education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

GEOGRAPHY P1

FEBRUARY/MARCH 2010

MARKS: 300

TIME: 3 hours

This question paper consists of 15 pages and an 11-page annexure.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Answer ANY THREE questions of 100 marks each.
3. All diagrams are included in the ANNEXURE.
4. Number ALL your answers in the CENTRE of the line.
5. Leave a line between subsections of questions answered.
6. Start each question at the top of a NEW page.
7. Number the answers correctly according to the numbering system used in this question paper.
8. Do NOT write in the margins of your ANSWER BOOK.
9. ENCIRCLE the numbers of the question that you have answered on the front page of your ANSWER BOOK.
10. Where possible, illustrate your answers with labelled diagrams.
11. Write neatly and legibly.

SECTION A: CLIMATE AND WEATHER, FLUVIAL PROCESSES AND STRUCTURAL LANDFORMS

Answer at least ONE question from this section.

QUESTION 1

1.1 Refer to FIGURE 1.1 showing a weather system that often occurs along the east coast of Southern Africa.

Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A – D) next to the question number (1.1.1 – 1.1.5) in the ANSWER BOOK, for example 1.1.6 A.

1.1.1 The diagram illustrates a …

A mid-latitude cyclone.
B coastal low pressure.
C line thunderstorm.
D tropical cyclone.

1.1.2 The following air movements are associated with the illustrated weather system along the coast of Southern Africa:

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

1.1.3 The main cloud types associated with this weather system are … clouds.

A cumulonimbus
B cumulus
C cirrus
D nimbostratus

1.1.4 The following conditions will exist at **A**:

A Cloudless, low pressure, windless
B Cloudless, high pressure, windless
C Cloudy, low pressure, light rain
D Cloudy, high pressure, heavy rain

1.1.5 The weather system is in the … stage of development.

A initial/formative
B immature
C mature
D decaying/dissipating (5 x 2) (10)

1.2 Use FIGURE 1.2 showing the four slope elements to assist you in giving ONE word/term for each of the following descriptions. Write only the term next to the question number (1.2.1 – 1.2.5) in the ANSWER BOOK, for example 1.2.6 base flow. The same term may be used more than once.

1.2.1 Slope element with a convex shape

1.2.2 Low-angle slope element

1.2.3 Soil creep occurs on this slope element

1.2.4 Slope element that is a rocky, vertical outcrop

1.2.5 Slope element composed mainly of weathered material (5 x 2) (10)

1.3 FIGURE 1.3A is a simplified cross-section of a large city situated on a valley floor somewhere in the Southern Hemisphere. FIGURE 1.3B shows the amount of carbon monoxide (CO) in the atmosphere of the same city during July. Read the extract below before answering the questions that follow.

Carbon monoxide is a colourless, odourless gas emitted naturally through volcanic eruptions, forest fires, bacterial activities, et cetera. In cities, unsafe levels may accumulate from incomplete combustion of gas in automobiles. Automobile exhaust in cities can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources include furnaces, home fires, and cigarette smoke. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO.

Carbon monoxide is extremely hazardous and long-term exposure to even small concentrations can lead to death. Carbon monoxide enters the bloodstream and reduces oxygen delivery to the body's organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular diseases. Healthy individuals are also affected, but only at higher levels of exposure. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, and difficulty in performing complex tasks.

1.3.1 Winds will blow down into the city at night. What are these winds called? (1 x 2) (2)

1.3.2 Use a clearly labelled (annotated) diagram to explain the development of the winds named in QUESTION 1.3.1. (3 x 2) (6)

1.3.3 The winds mentioned in QUESTION 1.3.1 will be responsible for the high concentrations of CO measured over the city during July. Explain how these winds and the topography of the landscape contribute to these high levels of CO. (3 x 2) (6)

1.3.4 For how many days in July was the CO pollution above the level at which it influenced people's health? (1 x 2) (2)

1.3.5 It is clear that CO pollution levels are unacceptably high over large cities. Write a short essay (no more than 12 lines) to outline reasons why a concerted effort should be made to reduce CO levels over large cities. In your essay also provide solutions that are geographically sound, to reduce CO levels over large cities. (6 x 2) (12)

1.4 FIGURE 1.4 is a cross-section showing a berg wind that often occurs along the south coast of South Africa. Use your knowledge of berg winds and also refer to FIGURE 1.4 to answer the questions below.

