

## GEOGRAPHY

### EXPECTED ANSWERS

#### CLIMATE CHANGE

##### 1.1 CHANGES IN ENERGY BALANCE

- a. Global warming – increase in average global(world) temperatures as a result of greenhouse gas emissions.

Greenhouse effect – absorption and retention of heat by greenhouse gasses (CO<sub>2</sub>, methane) contributing to higher surface temperatures.

b. **Causes:**

- Large scale deforestation – more CO<sub>2</sub> levels.
- Increasing world population – greater demand for fossil fuels – use
- Increase in use of automobiles
- CFC's used in manufacturing – destroy ozone

c.

- Increase desertification – create food shortages
- Change in flood and drought cycles – destroys communities
- Higher sea levels – melting of ice bergs and glaciers
- Destruction of sensitive marine ecosystems e.g. coral reefs.
- Increase in climatic hazards such as tornadoes, hurricanes.

d.

- Reduce greenhouse gas emissions
- Use of renewable energies like solar and wind
- Afforestation – increasing planting of trees
- Sustainable forms of agriculture – using biodegradable insecticides, pesticides, fertilizers.

##### 1.2 CLIMATES AND REGIONAL AND LOCAL SCALES

###### 1.2.1

- a. Katabatic – downslope movement

- b. at night cool air sinks down the valley floor under the influence of the force of gravity.

- c. Suitable for citrus crops – cold conditions on valley floor(frost pocket) destroy insect pests – helps in maturing of crops. Cannot cultivate frost sensitive crops here – only frost resistant ones.

- d. Land values are higher on warmer slope or middle slopes(thermal belt). Low income dwellings occur close to valley floor where industries are found. Health risk is posed. Land prices are lower on valley floor, higher on middle warmer slopes with higher temperatures favoring settlement and cultivation.

###### 1.2.2

- a. Urban area is built up area – town/city. With all activities such as industries, vehicles, etc. , create micro climate that is different from surrounding countryside/rural area.

- b. Heat island – area of high temperature in city centre surrounded by areas of low temperatures.

Dust Dome – also known as pollution dome – accumulation of dust, soot, smoke and other pollutants over the city.

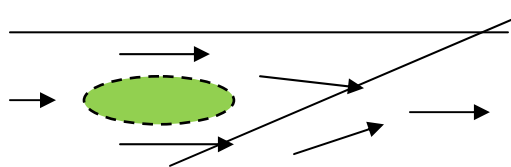
- c.
- City’s geometric shape of buildings – taller, made of glass, concrete, metals, etc – absorb and retain heat.
  - Efficient drainage system in city – removes surface water – less evaporation causes higher temperature.
  - Higher population in city – higher temperatures
  - More industries, cars, restaurants etc in city – generates more heat
  - Less exposed soil, water surfaces in city – also less vegetation and open spaces – contribute to higher temperatures.

## 2. FLUVIAL PROCESSES AND LANDFORMS

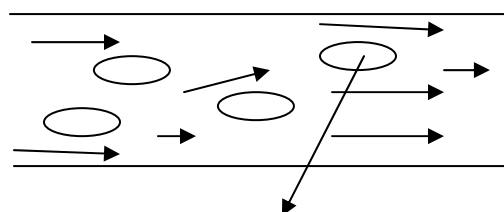
### 2.1 STREAM PATTERNS, PROFILES AND FEATURES

- a. Dendritic – horizontal igneous, sedimentary, metamorphic rocks  
Folded or inclined rock/alternate hard and soft rocks.  
Rectangular – jointed igneous rock, or sedimentary with faults  
Radial centre fugal – domes/volcanoes/massive igneous rocks  
Radial centripetal – massive igneous rocks
- b. Longitudinal profile – view of river from source to mouth.  
Cross profile – view of river from bank to bank.
- c. Shows length of river from source to mouth  
Shows level of gradation(wearing/erosion)
- d. Depth and width – bridge, tunnel construction
- e. No – graded profile is concave/smooth.  
Ungraded profile is uneven with obstacles like waterfalls, rapids.

- f. River island -
- Island –vegetation - animal and bird sanctuary

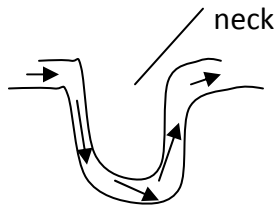


Braided stream -

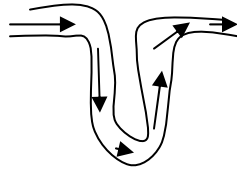


Deposited sediment causes river to braid.  
Such deposition can be removed when floods occur.

