letter (A – H) next to the question numbers (3.2.1 to 3.2.7) in the ANSWER BOOK, for example 3.2.8 I.

COLUMN A		COLUMN B	
3.2.1	This industry is often in or near the CBD.	A	Raw material orientated industry
3.2.2	Industries that process material that is bulky and heavy and the materials influence its location.	B	Light industry
		C	Break of bulk industry
3.2.3	Large scale production which is generally sold to other industries and not to the consumer.	D	Heavy industry
		E	Market orientated industry
3.2.4	The industry is not tied to the market or raw material.	F	Ubiquitous industry
3.2.5	An internet industry that can be placed at any location.	G	Distribution industry
		H	Footloose industry
3.2.6	This industry occurs where the cargo is distributed by smaller units of transport.		
3.2.7	The industry produces goods close to the consumer.		

(7 x 1) (7)

3.3 Refer to FIGURE 3.3, a pie-graph on reasons for rural-urban migration.

3.3.1 Define the term *rural-urban migration.* (1 x 1) (1)

3.3.2 Provide ONE physical push factor from the pie-chart that results in rural-urban migration. (1 x 1) (1)

3.3.3 Calculate the variance (difference) between the TWO social factors on the pie-chart that cause people to leave rural areas. (1 x 2) (2)

3.3.4 According to the diagram, 32% of rural-urban migration is caused by other reasons than those depicted in the diagram. Explain TWO other social factors in the rural areas which can lead to rural-urban migration. (2 x 2) (4)

3.3.5 Write a paragraph of approximately EIGHT lines, in which you explain sustainable measures that the government can implement to prevent depopulation due to poor social conditions in rural areas. (4 x 2) (8)

3.4 Study FIGURE 3.4, an informal settlement and an area of low cost housing.

3.4.1 Match **A** and **B** on FIGURE 3.4 to the TWO terms *low cost housing* and *informal settlement*. (2 x 1) (2)

3.4.2 Refer to the building materials used in FIGURE 3.4 and differentiate between settlements **A** and **B**. (2 x 1) (2)

3.4.3 Apart from formal building structures, name any TWO basic services that people may find lacking at settlement **A,** evident in FIGURE 3.4. (2 x 1) (2)

3.4.4 Why do many people still choose to remain in settlement **A,** despite unfavourable conditions? (2 x 2) (4)

3.4.5 Recommend TWO strategies that the government of South Africa could implement in settlement **A** to reduce the impact of the unfavourable conditions you mentioned in QUESTION 3.4.3. (2 x 2) (4)

3.5 Study the article on food security and hydroponic farming in FIGURE 3.5.

3.5.1 Define the term *food security*. (1 x 1) (1)

3.5.2 Name TWO environmental factors from the article that had a negative influence on traditional food production and food security (2 x 1) (2)

3.5.3 Describe how the negative impact of the environmental factors on food security resulted in the development of hydroponic farming. (2 x 2) (4)

3.5.4 Refer to the article and mention TWO environmental advantages of crops being grown in a fertilized solution with the hydroponic farming method. (2 x 2) (4)

3.5.5 In your opinion hydroponic farming sustainable as an alternative for traditional crop farming to ensure food security in a country such as South Africa? Explain your answer. (1 + 2) (3)

3.6 Study the diagram and article on the Platinum SDI in FIGURE 3.6.

3.6.1 Explain the main aim of Spatial Development Initiatives. (1 x 2) (2)

3.6.2 In which province is the Platinum SDI situated? (1 x 1) (1)

3.6.3 State TWO major challenges that the government wanted to address by locating the Platinum SDI in this region. (2 x 1) (2)

3.6.4 According to the article, was the Platinum SDI efficient? Substantiate your answer by using the information found in FIGURE 3.6, relating to the contribution to the GDP. (1 + 2) (3)

3.6.5 Study the indicators of the effectiveness index and explain in a paragraph of approximately EIGHT lines why this contributed to the re-evaluation of the Platinum Spatial Development Initiative. (4 x 2) (8)

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QUESTION 4

4.1 Choose the term from COLUMN B that matches the description in COLUMN A. Write only the letter (A – H) next to the question numbers (4.1.1 to 4.1.7) in the ANSWER BOOK, for example 4.1.8 I.