1.4.1 Identify the type of low pressure, visible in FIGURE 1.4, which plays a role in the development of berg winds. (1 x 2) (2)

1.4.2 Explain why berg winds will result in warm, dry conditions along the south coast of South Africa. (3 x 2) (6)

1.4.3 Veld fires often accompany berg winds. Give ONE preventative measure that can be introduced to reduce the spreading of veld fires. (1 x 2) (2)

1.4.4 Which weather system is responsible for the dissipation of berg wind conditions? (1 x 2) (2)

1.5 Refer to FIGURE 1.5A showing a longitudinal river profile after rejuvenation has occurred. FIGURE 1.5B shows the effects of rejuvenation along the lower course of a river. Meanders may have been present along the river course. These meanders would have formed on a floodplain. Once the river is rejuvenated, it will incise and the meanders will no longer be on a plain but in deep, steep-sided valleys.

1.5.1 Define the following terms indicated on FIGURE 1.5:

(a) Graded profile (1 x 2) (2)

(b) Base level (1 x 2) (2)

1.5.2 Draw a diagram similar to FIGURE 1.5 to show a graded longitudinal river profile. (1 x 2) (2)

1.5.3 Provide evidence, visible in FIGURE 1.5, that rejuvenation has occurred. (1 x 2) (2)

1.5.4 Provide possible reasons why rejuvenation has occurred in this landscape. (2 x 2) (4)

1.5.5 The local community has proposed the construction of a major dam in the river system shown in FIGURE 1.5. Write a short essay (no more than 12 lines) to outline the advantages and disadvantages of such a proposal. (6 x 2) (12)

1.6 Refer to FIGURE 1.6 showing the development of a landscape associated with horizontal sedimentary rock. The three diagrams are not arranged in the correct order of development.

1.6.1 Arrange the three diagrams in the correct order of development by writing the letters that appear on the diagrams in the correct order. (3 x 2) (6)

1.6.2 The utilisation of landscape **B** by humans is limited. Explain the reason for this. (2 x 2) (4)

1.6.3 Which ONE of the diagrams illustrates a typical Karoo landscape? (1 x 2) (2)

1.6.4 Identify the landform in the diagram mentioned in QUESTION 1.6.3 that is typically found in the Karoo landscape. (1 x 2) (2)

1.6.5 Give a reason why cuestas will not develop in the landscape visible in FIGURE 1.6. (1 x 2) (2)

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QUESTION 2

2.1 Refer to FIGURE 2.1 illustrating a weather system that develops west of Cape Town.

Choose the correct term from those given in brackets to make all the statements below TRUE. Write only the word/term next to the question number (2.1.1 – 2.1.5) in the ANSWER BOOK.

2.1.1 The sketch illustrates a (tropical/mid-latitude) cyclone.

2.1.2 The weather system illustrated in FIGURE 2.1 is in the (warm sector [mature]/occlusion) stage of development.

2.1.3 Air rotates (anticlockwise/clockwise) around the centre of the weather system.

2.1.4 This weather system generally passes over Cape Town during (winter/summer).

2.1.5 The front labelled **P** is the (cold/warm) front. (5 x 2) (10)

2.2 Refer to FIGURE 2.2 illustrating the relationship between stream type and the water table.

Indicate whether the following statements are TRUE or FALSE. Write only 'true' or 'false' next to the question number (2.2.1 – 2.2.5) in the ANSWER BOOK.

