



**SCHOOL OF EDUCATION AND SOCIAL SCIENCES**

**FINAL EXAMINATIONS**

**EXAMINATION MODE: IN-PERSON**

**SCHOOL OF EDUCATION AND SOCIAL SCIENCES**

**ORDINARY EXAMINATION FOR THE DEGREE OF BACHELOR OF ARTS IN  
EDUCATION**

**GEO 2123: INTRODUCTION TO CLIMATOLOGY**

**SEMESTER: MAY-AUGUST 2025**

**STREAM: BEDU**

**EXAMINATION SESSION: AUGUST 2025**

**DAY [INSERT DAY HERE]**

**ACADEMIC YEAR: 2025**

**TIME: 2 HOURS**

**DATE: [INSERT DATE HERE]**

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**INSTRUCTIONS:**

1. Answer Question One and Any other two questions
  2. Section A is worth thirty (20) points/marks. Section B, each question is worth 10 marks
  3. The entire exam is worth a sixty (40) points/marks.
  4. Write ONLY on the space provided on the answer sheet or as otherwise instructed.
  5. Where necessary Show your working clearly.
  6. Do NOT attempt to access any library, online (audio, video, digital or electronic) or paper based (written), sources for your answers unless this is clearly advised in the question.
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## SECTION A

### QUESTION ONE: COMPULSORY (20 MARKS)

- a) Using a diagram show the layers of the atmosphere. (4 marks)
- b) Explain any **four** characteristics of the Tropical Maritime Climate. (4 Marks)
- c) Explain four physical processes which are constantly at work in the atmosphere. (4 Marks)
- d) Explain four characteristics of the Inter Tropical Convergence Zone (ITCZ). (4 Marks)
- e) Examine any four elements of climate. (4 Marks)

### SECTION B (20 MARKS): ANSWER TWO QUESTIONS SECTION

#### QUESTION TWO

- (a) Describe **five** factors that influence the amount of insolation received on the earth surface. (5 Marks)
- (b) Explain **five** human causes of climate change (5 Marks)

#### QUESTION THREE

- (a) Discuss any five types of fog (5 Marks)
- (b) Explain any five negative consequences of climate change (5 Marks)

#### QUESTION FOUR

- (a) Describe **five** factors that influence the urban climate. (5 Marks)
- (b) Sea breeze and Land breeze are examples of local winds. Describe **FIVE** processes in which local winds are formed. (5 marks)

#### QUESTION FIVE

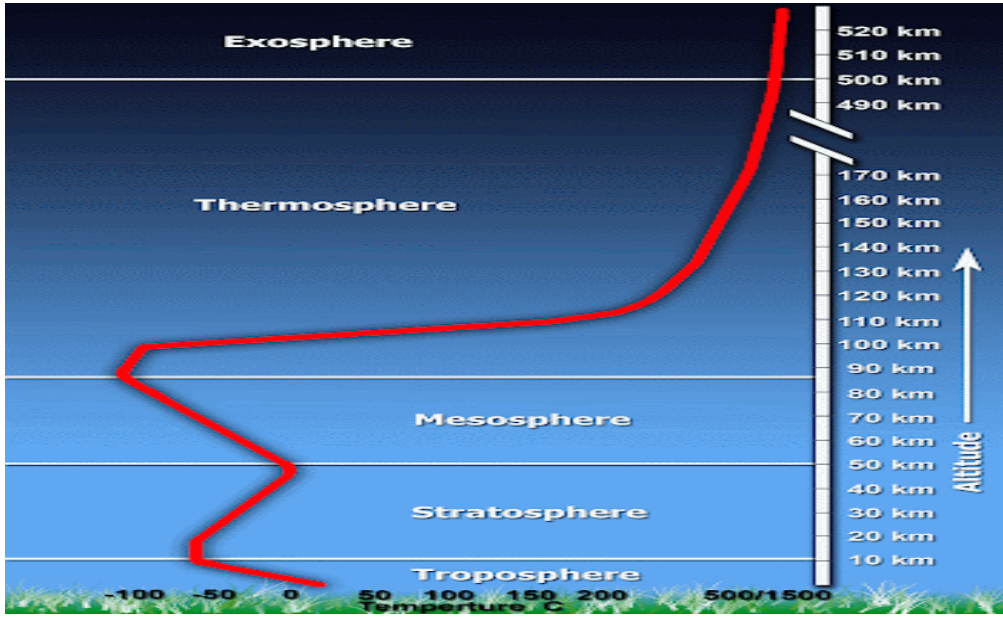
- (a) Agriculture has been described as the back bone of Kenya's economy. Explain five ways in which climate change has affected crop farming in Kenya (5 Marks)
- (b) Discuss five instruments that are kept in a Stevenson screen in the weather station. (5 Marks)

