EXAMINATIONS COUNCIL OF ESWATINI

EGCSE

EXAMINATION REPORT

FOR

GEOGRAPHY (6890)

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EGCSE GEOGRAPHY

Paper 6890/01

Geographical Themes

General Comments

The number of candidates decreased from 13700 in 2021 to 7400 in 2022.

Popular questions were questions 2, 3 and 6 and the least popular were questions 1, 4 and 5.

Question 3 and 6 were the high scoring while question 1 had the lowest score, it was challenging to the 2022 cohort.

Some cases of rubric infringement were observed whereby candidates would answer all the six questions or answer two questions from the same theme. Time was well managed by most candidates as they were able to finish answering the three questions as per the instructions.

Candidates seem to have a challenge with understanding key geographical terms, which made it difficult for them to answer questions satisfactorily.

The terms 'physical/natural/environmental' are often confused with 'economic/social/human'. Where candidates are required to describe environmental factors they would also give economic and/or social factors.

It has also been noted that candidates did not understand the meaning of some key words used in the questions, yet these are very important components of the question. These need to be clearly explained or defined to candidates during teaching/learning:

- Impacts – these can be negative or positive; candidates must take note if the impact required is positive or negative.
- Efforts/solutions/strategies; these are often used interchangeably as they more or less have the same meaning
- Reasons
- Benefits/advantages
- Problems/disadvantages
- Affected (ways by which)
- Changes
- Factors
- Services
- Characteristics/features

Also noted was the poor reference to figures or photographs when answering a question. In some questions, the answer required was present or was related to the resource given but candidates failed to take advantage of that, as they would just ignore the resource and give general information. A link must be created between the stem of the question, the figure/photograph and the question.

Some candidates seem not to understand the meaning of "INSERT'. It has been noted that such candidates would give general answers to the question instead of using the resource provided in the Insert thus they ended up leaving out some information which they could have sourced from the Insert e.g. Question 2 (b) (i) where, instead of giving features shown in Photograph B they would just give other features of the vegetation not shown (such as long tap roots) or they would describe irrelevant features such as description of the soil.

In case studies candidates have a problem with giving relevant examples to the case study mentioned. In some instances, the examples were not given at all, hence they lost a mark.

Comments on specific questions
THEME 2: THE PHYSICAL WORLD
Candidates were supposed to answer **one** question from this theme.
Question 1

(a)   **Study Photograph A (Insert), which shows an instrument used at a weather station.**

   (i)   Name the instrument shown in Photograph A.

   Most candidates were able to identify the instrument shown in Photograph A.

   Expected response:

   - Sunshine recorder/ Heliograph/ Campbell Stokes recorder   1 @ 1 mark   [1]

   (ii)   Identify the parts of the instrument labelled as X and Y in Photograph A.

   Candidates were able to identify part X of the instrument but had a challenge with

   identifying part Y which they would refer to as a card or cardboard instead of a

   sensitised card. A key feature of this card is that it is sensitive to the sun's rays.

   Expected response:

   - **X** - spherical glass/ glass sphere/ glass spherical lens/ glass ball

   - **Y** - sensitized card   2 @ 1 mark   [2]

   (iii) Describe how the instrument shown in Photograph A (Insert) is used in a

   weather station.

   Poor response by candidates as they did not know how the sunshine recorder works,

   they just described how the instrument is sited.

   Expected response:

   - Glass sphere focuses rays of the sun on sensitized card

   - Rays burn a trace on the card

   - Card removed from metal frame

- Length of trace is converted to hours/minutes using the time scale on card

- Recorded on weather chart   3 @ 1 mark   [3]

  (iv) State four factors to consider when siting the instrument shown in Photograph A at a weather station.

  Candidates were able to state the correct factors.

  Expected responses:

  - Fenced area

  - Open area/ away from tall trees and buildings

  - Direction of sun's rays

  - Flat surface/gentle slope

  - Short grass   4 @ 1 mark   [4]

(b)   Study Fig. 1, which is a hygrometer used at a weather station to measure relative humidity.

  (i) Describe how the instrument shown in Fig. 1 is used to measure relative humidity.

  Candidates failed to understand the question, instead of describing how the hygrometer works they described the features of the instrument.

  Expected responses:

  - Record temperature of dry bulb thermometer

  - Record temperature of wet bulb thermometer

  - Calculate the wet bulb depression/subtract wet bulb temperature from dry bulb

  - Refer to hygrometric table

  - Find relative humidity in percentage.   4 @ 1 mark   [4]

  (ii) Explain two reasons why a hygrometer is kept inside a Stevenson screen.

  Candidates failed to link the reasons to the features of the Stevenson screen. Most simply described the features of the Stevenson screen. Some candidates, instead of writing to void direct sun rays, would write to avoid sunlight or sunshine which was incorrect.

Expected responses:

- To protect it from wind/breakage – wooden housing/sloping roof

- To protect it from rain – sloping roof

- To record shade/sheltered temperatures – double board roofing

- To avoid ground temperatures – raised about 1.21m above ground surface

- To avoid direct sun rays – door faces South in the southern hemisphere/white in colour

- For free circulation of air – louvred sides

        1 mark for naming, one mark for explanation.   2 @ 2 marks   [4]

(c) **Global average temperatures vary leading to the different climatic regions. For an area you have studied explain three factors that affect the temperature of the area.**

Candidates did not understand this question as they confused it with causes of climate change or global warming hence, they gave responses such as deforestation, burning of fossil fuels, exhaust fumes. Candidates focused on the stem of the question instead of the question itself. Some candidates referred to the impacts of deforestation such as soil erosion, and destruction of natural habitats which was incorrect.

Expected responses:

Example: **An area whose temperature is affected by the identified factors**

- Any area- points must be relevant to the area

- Altitude

- Latitude

- Distance from the sea

- Ocean currents

- Aspect

- Wind

- Cloud cover

        1 mark for naming, 1 mark for explanation   3 @ 2 marks

        Reserve 1 mark for example   [7]

[25 marks]

Question 2

(a) Study Figs. 2A and 2B which show graphs of two climatic regions.

(i) Name the climatic region shown by Fig. 2A

Question was accessible to candidates as they were able to identify the climatic region, however, some would give names of deserts such as Sahara Desert or just desert.

Expected response:

- Hot/Tropical desert   1 @ 1 mark   [1]

(ii) State two reasons for the high annual rainfall shown in Fig. 2B.

Most candidates found this question challenging. The only correct common answer   was high temperatures.

Expected responses:

- High humidity
- Inter tropical convergence zone (ITCZ)/convergence of NETW and SETW
- High rate of evapotranspiration/evaporation
- Low pressure belt/ doldrums
- High temperatures for convection   2 @ 1 mark   [2]

(iii) Compare the temperatures shown in Fig. 2A to those of Fig. 2B.

This was a difficult question for most candidates as most did not score any mark. They were able to display the skill of comparison but they lacked the proper terminology required such as annual temperature range and mean monthly temperature. They would just refer to temperatures in general. Some compared the general temperature using the months e.g. in Fig. 2B in January the temperature was higher than in Fig. 2A which was incorrect. For those who did not understand the question, they even referred to rainfall or compared other factors like altitude and latitude which did not score a mark.