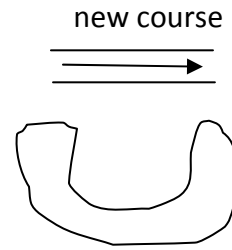
g. Ox – bow lake



Meander neck becomes  
Narrow as erosion occurs



loop narrows further



loop cut - off

2.2 RIVER CAPTURE

- a. **A – MISFIT STREAM**                      **B – CAPTURED STREAM**                      **C - ELBOW OF CAPTURE**
- b. Higher flows/velocity/increase in volume/velocity  
Decrease in farming – less water available for irrigation  
Lower productivity – higher prices

2.3 TOPOGRAPHY ASSOCIATED WITH HORIZONTAL ROCKS

- a. Backwasting – parallel retreat of slopes while original height is maintained during erosion.
- b. **A – PLATEAU**                      **B – MESA**                      **E – BUTTE**
- c. Flat tops/steep sides
- d. Parallel retreat of sides of B reduces area of top and s area of top and mesa evolves into buthe.
- e. 1. Crest                      2. Cliff/scarp                      3. Talus                      4. Pediment
- f. Pediment – flat with thick soils – suitable for farming.

2.4 Topography associated with Inclined rock Strata

- a. Cresta
- b. Crustal forces cause rocks to bend/fold under pressure.
- c. Dip slope – gentle                      Scarp slope – steep

2.5 Features associated with Massive Igneous Rocks

- a. X – Dome                      Y – Laccolith                      Z - Batholith
- b. Core stones/rocks resting or balancing against one another.
- c. Two stags
- i. Below surface: humid environment – infiltration and weathering causes joints to form in massive igneous rocks. Rocks break into rectangular blocks.
- ii. Above surface: arid – humid environment – weathered particles are removed by wind, water erosion. Rectangular blocks are reduced in size becoming rounder, smaller, and smoother.
- d. – Tourist attraction                      - Erosion leads to fertile soils – suits farming.

### 3. **PEOPLE AND PLACES**

#### 3.1

- a. A settlement is a grouping of people, buildings and human activities.
- b. C,D,F
- c. Linear dispersed
- d. Access to road/water. Situated on own farms.
- e. Threat – negative – could come down in flood and destroy settlement/farmland/crops.  
Necessity/benefit – positive – water for irrigation and personal or domestic use.
- f. Adequate flat or fertile land supports regular sized farmsteads. Similar in size and spaced evenly away(dispersed) from each other.
- g. – privacy - Make use of own ideas – in --- and basis.
- h. Urban centre/area that supplies goods and services to surrounding rural population.

#### 3.2

- a. Industrial/Commercial/Residential/Recreational
- b. High income – located away from CBD and urban built up area in general. Close to open spaces, with easy access to important transport links.  
Low income – close to built up areas – surrounding 7 CBD and industrial regions to reduce transport costs.
- c. Refers to open, green spaces planned developed on the boundary of urban area to prevent and control the expansion of cities(urban sprawl).
- d.
  - allow for other growth points
  - Reduces monotony of city life
  - Aesthetic value – pleasing environment
  - Recreation (parks and gardens)
  - Reduces effect of urban heat island
  - Controls greenhouse gasses.
- e.
  - overcrowding – too many people in one place
  - Unemployment – more applicants for limited jobs
  - Abuse of existing infrastructure/facilities – e.g. roads, recreational grounds, schools, hospitals etc.
  - Increase in social ills such as crime, gambling, prostitution, gangsterism
- f. – develop infrastructure – housing, etc. as an expansion to the urban area.
  - Provide services and facilities to rural population
  - Training and education in agriculture and other rural services.

### 4. **PEOPLE AND THEIR NEEDS**

#### 4.1

- a. A – Western Cape      B – KZN      C – Eastern Cape      D – Mpumalanga
- b. A – Cape Town      B – Pietermaritzburg      C – Bisho      D – Nelspruit
- c. F – 1      G – iii      H – v      I – iv      J – ii
- d. Yes – lies in SW Cape region – in the path of approaching mid – latitude cyclones which move northwards close to land – cold front – within 30° - 60°S latitude.