2.2.1 River **X** will only flow after a heavy thunderstorm.

2.2.2 River **Y** is a periodic river.

2.2.3 River **Z** will only flow during the wet season.

2.2.4 The water table lies at a lower level during a prolonged drought.

2.2.5 River **Z** does not receive any water from base flow to support its flow. (5 x 2) (10)

2.3 FIGURES 2.3A and 2.3B show weather conditions that South Africa will experience at different times of the year. Also read the extract on droughts below. If the conditions illustrated in FIGURE 2.3B persist, South Africa may experience a severe drought.

> Hot, dry weather from January to March 2007 wilted crops in southern Africa. The severe drought produced near-record temperatures that, combined with a lack of rainfall, caused extensive crop damage, particularly in western crop areas. In South Africa, the anticipated yield from the corn crop dropped from ten million tons in December to six million tons in April, because farmers couldn't plant in the dry conditions and many of the crops that were planted, wilted in the dry heat. The last South African drought of this magnitude occurred in 1992.
>
> The CSIR said, "The 1982-'83 and 1991-'92 droughts were the most severe meteorological droughts of the 20th century in southern Africa." In the 1991-'92 drought, 70% of the crops failed. It was estimated that half of the population in the affected area was at risk of malnutrition, other related health problems, and even starvation.

2.3.1 During which season would South Africa experience the weather conditions represented in **A** and **B** respectively? (2 x 2) (4)

2.3.2 Name the weather system labelled **X** on both diagrams. (1 x 2) (2)

2.3.3 Weather system **X** is responsible for the development of stable conditions which frequently occur over the South African interior during winter. Briefly explain why weather system **X** is responsible for the development of stable conditions over the interior. (2 x 2) (4)

2.3.4 In which one of the diagrams, **A** or **B**, is the above-mentioned condition clearly visible? (1 x 2) (2)

2.3.5 FIGURE 2.3C is a graph showing the vertical temperature gradient as experienced in FIGURE 2.3B.

(a) Describe the temperature changes as shown on the graph in FIGURE 2.3C. (3 x 2) (6)

(b) What is the zone labelled **Y** known as? (1 x 2) (2)

2.3.6 What is a *drought*? (1 x 2) (2)

2.3.7 Explain why the persistence of the condition illustrated in FIGURE 2.3B can result in drought over the South African interior. (3 x 2) (6)

2.3.8 Write a short essay (no longer than 12 lines) in which you discuss measures that can be introduced to reduce the effect of persistent droughts in South Africa. Also give reasons why it is important to reduce the effect of persistent droughts. (6 x 2) (12)

2.4 Refer to FIGURE 2.4 (A – F) representing the drainage basins of two river systems (A and B) and flow hydrographs (C – F) to show run-off in rivers after rain showers. Also read the extract on floods below.

> Flooding occurs when water overflows its normal channels such as streams and storm water drains. Floods may also occur when there is an accumulation of water by drainage into areas which are not normally submerged. Floods are common in South Africa following long periods of drought. Drought, overgrazing and the deterioration of the land make the ecosystem vulnerable. Humans can alter the flow characteristics of a river negatively by clearing vegetation, constructing impermeable tar and concrete surfaces and building on a river's flood plain.

2.4.1 Define the following terms referred to above:

(a) Drainage basin (1 x 2) (2)

(b) River system (1 x 2) (2)

2.4.2 Describe the shapes of drainage basins **A** and **B** respectively. (2 x 2) (4)

2.4.3 List and explain any TWO factors that could influence the run-off in a river. (4 x 2) (8)

2.4.4 Suppose a rain shower of 100 mm occurs in each of drainage basins **A** and **B**. Which of the flow hydrographs (**C** – **F**) will most likely represent stream flow at the point marked = in drainage basins **A** and **B** respectively? (2 x 2) (4)

2.4.5 Give a reason for each of the choices you have made in QUESTION 2.4.4. (2 x 2) (4)

2.4.6 At which point, **X**, **Y** or **Z**, would there be a greater risk of flooding? (1 x 2) (2)

2.4.7 Give ONE reason for your answer to QUESTION 2.4.6. (1 x 2) (2)

2.4.8 In order to control flooding, a drainage basin must be managed properly. Conservation of the whole drainage basin must be sustainable to reduce the risk of flooding.