Expected responses:

- Hot deserts have temperature seasons – tropical rainforest hot throughout the year
- Hot deserts large annual range/ 25^0C – tropical rainforest small/4^0C
- Hot deserts maximum mean monthly 37^0C/38^0C – tropical rainforest 26^0C
- Hot deserts minimum mean monthly 13^0C – tropical rainforest 22^0C.

3 @ 1 mark   [3]

(iv) Describe four factors that are responsible for the climate shown in Fig. 2A.

A challenging question to most candidates. The most common correct answer was lack of cloud cover. For those candidates who gave ocean currents they were not specific on **cold** ocean currents, and for those who referred to winds they did not state that these are dry offshore winds.

Expected responses:

- Presence of cold ocean currents results in fog and mist

- Dry offshore winds have less moisture/less condensation

- High pressure belt- winds descend thus less condensation

- Located on western edges of continents – might be the leeward side.

- Easterly winds – blow offshore

- Absence of cloud cover   4@ 1 mark   [4]

(b)   Study Photograph B (Insert), which shows the landscape and vegetation of a climatic region.

(i) Describe four features of the vegetation shown in Photograph B (Insert).   [4]

Candidates were able to analyse the Photograph hence most of the features were identified. Some candidates lost marks by referring to features not shown in the Photograph such as long roots, or they would refer to other features of the desert such as soil which is not a feature of vegetation.

Expected responses:

- Thorny leaves/spikes/spines
- Fleshy stems/succulent
- Cacti
- Scrub/shrubs/short vegetation
- Waxy leaves/cuticle
- Sparse vegetation
- Brown/orange vegetation   4 @ 1 mark   [4]

(ii) Explain two human activities that take place in hot desert regions.
A majority of the candidates were able to explain the human activities in hot desert regions, but some did not develop their points properly.
Expected responses:

- Farming (crop/livestock) – desert people are able to use the water available in

- oasis/wells for domestic purposes and for cultivation of crops

- Hunting and gathering of food –

- Mining – the desert region consists of a variety of minerals, including oil, which are exploited to provide revenue and employment

- Nomadic pastoralists – people in the desert rear animals they have to move from one area to another in search of grazing land

- Tourism – people often visit the desert for leisure which generates income for the local people

- Fishing activities along the coast for those areas which have a coast – generates export revenue

- Leisure activities – locals and tourists visit area for entertainment such as off-road motor sport, horse riding, camel riding etc.

<div style="text-align:center">1 mark for naming, one mark for explanation 2 @ 2 marks [4]</div>

(c) Human activities have an impact on the vegetation of an area. For an area of tropical rainforest you have studied, explain three ways by which human activities have affected its vegetation.

The human activities were well explained by most candidates. A few, though, simply explained the negative impacts of deforestation such as soil erosion, loss of habitats etc. Most candidates lost a mark in the example as they would give the name of a country e.g. Brazil instead of an area within the Tropical rainforest region or a name of a tropical rainforest e.g. Amazon basin.

Expected responses:

Example: **An area in the tropical rainforest**

- Ranching and commercial farming – large areas of forest have been cleared for pastoral farming and plantations/this has resulted in the loss of indigenous trees

- Mining – a number of minerals are being exploited in this region and forests are cleared for this activity especially in open cast mining

- Fuel wood – local people depend on the trees for their source of fuel/energy hence large areas are cleared

- Settlements/industries/road construction – large areas of forest are cleared to make way for development of settlements/industries and roads.

- Dam construction – for production of HEP results in large areas being cleared

- Medicinal use

- Timber/logging/lumbering   3 @ 2 marks

        1 mark for naming, 1 mark for explanation

        Reserve 1 mark for example   [7]

[25 marks]

THEME 3: ECONOMIC DEVELOPMENT, UTILISATION AND MANAGEMENT OF

RESOURCES

Candidates were supposed to answer **one** question from this theme.

Question 3

(a)   Study Fig. 3, which shows a plan of a large-scale commercial farm in an LEDC.

    (i)   Define *commercial* farming.

      Candidates were able to define commercial farming. Some lost a mark because they either left out the rearing of livestock and just mentioned the growing of crops, which is arable farming or they would repeat or use words that are part of the question that is *farming* or *commercial.*

      Expected response:

- Growing of crops and rearing of livestock for sale/profit/market   1 @ 1 mark   [1]

    (ii)   State any two possible impacts of the farm on the river.

      In most cases, candidates misinterpreted the question and gave the impacts of the river on the farm or people living in the farm such as flooding, dangerous animals, instead of stating the impacts of the farm activities on the river such as pollution from agrochemicals.

      Expected responses:

- Pollution from agrochemicals/ eutrophication

- Reduced volume of water

- Sedimentation/siltation due to soil erosion   2 @ 1 mark   [2]

    (iii) List any other **three** inputs of the commercial farm **not** shown in Fig. 3.

      Some candidates were able to list the inputs however some failed to analyse Fig. 3 by mentioning inputs that are represented such as seeds (nursery) and labour (staff houses).

      Expected responses:

- Machinery
- Fertilizers
- Capital
- Sunshine/sunlight
- Rainfall
- Pesticides/ Insecticides/ herbicides
- Temperature   3 @ 1 mark   [3]

(iv) Describe four advantages of the features shown on the farm in Fig. 3.

Some candidates were able to link the features shown in Fig. 3 to the advantages, but some stated the features shown without describing how these are an advantage to the system. In some cases, they described the benefits of the system or the farm such as employment opportunities which was incorrect. Some of the features were rarely mentioned such as fallow land and grazing land. The function of the nursery was not known by most candidates as they stated that it was for treating workers when they are sick, rather than growing of seedlings.

Expected responses:

- Staff houses on site – increases efficiency/reduces transport costs as workers are nearby

- Large area – enables cultivation of a variety of crops/to allow fallowing

- Earth dam/river/furrow – for water supply throughout the year

- Road – for transport of raw materials and produce

- Proximity to market, 2 km away – produce reaches market still fresh / cheaper transport costs

- Nursery - for growing of seedlings at a cheaper cost

- Storage shed/ farm buildings – for proper keeping of tools and keep produce fresh/ before transportation to the market

- Fallow land – helps to maintain productivity of the soil/improves soil fertility

- Grazing land – ensures that livestock can feed nearby   4 @ 1 mark   [4]

(b) Study Photograph C (Insert), which shows a system of farming in Eswatini.

(i) Identify four characteristics of the system of farming shown in Photograph C (Insert).

Most candidates were not able to link the question to the Photograph thus they ended up stating characteristics that are not shown in the Photograph such as family labour, use of kraal manure etc.

Expected response:

- Small area of land

- Contour ploughing/ploughing across the slope

- Land unfenced

- Grass strips in between fields

- Terraced fields

- Rural homestead close or nearby   4 @ 1 mark   [4]

(ii)   Explain two solutions by which this farming system can be made

more productive.

This question was well answered by most candidates the solutions were well explained. In some cases, though, it was not clear how the solution mentioned would improve productivity.