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**MARKING SCHEME**

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1. Answer Question One and Any other two questions
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3. The entire exam is worth a sixty (40) points/marks.

	THIS MARKING SCHEME CONSISTS OF SECTION A AND SECTION B	40 MARKS
	MARKING GUIDELINES	
	SECTION A: CANDIDATES ARE TO ATTEMPT ALL QUESTIONS	
	QUESTION ONE	20 MARKS
a)	Using a diagram show the layers of the atmosphere. (4 marks)	4x1=4 Marks



It's divided into 4 layers/zones namely:

1. Troposphere

	<ul style="list-style-type: none"> <li>• Tropopause.</li> </ul> <p><b>2. Stratosphere/ozonosphere</b></p> <ul style="list-style-type: none"> <li>• Stratopause.</li> </ul> <p><b>3. Mesosphere</b></p> <ul style="list-style-type: none"> <li>• Mesopause</li> </ul> <p><b>4. Thermosphere/ionosphere</b></p>	
<b>b)</b>	<p><b>Explain any four characteristics of the Tropical Maritime Climate.</b></p> <ul style="list-style-type: none"> <li>• Summer temperatures are very high approximately 30°C.</li> <li>• High rainfall totals in summer when winds are onshore (1000-2000mm).</li> <li>• Orographic and convectional rainfall in summer.</li> <li>• Dry winters due to winds being offshore.</li> <li>• High humidity due to coastal location.</li> <li>• Experiences tropical cyclones towards end of hot season.</li> <li>• Winters are cool (about 21°C).</li> </ul>	<b>4x1=4 Marks</b>
<b>c)</b>	<p><b>Explain four physical processes which are constantly at work in the atmosphere. (4 Marks)</b></p> <ul style="list-style-type: none"> <li>• Conduction</li> <li>• Radiation</li> <li>• Convection</li> <li>• Temperature variations</li> <li>• Absorption of heat</li> </ul>	<b>4x1=4 Marks</b>
<b>d)</b>	<p><b>Explain any four characteristics of the Inter tropical convergence zone (ITCZ).</b></p> <ul style="list-style-type: none"> <li>• Zone within the Tropics-between 23<sup>1/2</sup>° South of the equator.</li> <li>• A zone with low atmospheric pressure</li> <li>• A convergence zone of S.E and N.E trade winds</li> <li>• Associate with convectional rainfall</li> <li>• Characterized with high temperatures due to overhead sun</li> <li>• Migrates to the North and to the South of the Equator with the apparent movement or changes of the overhead sun</li> </ul>	<b>4x1=4 Marks</b>
<b>e)</b>	<p><b>Examine any <u>four</u> elements of climate. (4 Marks)</b></p> <p><b>1. Temperature</b></p> <ul style="list-style-type: none"> <li>• <b>Definition:</b> Temperature is a measure of the warmth or coldness of the atmosphere, typically recorded in degrees Celsius (°C) or Fahrenheit (°F).</li> <li>• <b>Influences:</b> Temperature is influenced by factors such as latitude, altitude, proximity to large bodies of water, and prevailing winds. Higher latitudes generally experience colder temperatures, while lower latitudes are warmer. Altitude can also affect temperature, with higher elevations generally being cooler.</li> <li>• <b>Variability:</b> Temperature varies by season, time of day, and location. For example, coastal areas often have more moderate temperatures compared to inland areas due to the heat capacity of the ocean.</li> </ul> <p><b>2. Precipitation</b></p> <ul style="list-style-type: none"> <li>• <b>Definition:</b> Precipitation refers to any form of water, liquid or solid, that falls from the atmosphere and reaches the ground. It includes rain, snow, sleet, and hail.</li> <li>• <b>Types:</b> Precipitation can be categorized into different types based on its form and intensity. For example, light rain, heavy rain, and thunderstorms.</li> <li>• <b>Distribution:</b> The amount and distribution of precipitation vary by region and season. Some regions experience high rainfall (tropical rainforests), while others are arid or semi-arid (deserts).</li> </ul> <p><b>3. Humidity</b></p> <ul style="list-style-type: none"> <li>• <b>Definition:</b> Humidity is the amount of moisture in the air. It is commonly expressed as relative humidity, which is the ratio of the current absolute humidity to the maximum possible at a given temperature.</li> <li>• <b>Types:</b> There are two main types of humidity: <ul style="list-style-type: none"> <li>○ <b>Absolute Humidity:</b> The total amount of water vapor in the air.</li> <li>○ <b>Relative Humidity:</b> The percentage of water vapor in the air compared to the maximum amount that can be held at a particular temperature.</li> </ul> </li> </ul>	<b>4x1=4 Marks</b>