COLUMN A		COLUMN B
4.1.1	The increase in the absolute number of people in urban areas	A Urbanisation
4.1.2	The growing of the urban "built-up area"	B Urban sprawl
4.1.3	Movement of businesses outwards from central areas	C Urban growth
4.1.4	Increased percentage of people living in urban areas	D Urban depopulation
4.1.5	The unrestricted growth in urban areas with little concern for urban planning	E Counter-urbanisation
4.1.6	The process where people move to the outskirts of cities	F Urban hierarchy
4.1.7	The ranking of urban areas according to the degree of specialisation	G Urban expansion
		H Commercial decentralization

(7 x 1) (7)

4.2 Refer to FIGURE 4.2 that shows different types of farming. Match the descriptions below with the type of farming **A** or **B**. Choose the answer and write only the letter **A** or **B** next to the question numbers (4.2.1 to 4.2.8) in the ANSWER BOOK, for example 4.2.9 A.

4.2.1 These farms use more labour than machinery.

4.2.2 These farmers own a small piece of land and farm to make a small profit.

4.2.3 Farmers use limited agrochemicals and fertilizers and supply the local or surrounding markets.

4.2.4 These types of farms require sophisticated equipment and huge storage space.

4.2.5 The type of farming that is usually characterised by intensive labour and in most cases, animal traction.

4.2.6 These farmers produce crops to supply their province.

4.2.7 These farmers practise monoculture on a large piece of land.

4.2.8 Farming that involves in export of crops. (8 x 1) (8)

4.3 Study FIGURE 4.3, which shows the location of settlements.

4.3.1 Differentiate between the location of a wet point settlement and a dry point settlement. (2 x 1) (2)

4.3.2 Is the settlement in FIGURE 4.3 a wet or dry point settlement? Give TWO reasons for your answer. (1 + 4) (5)

4.3.3 State the pattern of the settlement illustrated in FIGURE 4.3. (1 x 1) (1)

4.3.4 Explain social advantages of this settlement pattern illustrated in FIGURE 4.3. (2 x 2) (4)

4.3.5 The settlement shape illustrated in FIGURE 4.3 is linear. Give ONE advantage of this shape regarding accessibility to the water source. (1 x 2) (2)

4.4 Study FIGURE 4.4, a graph on urban functions

4.4.1 Explain the difference between a *low order function* and a *high order function*. (2 x 1) (2)

4.4.2 Name ONE example of a low order function and ONE example of a high order function regarding education indicated in FIGURE 4.4. (2 x 1) (2)

4.4.3 Explain the meaning of the label "population size of settlements" found on the horizontal axis. (1 x 2) (2)

4.4.4 State the general trend between the "population size of the settlements" and the "number of services provided". (1 x 2) (2)

4.4.5 In a paragraph of approximately EIGHT lines, analyse the relationship between the settlement size and the order of services and discuss reasons for this relationship. (4 x 2) (8)

4.5 Study FIGURE 4.5 which depicts a graph illustrating the contribution of different economic sectors to employment.

4.5.1 Define the concept *primary sector.* (1 x 1) (1)

4.5.2 (a) State the number of people employed by the mining sector in 2016 and 2018. (2 x 1) (2)

(b) Explain how mechanisation influenced the employment opportunities in the mining sector from 2016 to 2018. (1 x 2) (2)

4.5.3 (a) Which tertiary sector provides the most employment opportunities in South Africa? (1 x 1) (1)

(b) Explain the economic importance of this tertiary sector, identified in QUESTION 4.5.3(a), with regards to foreign income. (1 x 2) (2)

4.5.4 Write a paragraph of approximately EIGHT lines, in which you discuss factors that hinder the mining sector and the effect it has on the tertiary sector identified in QUESTION 4.5.3(a). (4 x 2) (8)

4.6 Study the case study in FIGURE 4.6 on the PWV industrial region.

4.6.1 The core industrial region of Gauteng is also referred to as the PWV-region. For what does the abbreviation PWV stand? (1 x 1) (1)

4.6.2 State the relationship between load-shedding and the GDP growth. (1 x 1) (1)

4.6.3 Apart from load-shedding, the reserve bank identifies factors that impacted the GDP of the PWV region. List TWO of these factors. (2 x 1) (2)

4.6.4 Explain how the fourth industrial revolution influences industries' dependency on electricity supply in the PWV region. (2 x 2) (4)

4.6.5 Discuss how load-shedding impacts negatively on the multiplier effect of the PWV economy and ISCOR / Mittal Steel (a large enterprise found in the PWV region). (3 x 2) (6)

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TOTAL: 225

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