Expected responses:

- Use of hybrid seeds – which are resistant to disease/high yielding

- Use of inorganic fertilizers – increases nutrients in the soil

- Extensive use of machinery – a large area can be cultivated within a short period of time

- Irrigation – extends area under cultivation/during dry season/drought

- Technology – enables the use of new methods of farming and machinery

- Improved storage – reduces loss of produce due to bad weather elements and pests

- Fencing – to prevent livestock and wild animals from destroying the crops

- Crop rotation – increases soil fertility and decrease pests and disease

- Government policies – e.g. subsidized prices of inputs like seeds/fertilizers

                    1 mark for naming, one mark for explanation.   2 @ 2 marks   [4]

(c)   Subsistence pastoral farming has an impact on the people of an area. For an area you have studied explain three positive impacts of subsistence pastoral farming on the people.

Candidates responded well to this question except for a few who overlooked the term pastoral and hence explained the general impacts of subsistence farming on the people. Some candidates gave examples in urban areas instead of rural areas.

Expected responses:

Example: **An area where subsistence pastoral farming is practiced**

- Draught animals – used for pulling farm implements animals

- Make kraal manure/cow dung – which will be used for soil fertility/ source of fuel

- For milk/beef - which serves as a source of food/ protein

- Skins/horns are dried and softened for traditional attire such as loin skin and other domestic uses such as floor mats

- Sold for financial benefit – the money can be used for other financial needs

- For traditional ceremonies – such as lobola or where the cows are slaughtered to provide food during the ceremony or to observe culture

- Job opportunities – herd boys are hired which reduces unemployment rate or improves their standard of living   3 @ 2 marks

                    1 mark for naming, 1 mark for explanation

                    Reserve 1 mark for example   [7]

                                                                          [25 marks]

Question 4

(a)   Study Photograph D (Insert), which shows some aspects of sustainable tourism.

(i)   What is sustainable tourism?

   Candidates had a challenge with the definition, they just defined tourism in general.

   Expected response:

   - Tourism that respects both the local people/ the traveller/ cultural heritage / environment without compromising/ruining the needs of the future

                                                                1 @ 1 mark   [1]

(ii) State two possible strategies for sustainable tourism.

   Candidates again referred to strategies for tourism in general rather than sustainable tourism.

   Expected responses:

   - Limiting number of tourists to an area

   - Limit the number of vehicles (park and ride)

   - Limit the number of lodges/campsites

- Restrict access to some areas.

- Ban tourists from hunting activities

- Education on sustainable tourism

- Biodiversity

- Conservation of honeypot sites and wilderness areas

- Promoting community-based tourism   2 @ 1 mark   [2]

(iii) Identify from Photograph D (Insert) three things which require sustainable management.

This question was fairly answered by candidates as they were able to analyse the photograph, though most did not identify the traditional hut (made from local natural material) or simply referred to it as a settlement.

Expected responses:

- Traditional house/hut/ house made of local natural material

- Wild animals/ giraffe

- vegetation

- landscape/mountains   3 @ 1 mark   [3]

(iv) Describe four negative impacts of the tourism industry on the environment.

Candidates scored low marks in this question because they referred to general negative

impacts of tourism even to people such as loss of farmland, prostitution, traffic

congestion etc. instead of referring to the environment.

Expected responses:

- Removal of vegetation/environmental degradation/ destruction of ecosystems/loss of habitats

- Footpaths lead to soil erosion

- Strain on natural resources such as water

- Pollution (litter/waste/air/water)

- Pressure on endangered species

- Environmental degradation   4 @ 1 mark   [4]

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(b) **Study Fig. 4, which shows the advantages resulting from the growth of the   tourism industry in an LEDC.**

(i) **Using Fig. 4, describe four benefits that may arise from the development of the tourism industry in a country.**

Candidates failed to describe how the advantage shown in Fig. 4 would benefit the country. In most cases, they just gave the advantage as is from the figure.

Expected response:

- Local agricultural produce- provides a market for local famers

- Airports and hotels – investment creates employment opportunities/accelerates economic development

- Profits – which may be reinvested into the industry

- Employment – locals employed which improves the standard of living

- New facilities – which may be used by locals too

- Craft industry – sustains the industry/locals get profit   4 @ 1 mark   [4]

(ii) **Explain two strategies used by the country of Eswatini to promote tourism.**

Candidates were able to explain the strategies, but some just stated without developing their points.

Expected responses:

- Eswatini Tourism Authority – responsible for marketing of the tourism industry

- KM III International Airport – attracts airlines from the international community

- Advertisement/ websites – easy for tourists to make bookings online

- Promotional literature – helps to make tourists aware of attractions and places to visit

- Community tourism projects – help to educate locals about sustainable tourism/boosts sustainable/ecotourism tourism

- Cultural villages/events – provides entertainment for the tourists

- Ease of border restrictions/entry requirement

- Holiday packages

- Development of relevant infrastructure such as hotels/roads/airports. Clean-up campaign

1 mark for naming, one mark for explanation   2 @ 2 marks [4]

(c) The development of the tourism industry has an impact on the people.

For an area you have studied, explain three negative impacts of tourism on the people.

Candidates responded well to this question as most scored the total marks. Candidates are advised to avoid repetition of some impacts such as crime, prostitution, drug abuse as they are all social ills.

Expected responses:

Example: An area affected by tourism

- Foreign influence on local culture and tribal values

- Social problems such as drug abuse, prostitution and crime

- Foreign ownership so managerial positions occupied by foreigners

- Profits may leave the country as companies often owned by MNCs

- Local areas may lag behind in terms of development as governments concentrate on the tourist attraction area

- High cost of goods and services

- Resettlement or displacement of local people

- Traffic congestion

- High/fast spread of diseases

- Shortage of water resources

- Pollution

- Seasonal employment   3 @ 2 marks

                                1 mark for naming, 1 mark for explanation

                                Reserve 1 mark for example   [7]

[25   marks]

THEME 4: POPULATION AND SETTLEMENTS

Candidates were supposed to answer **one** question from this theme.

Question 5

(a)   Study Photograph E (Insert), which shows a zone located in an urban settlement.

(i)   Identify this zone shown in Photograph E (Insert).

Candidates were able to identify the zone as a CBD (Central Business District)

Expected response:

CBD/Central Business District   1 @ 1 mark   [1]

(ii)   State two reasons for the development of this zone in an urban settlement.

This question proved to be difficult as they could not provide the reasons for the development of this zone, instead they described features of the CBD.

Expected response:

- Accessible

- Variety of services

- Road intersection

- High land value   2 @ 1 mark   [2]

(iii) Describe three features of the zone shown in Photograph E (Insert).

Most candidates responded well to this question, they managed to score the full marks. The Photograph was well analysed.

Expected responses:

- Tall buildings/ skyscrapers/ multi storey

- Flat tops

- Variation in height

- Large surface area of glass/mainly modern buildings

- Constantly being redeveloped

- Multi-coloured buildings

- Different designs

- Names/signage on buildings

- Clustered   3 @ 1 mark   [3]

(iv) Describe four problems experienced by people who live in urban settlements.

Candidates were familiar with the problems experienced by people living in urban settlements, most scored full marks.