Write a short essay (no more than 12 lines) to explain how the sustainable management of drainage basins can reduce the risk of flooding. In your answer also indicate the negative impact of flooding for the local communities living in the drainage basin.(6 x 2) (12)

[100]

SECTION B: PEOPLE AND PLACES: RURAL AND URBAN SETTLEMENT, PEOPLE AND THEIR NEEDS

Answer at least ONE question from this section.

QUESTION 3

3.1 An urban area has different land-use zones and functions. FIGURE 3.1 is an urban profile showing some of these land-use zones.

Give the correct term for each of the following land-use zones (3.1.1 to 3.1.5) by using the words in the list below. Write only the correct term next to the question number (3.1.1. – 3.1.5) in the ANSWER BOOK. Refer to FIGURE 3.1 to assist you.

central business district (CBD); middle-income residential area; transition zone (zone of decay); rural-urban fringe; low-income residential area; outlying industrial park; green belt; outlying business district

3.1.1 Most important commercial zone in the city

3.1.2 Zone of mixed functions on edge of commercial centre

3.1.3 High-density housing close to commercial centre

3.1.4 Housing area with small to medium-sized plots

3.1.5 Zone set aside to accommodate secondary activities (5 x 2) (10)

3.2 Refer to TABLE 3.2 which provides you with some vital statistics of South Africa's nine provinces.

Indicate whether the following statements are TRUE or FALSE. Write only 'true' or 'false' next to the question number (3.2.1 – 3.2.5) in the ANSWER BOOK.

3.2.1 The abbreviation GDP stands for Gross Domestic Product.

3.2.2 GDP refers to the total value of goods and services produced in a province over a period of one year.

3.2.3 The table shows that there is a direct link between the size of the province, population size and contribution to the GDP.

3.2.4 According to the table, Gauteng can be considered South Africa's economic heartland.

3.2.5 South Africa's largest province contributes the least to the national GDP. (5 x 2) (10)

3.3 Refer to FIGURE 3.3 showing a number of traditional villages, before answering the following questions.

Many inhabitants are leaving these rural settlements. Sustainable development must be taken into account when finding solutions to prevent people from leaving these settlements. The natural, human and economic spheres of life need to be developed at the same time, in such a way that it respects the fragile nature of all three.

3.3.1 Would you classify these settlements as rural or urban? (1 x 2) (2)

3.3.2 Identify the settlement pattern of these settlements. (1 x 2) (2)

3.3.3 Give ONE reason for your answer to QUESTION 3.3.2. (1 x 2) (2)

3.3.4 Name ONE social advantage of this settlement pattern for the inhabitants living here. (1 x 2) (2)

3.3.5 By referring to the diagram, state TWO physical factors that played a role in selecting the sites of these settlements. (2 x 2) (4)

3.3.6 Many inhabitants of this valley are moving out of this area to settle in large cities. Explain why these people are moving to large cities with reference to TWO push factors. (2 x 2) (4)

3.3.7 A town is planned for development at **A**. Write a short essay (no longer than 12 lines) in which you name and discuss the services you would recommend local authorities to establish here in order to manage the dwindling settlements. (6 x 2) (12)

3.4 FIGURE 3.4 represents a cross-section of land-uses in a city from the CBD to the edge of the city. Beyond the edge of the city one finds the rural-urban fringe.