- e. K – iii – high summer temperatures and rainfall – trees, bush and grassland  
H – i – high summer temperatures and rainfall – warm Mozambican current.  
G – ii – low rainfall with sparse vegetation.
- f. X – cold Benguela Current in Atlantic Ocean (west coast)  
Y – warm Mozambican Current in Indian Ocean (east coast)
- g. Warm Mozambican current raises temperature and evaporation rate along eastern parts of S.A. – contributing to high average temperatures and rainfall.
- h. Root system binds the soil to prevent soil erosion – more infiltration. Shedding of leaves, etc keeps soil moist – which reduces erosion.

## 4.2

4.2.1 GDP – total value of goods and services brought into the country in one financial year by all people.

GNP – total value of goods and services produced in a country in one financial year by its permanent inhabitants.

4.2.2 i – Secondary                  ii – Primary                  iii – Tertiary                  iv – Tertiary

- 4.2.3 a. negative or positive balance between a country's visible imports and exports.
- b. Favorable – exports(R101397m) exceed imports(R98614m).
- c. Increased exports – favorable trade balance because of gold exports.
- d. high gold price internationally leads to positive trade balance – more foreign revenue earned – supports development of infrastructure locally, provision of jobs, better standards of living, better services and facilities, etc.

low gold price – affects trade balance negatively – causes short time, job losses, closure uneconomical associated industries, may lead to increase in crime and other social evils.

## 4.3

a. [Physical factors are Natural factors]

- Abundance of high quality minerals – gold, diamonds, iron ore, platinum.
- Gentle Relief – supports infrastructure.
- Abundance coal – high grade for generation of thermal electricity.
- Perennial rivers – Vaal, Orange – construction of dams for supply of water to industries and dense population. Also for irrigation for farms supplying raw materials to food and beverage industries in PWV regions.
- b. Yes – Durban harbor – developed to allow huge oil tankers to off load cargo of oil – crude oil is processed into fuel and other chemicals in the industrial area close by.
- c. HIV-AIDS is decimating the workforce – especially the economically active part of the population – from 19 to 54 years. Reduces productivity in all areas of industry – long periods of absenteeism, death, the need to train and retrain new staff – all affect production which affects quality and profits negatively. This has a direct bearing on the GDP and results in a negative trade balance.

d. Advantages

- Easy access to transport and other infrastructure
- Contain pollution and congestion in certain areas only
- Supports associated industry and business
- Dense population – ready market and labor supply.

Disadvantages

- Core industrial development is not strategically beneficial especially in times off hostilities/war.
- Leads to influx of people from all over – local and international – overcrowding, unemployment, crime, etc accompany such areas.
- Over – exploitation of resources such as water, etc leads to shortages.
- Too much pollution and congestion.

e.

- location of industries in the periphery or undeveloped rural areas away from core areas.
- SDI's – aimed at improving infra-structure and attracting business investments to rural areas that were previously neglected and underdeveloped due to political/historical reasons.
- To provide communities with opportunities to participate in economic activities such as mining, tourism, etc.
  - To promote sustainable job creation in such areas.
  - To use local raw materials and resources to generate economic growth for locals.

f.

- Environmental injustice – effecting the balance of biotic and abiotic elements in an ecosystem – e.g. smoke and fumes that cause animal life to die/migrate.  
Polluted streams – seepage of chemicals into the ground water reserves – life threatening.

Social injustice – people not consulted or involved in decision making concerning their lives.

Poor – cannot afford cannot afford legal battles with multinational corporations greedy for profit – irrespective of the damage done to communities and the environment.

- The rights to life and good health(healthy environment). The right to have a say in whatever affects you.
- Engen spokesperson – H. Payne – indicating there is no risk is irresponsible as the gaseous fire is toxic and an environmental hazard.
  - Councilor – Resident Abraham Shaikh – health problems such as asthma and cancer are prevalent in such areas – and whenever such an incident occurs, it results in panic.You may choose any answer – provided you justify your choice with a good explanation – from the passage as well as from knowledge you have from other areas.

5.1 Synoptic weather map interpretation

- High inland temperatures
  - Pressure of tropical cyclone
  - Thermal lows/heat lows over interior
  - Southerly position of temperature cyclones

- Southerly position of maritime highs(SAH and SIH)

b. Yes – check weather symbol, sky does not show cloud cover and wind speed is 35knots per hour.

c. – Has an eye

- Name

- Closed isobars

- Found with tropical belt – 5 to 25° N/S of equator – easterly wind belt.

d. No – mature stage isobars below 1000mb at centre and almost reaching Mozambique – far west of its origin of formation.

e. Ascending around the eye – diverging in upper atmosphere – descending on outskirts of cyclone – their descending air heats at 1°6 -- 100m – reaches surface considerably warmer – high temperatures on surface.