Expected responses:

- High crime rate/ prostitution / drug abuse/ street kids.

- Traffic congestion/ lack of parking space

- Pollution (air/ water/ land) max 2

- Lack of housing/ high cost of rent

- High costs of goods and services

- Poor sanitation/ lack of proper sewage

- Rapid spread of disease

- Lack of clean water

- High rate of unemployment

- Overcrowding

- Power cuts

- Shortage of public transport during peak hours   4 @ 1 mark   [4]

(b)   Study Fig. 5, which shows a map of a developing town in Eswatini.

(i)   Identify four services provided in the town shown in Fig. 5.

Candidates answered this question well, the services were correctly identified form the facilities shown in Fig. 5. A few candidates mentioned the facilities instead of deriving the service from the facility.

Expected responses:

- Shopping

- Educational

- Entertainment/recreational

- Administrative

- Medical

- Transport

- Industrial

- Residential/accommodation

- Mailing/ posting/communication/postal service

- Religion

- Marketing

- Law and order/ security/police services   4 @ 1 mark   [4]

(ii) Explain two possible future changes to the present land use shown in Fig. 5 as the town develops.

Candidates found this question challenging, they could not explain how the present land use shown in Fig. 5 may change in the future, instead they gave general changes that take place as a town develops, e.g. development of roads, development of hotels.

Expected responses:

- Land used for farming will decrease as more land will be used for businesses and residential purposes

- Land used for informal settlements will decrease, taken up by more modern houses

- Gravel roads will be tarred

- Increase in number of services as the demands of the population increase

- Land values will increase

- Vacant land will be depleted for the development of new facilities

    1 mark for naming, one mark for explanation   2 @ 2 marks   [4]

(c) The development of cities may lead to urban sprawl. For an area you have studied, explain three impacts of urban sprawl on surrounding areas.

Candidates lost marks by referring to urban problems in general instead of problems associated with urban sprawl. For those that understood the question they could only give the negative impacts leaving out the positive impacts such as provision of more services, employment opportunities, development of infrastructure etc.

Expected responses:

Example: **An area around a city**.
• More services and goods which are not available in the rural area/higher order goods as in the rural area there are mainly low order goods

• Have to travel shorter distances to the city to acquire services not available in the rural area

- Loss of grazing land/Loss of farmland

- Increase in intra-city transport as people live further away from important commercial areas

- Loss of open space and natural recreational areas

- Pollution

- Deforestation

- Infrastructure development

- Employment opportunities

- Increase in cost of goods and services

- Increase in the value of land   3 @ 2 marks

                              1 mark for naming, 1 mark for explanation

                              Reserve 1 mark for example   [7]

                                                            [25 marks]

Question 6

(a) Study Fig. 6, which is a poster about HIV and AIDS produced by the government of Eswatini.

(i) What does AIDS stand for?

Candidates were able to state what the acronym stands for; the main problem was with the spelling especially acquired.

Expected response:

Acquired Immune Deficiency Syndrome.   1 @ 1 mark   [1]

(ii) List any two modes of HIV transmission.

The modes of transmission were well stated by the candidates.

Expected responses:

- Sexual intercourse

- Mother to child transmission

- Blood contact with an infected person/ sharing needles or razors   2 @ 1 mark   [2]

(iii) Suggest three reasons for the rapid spread of HIV and AIDS in LEDCs.

Most candidates gave the correct reasons, but a few would give the mode of transmission of HIV and AIDS. Some candidates referred to lack of contraceptives as a reason yet these are for preventing pregnancy.

Expected responses:

- Multiple partners/prostitution
- Low status of women
- Lack of use of condoms
- Lack of education/myths
- Polygamy
- Drug abuse.
- Poverty/unemployment
- Inter-generational relationships
- Migrant workers/tourists   3 @ 1 mark   [3]

(iv) Using Fig. 6, state four efforts being done by the country to address the impact of HIV and AIDS.

The question was well answered by candidates though a few referred to efforts not shown in the figure or could not mention the name of the organisation as shown in the figure.

Expected responses:

- Distribution of condoms

- Education

- circumcision

- PreP/ ARVs

- organizations such as NERCHA/ PEPFAR/USAID   4 @ 1 mark   [4]

(b) Study Fig. 7, which shows changes in the population of MEDCs and LEDCs.

(i) Describe four changes in the population of LEDCs shown in Fig. 7.

The questions was fairly done by most candidates, the main challenge for some was interpretation or analysis of the graphs. There was poor reference to the indicators or variables e.g. instead of referring to increase in infant mortality they would refer to increase in number of deaths, hence they lost marks. They would also refer to increase in population instead of increase in urban population. Some candidates also lost marks by comparing the LEDCs to MEDCs.

Expected responses:

- Number of children born per woman decreases/ fertility rate decreases

- Infant mortality decreases

- Life expectancy increases

- Urban population increases   4 @ 1 mark   [4]

(ii) Explain two reasons for the high life expectancy in MEDCs.

The element of 'improved' or 'better' was missing in most responses, candidates would just state medical care, water supply instead of better medical care and improved access to clean water, hence they lost marks. The use of non measureable terms such as good, or enough was common and these did not score.

Expected response:

- Better/improved medicinal care

- Improved food and nutrition

- Improved sanitation/hygiene/access to clean water

- Better housing/improved housing

- Affluence/affordability – of basic needs extends lifespan

- Healthier lifestyle/better health education

       1 mark for naming, one mark for explanation   2 @ 2 marks [4]

(c) The distribution of population in the world varies from place to place. For an area you have studied, explain three reasons why there is a high population density.

Most candidates confused high natural population increase with high population density hence they lost marks as they gave reasons for the high increase in population such as lack of contraceptives, polygamy, lack of education etc.

Expected responses:

Example: **An area of high population density**

- Fertile soils – attract populations as it can support a large number of people due to high yields

- Availability of clean water supply – which can be used for irrigation of crops or domestic use

- Gently sloping land – ease of construction of buildings

- Transport

- Availability of services

- Political stability

- Mineral deposits

- Favourable climate

- Employment opportunities   3 @ 2 marks

       1 mark for naming, 1 mark for explanation

       Reserve 1 mark for example   [7]

                       [25 marks]

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Paper 6890/02
Geographical Skills
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Key Messages:

- It is essential that candidates study the map carefully before deciding their answers. For   example, looking beyond the area in question can often help with interpreting the landscape such as in contour line labels.

- Candidates should pay particular attention to the map key. This will help improve the accuracy of their responses in map work.

- Both teachers and candidates are reminded that interpretation and analysis are basic skills in this paper. Candidates should refrain from copying out figures or information from the resources and using these as their answers.