3.4.1 What is the *rural-urban fringe*? (1 x 2) (2)

3.4.2 Give ONE urban function that one finds here. (1 x 2) (2)

3.4.3 Why is the urban function named in QUESTION 3.4.2 located here? (2 x 2) (4)

3.4.4 Many people living in the rural-urban fringe are not farmers. Why do they prefer to live in this land-use zone? (2 x 2) (4)

3.5 Refer to FIGURE 3.5 showing the wine estates at Constantia.

3.5.1 Explain the difference between a *primary*, *secondary* and *tertiary* economic activity. (3 x 2) (6)

3.5.2 Explain how the wine estates are part of all three economic activities. (3 x 2) (6)

3.5.3 Outline the contribution made by the wine industry to the economic development of this region. (3 x 2) (6)

3.6 Cape Town's location plays an important role in South Africa's foreign trade with Africa and the rest of the world. This is favourable for South Africa's balance of trade. Cape Town is thus part of the global market. Refer to FIGURE 3.6 showing Cape Town's location in relation to the rest of the world.

3.6.1 Give ONE reason why Cape Town's location has a favourable influence on South Africa's balance of trade. (1 x 2) (2)

3.6.2 Cape Town is strategically placed and plays an important role in world trade. Discuss this statement. (3 x 2) (6)

3.6.3 Explain what is meant by the statement, 'Cape Town is part of the *global market*.' (1 x 2) (2)

3.6.4 Globalisation is considered both a blessing and a curse for the inhabitants of a specific region. Write a short essay (no more than 12 lines) to discuss the advantages and disadvantages of globalisation for the inhabitants of the Cape Peninsula. (6 x 2) (12)

[100]

QUESTION 4

4.1 FIGURE 4.1 illustrates a number of settlements. These settlements have assumed different shapes, different patterns and developed for different reasons.

Identify the settlement that is best described by each of the statements below. Write only the letter of the settlement (A – H) next to the question number (4.1.1 – 4.1.5) in the ANSWER BOOK.

4.1.1 A settlement that developed a dispersed pattern

4.1.2 A settlement that provides the surrounding rural area with urban services

4.1.3 A settlement that developed at the junction of several natural routes

4.1.4 A settlement that developed at a natural passage through a physical obstruction

4.1.5 A settlement that developed due to the extraction of minerals (5 x 2) (10)

4.2 Refer to FIGURE 4.2 showing the impact of road transport on people and the environment.

Complete the mind map by choosing the correct terms from the possibilities listed below. Write down only the correct term next to the question number (4.2.1 – 4.2.5) in the ANSWER BOOK.

4.2.1 undermines/promotes

4.2.2 increased/reduced

4.2.3 renewable/non-renewable

4.2.4 rise/decrease/fluctuate

4.2.5 fill up/become empty (5 x 2) (10)

4.3 On arrival in a large city, newcomers are confronted by a variety of urban land uses and functions. Refer back to FIGURE 3.4 which represents a cross-section of land uses from the CBD to the edge of the city. Study FIGURE 3.4 carefully before answering the questions below.

4.3.1 (a) Name TWO land uses that do not occur in the core of the CBD. (2 x 2) (4)

(b) Which ONE of the two land uses named in QUESTION 4.3.1(a) could occur on the edge of the CBD? (1 x 2) (2)

(c) Why do the two land uses named in QUESTION 4.3.1(a) not occur in the core of the CBD? (2 x 2) (4)

(d) Why does the land use named in QUESTION 4.3.1(b) occur on the edge of the CBD? (2 x 2) (4)

4.3.2 (a) What percentage of land use is represented by shops and offices in the core of the CBD? (1 x 2) (2)

(b) Describe the change in the distribution of shops and offices from the CBD to the edge of the city. (1 x 2) (2)

(c) Give possible reasons for this change in the distribution of shops and offices as described in QUESTION 4.3.2(b). (2 x 2) (4)

(d) Many shops and offices are found in the suburbs and the edge of the city. What is the process called whereby these functions relocate to the suburbs and the edge of the city? (1 x 2) (2)