	<ul style="list-style-type: none"> <li>● <b>Impacts:</b> Humidity affects comfort levels and can influence weather patterns. High humidity can make temperatures feel warmer and contribute to cloud formation.</li> </ul> <p><b>4. Atmospheric Pressure</b></p> <ul style="list-style-type: none"> <li>● <b>Definition:</b> Atmospheric pressure is the force exerted by the weight of the air above a given point. It is typically measured in millibars (mb) or inches of mercury (inHg).</li> <li>● <b>Variation:</b> Atmospheric pressure varies with altitude, with higher pressure at sea level and lower pressure at higher elevations. It also changes with weather systems, such as high-pressure (anticyclones) and low-pressure (cyclones) systems.</li> <li>● <b>Influence:</b> Pressure differences drive wind and affect weather patterns. High-pressure systems are generally associated with clear, stable conditions, while low-pressure systems are linked to storms and unsettled weather.</li> </ul> <p><b>5. Wind</b></p> <ul style="list-style-type: none"> <li>● <b>Definition:</b> Wind is the movement of air from areas of high pressure to areas of low pressure. It is typically measured in terms of speed (km/h or mph) and direction.</li> <li>● <b>Types:</b> Winds can be classified based on their scale: <ul style="list-style-type: none"> <li>○ <b>Global Winds:</b> Large-scale winds, such as trade winds, westerlies, and polar easterlies.</li> <li>○ <b>Local Winds:</b> Small-scale winds, such as sea breezes and valley breezes.</li> </ul> </li> <li>● <b>Effects:</b> Wind influences temperature, humidity, and precipitation patterns. It also affects weather systems and can contribute to the dispersion of pollutants.</li> </ul> <p><b>6. Solar Radiation</b></p> <ul style="list-style-type: none"> <li>● <b>Definition:</b> Solar radiation is the energy emitted by the Sun, including visible light, ultraviolet (UV) light, and infrared (IR) radiation.</li> <li>● <b>Distribution:</b> The amount of solar radiation received varies with latitude, season, and time of day. The equator receives more direct solar radiation year-round, while higher latitudes receive less.</li> <li>● <b>Impact:</b> Solar radiation drives temperature changes and influences weather patterns. It also affects the Earth's energy balance and climate.</li> </ul> <p><b>7. Cloud Cover</b></p> <ul style="list-style-type: none"> <li>● <b>Definition:</b> Cloud cover refers to the fraction of the sky covered by clouds. It is typically expressed as a percentage.</li> <li>● <b>Types:</b> Clouds are categorized into different types based on their appearance and altitude, including cumulus, stratus, cirrus, and nimbostratus.</li> <li>● <b>Impact:</b> Cloud cover affects temperature by blocking or reflecting solar radiation and trapping heat. It also influences precipitation and weather patterns.</li> </ul> <p><b>8. Seasonal Variations</b></p> <ul style="list-style-type: none"> <li>● <b>Definition:</b> Seasonal variations refer to changes in climate elements that occur due to the Earth's tilt and orbit around the Sun, leading to different seasons.</li> <li>● <b>Examples:</b> In temperate regions, there are distinct seasons (spring, summer, autumn, winter) with varying temperature and precipitation patterns. In tropical regions, there may be wet and dry seasons.</li> </ul>	
<b>SECTION B: CANDIDATES ARE TO ATTEMPT ANY TWO QUESTIONS</b>		
<b>QUESTION 2 (10 MARKS)</b>		
a)	<p><b>Describe five factors that influence the amount of insolation received on the earth surface.</b></p> <p><b>1. Latitude</b></p> <p>Latitude is one of the most significant factors affecting insolation. The Earth's surface receives varying amounts of solar energy depending on its latitude, or distance from the equator.</p> <ul style="list-style-type: none"> <li>● <b>Equatorial Regions:</b> Near the equator, the Sun's rays strike the surface more directly, meaning that the energy is concentrated over a smaller area. This results in higher insolation and consistently warm temperatures throughout the year.</li> <li>● <b>Mid-Latitudes:</b> In the mid-latitudes, the Sun's rays hit the Earth at a more oblique angle. This causes the solar energy to be spread over a larger area, reducing the intensity of insolation. Seasonal variations are more pronounced in these regions due to the tilt of the Earth's axis.</li> <li>● <b>Polar Regions:</b> At the poles, the Sun's rays strike at a very low angle, spreading the energy over a large surface area. Consequently, these regions receive the least</li> </ul>	<b>5x1=5 Marks</b>