- Care is needed when the question refers to physical features, natural features or human features (see Question 1 c) (ii), d) (iii) and e).
- In questions with photographs, candidates should focus on what can be seen in the photograph in relation to the question rather than speculating on what cannot be seen.
- Good answers focused closely on the questions asked and were often very concise.
- Take notice of the mark allocations and space provided in order to write answers of an appropriate length – answers which are too brief will not gain many marks and too long answers will waste time.
- Avoid using vague words or statements which should be qualified or elaborated, for example rather than 'pollution' they should state the type of pollution.
- Candidates must always follow the chronological order when they are describing a process, see Question 2 (b) (ii).
- Candidates should ensure that all parts of the questions are attempted and especially those completed on the data resources provided (see Question 3 (b) (i)).
- Many of the questions are based on resources such as photographs and diagrams. Candidates should study these carefully before attempting the questions and ensure that they refer to them in their responses.
- Examiners can usually decipher rushed handwriting, but skills papers often include numerical answers and candidates need to ensure that they write digits clearly. Units should also be included.
- Similarly graph plots are best carried out with a sharp pencil so that the exact point is clear and if the candidate wishes to change their response this can be done more easily.
- Candidates need to follow instructions, i.e. answering only one question in Section C, Question 5 or Question 6.
- Candidates should use data from the figures, tables and graphs given in the question to support their statements rather than just using general statements.
- Candidates are encouraged to answer more succinctly and give more thought to answers.

- Hypothesis questions require candidates to give their own opinion by taking a stand first before giving any supporting evidence. Candidates must note that there is **no 'partially agree' or 'to some extent'**, it's either agree, disagree, correct, incorrect, true or false.
- When answering Hypotheses questions that ask whether you agree or not, always give your opinion at the start of your answer before any supporting evidence. Do not just copy out the hypothesis if you agree with it.

General Comments

The number of candidates who sat for the 2022 examination saw a drop to 7145 as compared to just over 13000 candidates in 2021. Some centres had worryingly very low numbers in the subject which is cause for concern. Most points for teachers to consider, when preparing candidates for future questions, relate to misunderstanding or ignoring command words and the importance of experiencing fieldwork – even if is only in the school grounds or simulated in the classroom.

Section B was poorly done by most centres in this examination and this points to misconceptions that emanate from the handling of some concepts in the syllabus, in areas such as cloud cover, plate tectonics and population pyramids. As always, there was a wide range of marks and some candidates, whilst not performing as consistently across the paper, did make a genuine attempt on some sections of the paper, enabling the paper to differentiate effectively between candidates of all abilities.

In some centres there were instances of rubric infringement that were observed in which the candidates did not follow the instruction especially in Section C. Centres are advised to stick to the instruction of attempting either Question 5 or 6 in this section. There is evidence that attempting both questions within the stipulated time compromises their performance in this section and invariably the entire component. Of the two, Question 5 was more accessible than Question 6.

Comments on specific questions
Section A
This section was comparable with previous sessions, testing a range of geographical skills and map-work applications. There were some excellent responses to Question 1, and thus a great improvement in attempting this question from a majority of centres, which was pleasing to see as the map contained a lot of information, particularly in the key, and candidates handled this well.

Question 1
The map extract is for Zvishavane (Zimbabwe). The scale is 1: 50 000. Fig. 1 shows the position   of some features in the map extract.
(a)   Identify the following features shown in Fig. 1:
   (i) type of road A
      Candidates were expected to identify the type of road, and a common response was Narrow tarred

      road which is incorrect.

      Expected response:
- Gravel or Earth

   (ii)   name of river marked B

Most candidates were able to identify the river marked B
Expected response:
- Shavi

(iii) feature C
Some candidates misinterpreted this symbol for a waterfall and thus could not score.
Expected response:
- Weir

(iv) feature D
Some candidates had a challenge in identifying feature D and gave responses such as 'designated area', 'boundary subdivision'.
Expected response:
- Boundary Cadastral/Original grant

(v) feature E
Most candidates were able to name the feature as expected.
Expected response:
- Dip Tank

(vi) feature F
Popular responses were incorrect they included quarry/excavation or smooth rock that could not score.
Expected response:
- Mine dump

(vii) land use at G
Some candidates gave multiple answers, through lifting from the key and thus gave incorrect answers in built up area and buildings that could not score yet these are two different symbols.

Expected response:
- Built up area

(viii) feature H
Even in this part question candidates lifted both symbols directly from the key i.e. gravel or earth with bridge yet these are two separate symbols.

Expected response:
- Bridge

(b) (i) State the height of the summit of Manjere mountain in grid square 9939

This part question was poorly done by most candidates. A majority of the candidates stated the name of the trigonometrical station 524/T while others gave the height without the correct units which could not score.
Expected response:
1289.6 m

(ii) **What is the six figure grid reference of the Poromora hill summit on the east of the town of Zvishavane?**

In this part question a majority of candidates mis-measured the minutes giving responses such as 974498 or 973498.

Expected response:

- 973496

(iii) **Measure the whole circle bearing of the Ruins in grid square 0045 from the Poromora hill summit.**

This part question was most challenging. The candidates with incorrect answers were often completely inaccurate, possibly due to setting up their protractor incorrectly.

Expected response:

- 134°-136°

(c) **(i)** **What is the general direction of flow of the river Shavi?**

This part question was fairly well done and some candidates went even further than being general.

Expected response:

- South East or East of South East/SE/ ESE

(iii) **Study the course of the river Shavi east of easting 00.**
Name any two physical features found along it.

Most candidates could not realise that the features to be identified were those along the river in the east of easting 00 and they further picked man-made features, yet the question emphasised on natural features. Instead, they listed features such as waterfalls, or oxbow lakes which is general knowledge while the question required an interpretation of the map.

Expected responses:

1. Braided channel or courses/Eyots
2. Rapids
3. **Meander/bends**

(d) (i) Measure the length of the stretch of the railway line in metres, on the south western part of the map extract.

A majority of the candidates gave a correct answer even though some left out the units (metres)

Expected response:

7800- 8000 metres

(ii) **The height where the railway line ends next to northing 42 is 1150 metres andwhere it ends next to easting 94 it is 1000 metres. Calculate the gradient between the two points of the railway line.**

More often an item with this part question has proven to be a challenge in most centres, as a result a few candidates managed to calculate only the VI and a majority could not compute the gradient.

Expected response:

Gradient = <u>1150m -1000m</u>
                    7800m

=   <u>150m</u>
        7800m /7900 /8000

=   <u>1</u>
            52   or 1: 52   or   1 in 53

(iii) State three social facilities found in the town of Zvishavane.

This part question was accessible to candidates from most centres, however weaker candidates failed to interpret the symbols and confused facilities for services.

Expected responses:
- Golf course
- Police station
- Hotel
- District Administration office
- Sports Field/Racetrack
- Post Office
- Hospital
- School
- Pools
- Sewerage ponds
- Cemetery

(e) Identify three pieces of map evidence that show that mining takes place in the town of Zvishavane.

Map evidence on the pieces of evidence for mining were correctly provided.

Expected responses:
- Mining or prospecting Trench
- Mine Dump
- Quarry or excavation
- Named mines (Max 1) e.g. Red Knight, Shabanie, Nil Desperandum

(f) (i) Name the settlement pattern found in grid squares 9747 and 9748.

- This part question was fairly well done by most candidates however there were those candidates that confused settlement patterns with drainage patterns as a result response on dendritic pattern were common with some centres. Some candidates gave nuclear settlements which did not score.