(e) Explain why so many shops and offices relocate to the suburbs and the edge of the city. (2 x 2) (4)

4.3.3 Read the article below and then answer the question that follows.

> In mid-1999 the Cape Town Partnership was established to address capital flight, to prevent crime and littering, and to promote inner city renewal and investment. Since the establishment of the Cape Town Partnership R12,5 billion has been invested in the city by the private sector. In 2003 alone, R3,4 billion was invested. Most notable has been the recent swell in the refurbishment and conversion of historical and/or vacant office buildings into residential apartments and for mixed use. Under the auspices of the Cape Town Partnership a City Improvement District Initiative (CID) was introduced. The CID's funding – over R15 million per annum – provides extra security and cleanliness, directly impacting on the demand for city-centre hotels.

Write a short essay (no more than 12 lines) outlining the need for urban renewal projects in Cape Town. Comment on the success rate of inner city renewal projects in Cape Town. (6 x 2) (12)

4.4 The Cape Peninsula is situated at the heart of the Southwestern Cape, the third largest industrial area in South Africa. The centralisation of industries has, however, resulted in many problems for the Cape Peninsula.

4.4.1 Name TWO factors that favoured the development of the Southwestern Cape industrial area. (2 x 2) (4)

4.4.2 Define the term *centralisation*. (1 x 2) (2)

4.4.3 State any TWO problems that the Cape Peninsula might experience as a result of centralisation of industries in this area. (2 x 2) (4)

4.4.4 Despite the above-mentioned problems, industrial development is important for economic growth in the Southwestern Cape. Discuss the economic importance of industrial growth for this region. (3 x 2) (6)

4.5 Read the article below before answering the questions that follow.

The official impoundment of the Berg River Dam, the biggest component of the R1,5 billion Berg Water Project near Franschhoek, has begun. This is the first step in completing the project that will increase the supply of water to the City of Cape Town by 18 percent.

The go-ahead for the project was granted on condition that the City of Cape Town reduces the demand for water by 20 percent. In response, the City of Cape Town is implementing a water conservation and water demand strategy and is on course to meet this target. Although the project will alleviate the immediate water shortage, it is important that residents continue to use water sparingly and that we develop a culture of saving water, not only in the Western Cape, but throughout the country.

Developers were also extremely sensitive about the natural and social environment. Prior to construction, an environmental monitoring committee was established, comprising representatives from the Department of Water Affairs and Forestry, the City of Cape Town, the Department of Environmental Affairs and Tourism, mandated representatives from local communities, elected officials, interested and affected parties and downstream stakeholders. Maximising the socio-economic benefits of the project to the local community was key to the project. The policy gave preference to local residents and businesses with regard to employment and procurement opportunities. In terms of landscaping, the downstream face of the dam wall, visible from the main road into Franschhoek, has been re-vegetated with indigenous flora. This ensures that the dam and associated structures do not contrast with the surrounding landscape. Alien vegetation was removed from the Berg River catchments, significantly increasing the amount of water available for both storage in the dam and use by indigenous plant species.

4.5.1 The provision of water to the Cape Peninsula has become critical. Name any TWO activities in the Cape Peninsula that are dependent on a secure supply of water. (2 x 2) (4)

4.5.2 Give TWO possible reasons, ONE natural and ONE human, why the Southwestern Cape experiences water shortages. (2 x 2) (4)

4.5.3 Name the water transfer scheme that was implemented to supplement the water needs of the Cape Peninsula. (1 x 2) (2)

4.5.4 Give ONE reason why 'downstream stakeholders' were included in the discussions prior to the development of this project. (1 x 2) (2)

4.5.5 The introduction of a large project, such as the Berg Water Project, should always be sensitive to social, economic and environmental injustices. Write a short essay (no more than 12 lines) to outline how the above-mentioned injustices were avoided. (6 x 2) (12)

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GRAND TOTAL: 300