	<p>insolation. The poles also experience extreme variations in daylight duration, with long periods of darkness in winter and extended daylight in summer.</p> <p><b>2. Time of Year (Seasonality)</b></p> <p>Seasonal changes significantly impact the amount of insolation received at different latitudes due to the tilt of the Earth's axis.</p> <ul style="list-style-type: none"> <li>● <b>Summer and Winter Solstices:</b> During the summer solstice, regions in the Northern Hemisphere receive more direct sunlight and longer daylight hours, leading to higher insolation. Conversely, during the winter solstice, these regions receive less direct sunlight and shorter daylight hours.</li> <li>● <b>Equinoxes:</b> Around the equinoxes, the amount of insolation is more evenly distributed between the Northern and Southern Hemispheres, leading to nearly equal day and night lengths.</li> </ul> <p><b>3. Earth's Tilt and Orbit</b></p> <p>The tilt of the Earth's axis (23.5 degrees) and its elliptical orbit around the Sun are critical in determining the distribution and intensity of insolation.</p> <ul style="list-style-type: none"> <li>● <b>Axial Tilt:</b> The tilt of the Earth's axis causes variations in the angle of sunlight and the length of daylight throughout the year. This axial tilt is responsible for the changing seasons and varying amounts of insolation at different times of the year.</li> <li>● <b>Orbital Eccentricity:</b> The Earth's orbit around the Sun is not a perfect circle but an ellipse. Although this has a relatively minor effect compared to axial tilt, it does influence the distance between the Earth and the Sun, affecting the intensity of solar radiation.</li> </ul> <p><b>4. Altitude</b></p> <p>Altitude, or elevation above sea level, also affects insolation.</p> <ul style="list-style-type: none"> <li>● <b>Higher Altitudes:</b> At higher elevations, the atmosphere is thinner, which results in less scattering and absorption of solar radiation. Therefore, mountainous regions often receive more direct solar radiation compared to lower altitudes at the same latitude.</li> </ul> <p><b>5. Cloud Cover and Atmospheric Conditions</b></p> <p>The Earth's atmosphere plays a critical role in modulating insolation through various processes.</p> <ul style="list-style-type: none"> <li>● <b>Cloud Cover:</b> Clouds reflect, absorb, and scatter solar radiation, reducing the amount of insolation that reaches the Earth's surface. Overcast conditions can significantly decrease insolation compared to clear skies.</li> <li>● <b>Aerosols and Pollution:</b> Particulate matter such as aerosols and pollutants in the atmosphere can also affect insolation by scattering and absorbing sunlight. This phenomenon can lead to reduced insolation and influence local and global climates.</li> </ul> <p><b>6. Surface Albedo</b></p> <p>Albedo is the measure of how much sunlight is reflected by the Earth's surface.</p> <ul style="list-style-type: none"> <li>● <b>High Albedo Surfaces:</b> Light-colored surfaces, such as ice and snow, have high albedo and reflect a significant portion of incoming solar radiation. This reflection reduces the amount of insolation absorbed by the surface.</li> </ul> <p><b>Low Albedo Surfaces:</b> Darker surfaces, such as forests or oceans, have lower albedo and absorb more solar radiation, leading to higher levels of insolation.</p>	
b)	<p><b>Explain five human causes of climate change (5 marks)</b></p> <ul style="list-style-type: none"> <li>● Burning of fossil fuels in industries, transportation, electricity generation etc. which contributes 65% of additional CO<sub>2</sub> in the atmosphere which is the main greenhouse gas.</li> <li>● Burning of vegetation e.g. in shifting cultivation and forest fires which also adds CO<sub>2</sub> in the atmosphere.</li> <li>● Clearing large tracts of forests for agriculture, settlement etc. which reduces the main disposal system for CO<sub>2</sub> from the atmosphere by photosynthesis.</li> </ul> <p>Industrial developments which add gases like methane, nitrous oxide and those containing chlorine and chlorofluorocarbons which damage the ozone layer which filters a greater percentage of ultra violet radiation given off by the sun which causes the average temperatures on the earth to rise.</p>	5x1=5 Marks
	<b>QUESTION 3 (10 MARKS)</b>	