Expected response:
- Nucleated or clustered

(ii) State one reason why the area in the south western part of the map extract is without settlements.
This question was well done by most candidates noting that the area has a hilly terrain.
Expected response:
- Steep slopes/hilly/mountainous/rugged terrain

Section B

This was by far the most challenging section in this examination component. There were glaring misconceptions that emanate from being casual with geographic terms while trying to simplify some concepts during learning as well as in meaning in context. This notion was evident in the three questions of cloud cover, industrial divisions and population studies.

Question 2

(a) Study Fig. 2, which shows types of clouds.

(i) Name the clouds labelled 2 and 3 in Fig. 2
In this part question reference could have been the resource in figure 2, and naming of the clouds was confusing in that some candidates could neither differentiate between the two or gave non-existent names of clouds all together.
Expected responses:
2 – Cirrus
3 – Stratus

(ii) Describe two characteristic features of the cloud labelled 1 in Fig. 2.
In this part question the drawn cloud was meant to act as the aid to stimulate recall of characteristic features of the cloud shown. Instead, most candidates demonstrated scanty knowledge on the cloud shown. Some gave 'large', 'big' or 'long' which could not score. Clouds are best described in colour, height and appearance.
Expected responses:
- White to grey in colour
- Fluffy/Heap of Cotton wool
- Globular/round
- Flat base/bottom
- Have great vertical extent or development/tall
- Mushroom top/cauliflower top/anvil or spreading

(b) Study Fig.3 which shows a process occurring in the Earth's crust.

(i) What type of plate boundary is shown in Fig. 3?
In this part question candidates failed to carefully study the arrows shown and look at the typical features that were shown. Instead, they gave responses to, divergent plate margin, conservative plate margin which could not score.

Expected response:
- Destructive/Convergent Plate margin

(ii) Explain why volcanoes occur in the area shown in Fig. 3.
The incorrect response given in (b) (i) above led to some candidates giving an explanation on why earthquakes occur in the area shown yet the question was on why volcanoes occur. There is need to emphasise the distinction between magma and lava.
Expected responses: **(in chronological order)**
- Continental and oceanic plates converge/collide
- Oceanic plate sub ducts under the continental plate
- Oceanic plate melts in mantle
- Forming magma
- Faults are formed/develop
- Magma escapes through faults.

Question 3
(a) Study Fig. 4, which shows the employment structure in LEDCs and MEDCs.
Describe three differences in the employment structure between LEDCs and MEDCs.
This part question was well done in some centres while in other centres candidates had some challenges. Weak responses were comparing primary and tertiary instead, yet the question required contrasts within a sector in both the LEDC and the MEDC. Other weak responses failed to use comparative terms such as higher, lower, more, fewer etc.
Expected responses:
- In MEDCs there are more people employed in tertiary while in LEDCs are less
- In MEDCs there are few people employed in primary while in LEDCs are more
- In MEDC there are more people employed in secondary while in LEDCs are less

(b) (i) Plot a dot of the employment structure for Eswatini in the appropriate position in the triangular graph shown in Fig. 5.
This part question was poorly done by most candidates. Evidence from some centres was that candidates had no idea of what a triangular graph is. Some candidates could not plot a dot but made a three-pin angle. Some shaded along the length/side of the outer triangles up until 70% in primary, 20% along secondary and 10% for tertiary, which was a waste of time for only a mark.
Expected response:
- Plotting correctly on the triangular graph where all three meet or converge
- Primary 70%, Secondary 20% and Tertiary 10%

(ii) Suggest two reasons for the employment structure of Eswatini.
Most candidates misunderstood this question emanating from (b) (i) above and as such it was poorly done. Most candidates focused on lack of jobs in Eswatini rather than referring to the percentages of a high number employed in primary than secondary and tertiary sectors.
Expected responses:
- Eswatini's economy is dependent on primary industries/ many primary industries

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- Few investors/political instabilities
- Lack of capital/technology/ expertise
- There are few manufacturing and processing industries to process the raw materials
- Lack of/small domestic market
- There is a limited services sector in the economy

(iii) State how the employment structure of the country will change as it develops.

Most candidates did well in this part question even though some suggested solutions to the problem of lack of jobs in the country such as government giving out more scholarships which did not score.

Expected responses:

- Primary sector will decrease
- Increase in secondary sector
- High increase in tertiary sector

Question 4

(a) Study Photograph A (Insert), which shows a residential zone of a town.

(i) In which residential zone was the photograph taken?

This part question was poorly done by most candidates. A few identified the zone correctly.

Expected response:

Low density (residential zone) / high income (residential zone).

(ii) Describe three features of the housing shown in Photograph A.

The photograph was supposed to be used as a source in which responses were to be generated. Most candidates failed to use the photograph to give plausible answers. Instead, they focused on distractors such as the gate, post office delivery box and a flag that had no bearing on the house. It is advisable for centres to expose candidates to the interpretation of photographs whether at vertical or oblique even at a limited scale while preparing for examinations.

Expected responses:

- Big/large house
- Beautiful plan/scenery
- Spacious yard
- Many rooms/windows/well ventilated
- Secured fencing
- Paved/concrete yard
- Roofed with tiles/well painted/Expensive or high quality materials.

(iii) Suggest two advantages of living in this residential zone.

The advantages of living in this residential zone were well articulated by some candidates and that was credited.

Expected response:

- Quiet environment/Less noise

- Less pollution/improved sanitation

- Attractive scenery/Prestige /improved/better standard of living

- Less crime

- Spacious surroundings

- More privacy

(b) **Study Fig. 6, which shows the population pyramid of Kenya, an LEDC in Africa.**

(i) What percentage of the population are males aged 15 to 19 years?

This part question was well done by candidates from most centres.

Expected response:

- 5 %

(ii) Describe two features of the population structure of Kenya shown in Fig. 6.

To teachers and candidates in all centres, care should be taken when handling this part of content during teaching and learning. A population pyramid is a visual/ illustration of the distribution by age/cohort or sex of a given population. The representation is meant to visualize and summarise the composition of that population. As such responses that dwell on the pyramid shape such as narrow top, broad base, and falling middle do not score. The shape of the pyramid is meant to aid comprehension. In examination questions we describe the features of the population depicted by the pyramid about that given population. Responses from this part question were misinformed and misguided thus vague.

*Expected responses***:**

- Many young/youthful/high number of children

- Few elderly/ageing/old dependants

- High dependency ratio/more dependants/Less economically active/working age

- More males than females/sex or gender imbalance

Section C

Answer **either** Question 5 **or** Question 6.

There were rubric infringements in this section where candidates from some centres were attempting both questions. In this section candidates are expected to show that they know about fieldwork equipment, how it is used and fieldwork techniques. Any fieldwork experience is worth doing even if there is only limited opportunity within the centre. Familiarity with maps, tables, sampling methods, measuring instruments and the various graphs and other refining techniques listed in the syllabus are also important for success in this part of the examination component.

Question 5 was more accessible to candidates than Question 6. Question 5 focused on the characteristics of a low-density housing zone and that of an informal settlement zone. They were required to use and interpret questionnaires to determine how facilities and crowding compared between the two zones. Candidates needed to make judgements about two hypotheses using data as well as applying knowledge and understanding of data collection tools to agree or disagree with them.

Question 5
A group of students studied the characteristics of a low-density housing zone and an informal settlement zone in the city of Mbabane. They decided to investigate the following hypotheses;
Hypothesis 1: *Facilities in the houses in a low-density housing zone are better than those in an informal settlement zone.*
Hypothesis 2: *Houses in a low-density housing zone are less crowded with people than those in an informal settlement zone.*

(a) Before carrying out the investigation the students decided to visit the two residential zones.

(i) What is an informal settlement?

This part question was challenging to most candidates, they missed the fact that they should relate it to a town or city. Answers referred to it as an unplanned settlement made of poor materials.

Expected response:

- It is an unplanned/ illegal settlement (found in the outskirts of town) or an area of poor-quality housing near the edge or outskirts of a town.

(ii) Name any two things the students would need when planning to carry out this investigation.
Most candidates could not score all the marks in this part question. Only a few managed to give 'recording sheet' as an answer. Some gave answers such as pen, pencil, or questionnaires, which did not score.

Expected responses:
- Land use survey <u>map of the area or settlement</u>
- Permission from the local authority or town council
- Recording sheet

(b) **The students decided to investigate Hypothesis 1:** *Facilities in the houses in a   low-density housing zone are better than those in an informal settlement zone*, **by interviewing 50 people in each residential zone.**

(i) **What is a residential zone?**

This question was fairly well done except for a few students who associated it with an area where the wealthy live.

Expected response:

- A place where people live/reside in a town

(ii) Name two other zones found in a town.

This part question was well done by some candidates though there were a few who divided the residential zone into high, middle and low income.

Expected responses:

- Industrial zone
- CBD/Downtown/city centre/commercial or business centre
- Greenbelt/Recreational area
- Transition zone

(c) **Study Fig. 7 (Insert), which shows the questionnaire used by the students when collecting data.**

(i) **Give two reasons why Question 1 in the questionnaire should not be asked?**

For a majority of candidates, it showed that the use of questionnaires as a data collection tool was covered satisfactorily during examination preparation as they did well here.

Expected responses:

- Personal/Embarrassing/Sensitive/confidential
- Irrelevant/unnecessary to the study/waste of time

(ii) Describe two good features of the questionnaire shown in Fig. 7 (Insert).

This part-question was fairly well done except for those candidates who did not bother studying the given questionnaire instead gave general statements.

Expected responses:
- Few questions/less than five
- Tick boxes/proper layout / neat
- Short/brief questionnaire
- Simple and easy to understand/user friendly
- Close-ended questions

(d) The results of the questionnaire are shown in Table 1.

Table 1

Question	Low density housing zone (%)	Informal settlement zone (%)
Where do you get your water supply?		
Stand pipe	16	36
Tap inside the house	70	4
Other	14	60
What are your toilet facilities?		
Pit latrine		
Flushed toilet	10	100
	90	0
How do you get your electricity supply?		
No electricity supply	4	30
Town board	90	15
Illegal connection	6	55

(i) Use the results for Question 2 in Table 1 to complete the block graph, Fig. 8 for low density housing zone.

This question on plotting was well-done by those candidates who deciphered   the value for each mini square. A reasonable number of candidates could not follow the key accompanying the graph; some had no knowledge on how to complete the graph altogether and left it undone.

Expected response:

- Line drawn correctly to show percentage for the other sources of water supply i.e. 16% standpipe, 70% tap inside the house and 14 % for other correct use of key

(ii) The students decided to plot the results for Question 4 for the informal settlement zone on a pie graph, Fig. 9. Use the information from Table 1 to complete the pie graph.
Most candidates poorly did this part question. Probably some could not convert the figures to angles, while some could not place the protractor correctly to complete, and shade correctly.

Expected response:

- No electricity: 30/100 x 360˚ = 108˚

- Town Board: 15/100 x 360˚ = 54˚

- Illegal connection: 55/100 x 360˚ = 198˚

  Correct angles
  Correct shading and plotting on pie graph

(iii) Write a conclusion to the investigation for Hypothesis 1: *Facilities in the houses in a low-density housing zone are better than those in an informal settlement zone.* **Use evidence from Table 1, Fig. 8 and Fig. 9 to support your answer.**

It is still disappointing in this section that some candidates cannot make judgements about a hypothesis using data as well as applying knowledge and understanding to agree or disagree (taking a stand). This part question was well attempted by some candidates the only drawback was some candidates did not use proper units in supporting data.

Centres and candidates should note the following:

- Use the required data set comparatively rather than listing unexplained data
- Whenever data is given ensure that proper units are used when picking evidence from the figures and tables, as directed by the question, to draw a conclusion to a hypothesis.
- In the first line of response on this part question candidates should make judgements or take a stand on whether they agree or disagree with the hypothesis.
- Avoid rewriting the hypothesis as it takes up the space for the answer with supporting evidence.

Expected response:
- Hypothesis true/correct/accepted
- Supporting evidence:
- Data from Table 1, with Fig. 8 and Fig. 9 was to assist in unpacking the differences between the two zones
- Taps inside the house is 70% a higher percentage in low density yet it is 4% in informal settlement zone
- Sanitation/Flush toilets are 90% in low density housing yet there are no flush toilets in informal settlement zone
- Electricity supply/connection from town council is 90% in low density yet it is 15% in informal

(e) The students further tested Hypothesis 2: *Houses in a low- density-housing zone are less crowded with people than those in an informal settlement zone.* **A questionnaire was used. They asked two questions:**
Question 1: How many rooms are there in your family house?
Question 2: How many people live in your family house?

The results of the questionnaire are shown in Table 2.

Table 2

1. How many rooms are there in your family house?

Number of rooms	Low density housing zone (%)	Informal settlement zone (%)
• 1 room	38	70
• 2 rooms	22	26
• 3 rooms	25	4
• 4 rooms	15	0

(i) Use the results in Table 2 for Question 1 to complete the bar graph, Fig. 10, for the low-density housing zone.

This part question was well done even though some candidates failed to read the scale correctly, shade following the given shading, use the correct width for the bars.

Expected response:

Placing and plotting of bar for one room and three rooms: 38 and 25 respectively.
Correct bar width (5 mini squares) using the provided shading

The students then plotted the results for Question 2, on a bar graph, Fig. 11. Using Fig. 11 complete Table 3 by stating the number of people living in 2 room houses in the informal settlement zone.

This part-question was well done by most candidates.

Expected response:

• 8 people

(ii) Write a conclusion to the investigation for Hypothesis 2: H*ouses in low-density housing zone are less crowded with people than those in an informal settlement zone.* Use evidence from Table 3 and Fig.11 to support your answer.

Most candidates had less difficulty taking a stand however there were a few cases of evidence taken from wrong tables and figures. Some candidates displayed the weakness of being unable to use comparative quantified statements by listing evidence and that did not score. Rather than table 2 the correct one from which evidence should be picked was table 3.