a)	<p><b>Discuss any FIVE types of Fog.</b></p> <ul style="list-style-type: none"> <li>● <b>Radiation Fog</b>-this forms when moist air which is in contact with the ground is cooled from below by terrestrial radiation.</li> <li>● <b>Advection Fog</b>- This type of Fog forms when moist air is cooled as it passes over a cool land or sea surface.</li> <li>● <b>Hill Fog</b>-This type of advection fog forms as a low sheet cloud in the hills. It is formed by the cooling of a moist air stream advancing inland through the hills.</li> <li>● <b>Frontal Fog</b>-This type of Fog forms at the front of a depression. It is formed when moist air is cooled from below as it rises over cold air.</li> </ul> <p><b>Steam Fog</b>-This type of fog which forms when cold air passes over the surface of a much warmer fresh water body.</p>	5x1=5 Marks
b)	<p><b>Explain any FIVE negative consequences of climate change.</b></p> <ol style="list-style-type: none"> <li>1. Global warming due to greenhouse effect by gases added in to the atmosphere and destruction of ozone layer.</li> <li>2. Increased rainfall as a result of high temperatures causing high rates of evaporation causing wet areas to become wetter and dry areas to become drier.</li> <li>3. Effect on agriculture by causing crop growing areas to shift to cooler altitudes and latitudes e.g. wheat growing areas of Canada shifting to the poles and causing dropping or failure of crop yields in area where temperatures have increased.</li> <li>4. Water shortage when climate becomes drier causing less water to infiltrate underground and hence less water to feed rivers.</li> <li>5. Submergence of coastal areas causing flooding when Antarctic and Arctic glaciers melt and water is added to the oceans.</li> <li>6. Heat waves due to increased temperature which leads to death of people.</li> <li>7. Receding and disappearance of ice caps on mountains e.g. Mt. Ruwenzori.</li> <li>8. Abnormal growth of plants due to increased amounts of co2 causing increased rate of photosynthesis which may lead to increased yields of major crops, poor soils due to soils having to sustain high rates of plant growth.</li> <li>9. increased levels of ultra violet radiation which causes human diseases such as skin cancer, lowering crop production by slowing photosynthesis and germination, lowering fish population by damaging plankton which fish eats and degradation of paint and plastics</li> </ol>	5x1=5 Marks
<b>QUESTION 4 (10 MARKS)</b>		
a)	<p><b>Describe four factors that influence the urban climate. (5 Marks)</b></p> <p>Urban climates are influenced by a range of factors that distinguish them from surrounding rural areas. These factors lead to unique weather patterns, including higher temperatures, altered wind patterns, and differences in humidity. Here are three major factors that influence the urban climate:</p> <p><b>1. Urban Heat Island Effect (UHI)</b></p> <ul style="list-style-type: none"> <li>● <b>Description:</b> The urban heat island effect refers to the phenomenon where urban areas experience higher temperatures than their rural surroundings. This is primarily due to the extensive use of heat-absorbing materials like concrete, asphalt, and buildings, which retain heat during the day and release it slowly at night.</li> <li>● <b>Influence on Urban Climate:</b> This effect leads to warmer conditions in cities, particularly during the night. It can increase the demand for cooling in buildings and raise energy consumption. Additionally, higher temperatures can impact air quality, intensify heatwaves, and alter local weather patterns.</li> </ul> <p><b>2. Human Activities and Emissions</b></p> <ul style="list-style-type: none"> <li>● <b>Description:</b> Cities are hubs of human activity, including industrial processes, transportation, and energy use, which emit significant amounts of heat, greenhouse gases, and pollutants into the atmosphere. These emissions can affect both the temperature and air quality of urban areas.</li> <li>● <b>Influence on Urban Climate:</b> Emissions from vehicles, factories, and power plants contribute to the formation of pollutants like particulate matter and ground-level ozone, leading to smog and poor air quality. Human activities also contribute to localized warming through the release of waste heat, further intensifying the urban heat island effect.</li> </ul>	5x1=5 Marks