***Expected responses*:**

• Hypothesis true/ correct/accepted

• All figures show crowding in informal settlements than low-density housing

• with a notable absence of four rooms in informal settlements:

• Fig. 11 The average number of people in 1, 2, 3 rooms is higher (taller bars) for informal settlement zones than Low density housing zone (named figures)

• In 1 rooms there are more people (6) living in informal settlement zone, while there are few people (2) living in low density housing zone.

- In 2 rooms there are more people (8) living in informal settlement zone, while few people (6), living in low density housing zone.
- In 3 rooms there are even more people (10) living in informal settlement zone, while there are 8 living in low density housing zone.
- In 4 rooms there are none in informal, while there are 4 in low density housing.

(iii) Suggest one way in which the students could improve the investigation to make the results more reliable.

Most centres were of the impression that improvements were generic and recited improvements that were given in other studies; Centres are advised to note that improvements to investigations are specific to the kind of investigation and should not be treated as all-inclusive.

Expected responses:
- Investigate the two zones in another town or city
- Investigate other factors that affect crowding in cities
- Repeat the investigation then share the activities and results with other group for comparison purposes.
- Use secondary data from other sources such as town council, census, or the internet (qualified sources)

Question 6
Students from a school in Eswatini wanted to investigate the impact of alien invasive species (an introduced plant that negatively changes its new environment) on the distribution of indigenous vegetation (plant species occurring naturally in an area). They decided to investigate two hypotheses:
Hypothesis 1: *The area covered by alien invasive species has increased from 1990 to 2020 while the area covered by indigenous vegetation has decreased.*
Hypothesis 2: *The variety of alien invasive species has increased from 1990 to 2020.*

(a) To investigate Hypothesis 1: *The area covered by alien invasive species has increased from 1990 to 2020 while the area covered by indigenous vegetation has decreased,* **the students decided to use both primary and secondary data. They measured the areas covered by both alien invasive species and indigenous vegetation.**

(i) Define secondary data.

Most candidates could not define secondary data instead they gave an example of secondary data that didn't score.

Expected response:
- Information collected from other written published sources other than that from fieldwork

(ii) Give two advantages of using primary data.

For most candidates that opted for this question, the advantages given were irrelevant e.g. first-hand information, cheap, easy to conduct

Expected responses:
- Can be specific/relevant/to the purpose of the investigation
- Can yield detailed information/relatively more accurate and reliable
- It gives more current/updated information.
- Less/unbiased

(b) The students used their results to draw a map, Fig. 12 (Insert) to show the area covered by the alien invasive species and indigenous vegetation.

(i) Use Fig. 12 (Insert) to calculate the area in square metres covered by alien invasive species. Show your working.
Most candidates that chose this question poorly did this part question. Some left the space reserved for calculating the area blank. Centres, are advised to spare sometime and expose candidate to varied methods of calculating areas of irregular features such as a farm of a dam
Expected responses:
- Number of full squares = 21
- Total number of part squares = 40.5 / 2
- Total number of squares is 21 + 20.5 =41.5 squares (carry error forward)
- Correct area is 41.5 x 100 = 4150 m^2

(ii) The students also calculated the area covered by indigenous vegetation. The area was calculated to be 3400m^2. They plotted both the area covered by indigenous vegetation and alien invasive species on a bar graph, Fig. 13.
Complete the bar graph by plotting the area covered by alien invasive species.
Most candidates failed to use the correct height, width and shading for the bar graph,
Expected response:
Correct plotting of the 3400sqm area with a width of 9 squares, bar height of 21-22, with the shading used for indigenous vegetation.

(c) The students relied on secondary data to find out the area covered by both indigenous vegetation and alien invasive species in the year 1990.

(i) Suggest two sources where they might have obtained this secondary data.
Most candidates could only give general secondary sources of data which did not score. The question demanded secondary data sources on both indigenous and alien invasive species that could be obtained from specific sources.
Expected responses:
- Nature/game reserve
- Internet source or website
- Tourism Offices/Ministry of Agriculture/Ministry of Natural resources

(ii) Fig. 14 is a bar graph that shows the same area covered by indigenous vegetation and alien invasive species in 1990. Use Fig. 14 to state the area covered by alien invasive species in 1990.

Most candidates were able to give the correct answer to this question, a few left out the units of measurement.

Expected response:

- 2200m^2

(d) Write a conclusion to the investigation for Hypothesis 1: *The area covered by alien invasive species has increased from 1990 to 2020 while the area covered by indigenous vegetation has decreased.* **Use evidence from Fig. 12 (Insert), Fig. 13 and Fig. 14 to support your answer.**

For most candidates, judgement on the hypothesis was correct. The only challenge was picking the data evidence in the various sources that support the stand taken.

Expected responses:

- Hypothesis is true/correct/accepted
- The area covered by alien invasive species has increased from 2200m^2 in 1990 to 4000/4150m² in 2020.
- The area covered by indigenous species has decreased from (5400m^2) in 1990 to 3400 m² in 2020.

(e) To investigate Hypothesis 2: *The variety of alien invasive species has increased from 1990 to 2020,* **the students decided to use a transect to observe the same area shown** *in* **Fig. 12. They agreed to make their observations along the banks of the river.**

(i) What is a transect?

This is terminology used in fieldwork. The emphasis of exposure to candidates to fieldwork even if it is on a limited scale cannot be overemphasised. Most candidates failed to give a definition of a transect.

Expected response:

- A line followed during observation of land use.

(ii) Fig. 15, shows the results of the secondary data collected in 1990 and Fig. 16   shows the results of the students' measurements in the same area in 2020.
Use the information in Fig. 15 and Fig. 16 to complete Table 4.

Table 4

No. of alien invasive species	
1990	2020
2	**5**

This part question was well done by most candidates; they made effective use of the key to identify the different kind of species.
Expected response: 2 species in 1990 and 5 species in 2020.

(iii) Write a conclusion to the investigation for Hypothesis 2: *The variety of alien invasive species has increased from 1990 to 2020*. **Use evidence from Fig. 15, Fig. 16 and Table 4 to support your answer**.

Most candidates did well in making a judgement on the hypothesis thus taking the correct stand, however the only evidence given was that of increased variety of species from 2 in 1990 to 5 in 2020. There was no mention of the increase in the stretch along the transect of the riverbank between 1990 and 2020.

Expected responses:
- Hypothesis is true/correct/accepted
- Data from Figs. 15, 16 and Table 4
- Table 4: Shows an increase in alien invasive species from 2 in 1990 to 5 in 2020.
- Fig. 15: Only two varieties of alien invasive species along the river bank over a shorter stretch 16 metres.
- Fig. 16: About 5 varieties of alien invasive species along the river bank over a longer stretch 65 metres.

(iv) Suggest four ways by which the students would improve the investigation to make the results more reliable.

This part-question was a challenge to most candidates. A word of caution to candidates is that it is not good practice to develop a series of generic improvements to an investigation to make results more reliable. As a result, such suggestions tend to be vague or irrelevant and not worth of credit.

Expected responses:
- Extend the study to other game reserves/areas
- Investigate other impacts of climate change on natural vegetation
- Repeat/carry out the investigation in a bigger area
- Repeat the investigation in another time/year/part year/season
- Carry out the investigation/study in another ecological zone/biome**.**