	<p><b>3. Modification of Wind Patterns</b></p> <ul style="list-style-type: none"> <li>● <b>Description:</b> The dense concentration of tall buildings, skyscrapers, and other infrastructure in urban areas can disrupt natural wind flow. These structures create friction and turbulence, altering wind speeds and directions.</li> <li>● <b>Influence on Urban Climate:</b> In some cases, urban areas may experience reduced wind speeds, which can trap pollutants and heat, exacerbating air quality issues. In other cases, wind patterns are intensified by "urban canyons," where streets lined with tall buildings channel and amplify wind speeds, potentially affecting local weather conditions.</li> </ul> <p><b>Summary</b> The urban climate is shaped by the urban heat island effect, human activities, and modifications to wind patterns. These factors contribute to higher temperatures, altered air quality, and distinct weather patterns in cities compared to their rural counterparts. Managing these factors is crucial for urban sustainability and public health, particularly as cities grow and climate change exacerbates these effects.</p>	
b)	<p><b>Sea breeze and Land breeze are examples of local winds. Describe FIVE processes in which local winds are formed. (5 marks)</b></p> <ul style="list-style-type: none"> <li>● It is experienced due to differential heating of land and water surfaces.</li> <li>● It is a mass of cool air blowing from the land to the sea during the night.</li> <li>● It develops at night.</li> <li>● At night land cools rapidly while the sea remains relatively warm.</li> <li>● The air becomes colder and heavier over the land than the sea.</li> <li>● High pressure develops over the land and low pressure develops over the sea.</li> <li>● These forces the lighter warm air over the sea to rise and the cooler heavier air from the land blow towards the sea as land breeze.</li> </ul>	5x1=5 Marks
<b>QUESTION 5 (10 MARKS)</b>		
a)	<p><b>Agriculture has been described as the back bone of Kenya's economy. Explain five ways in which climate change has affected crop farming in Kenya</b></p> <p>Climate change has had a profound impact on crop farming in Kenya, a country where agriculture plays a critical role in livelihoods and the economy. The effects of climate change are felt across the country, altering growing conditions and threatening food security. Here are five ways in which climate change has affected crop farming in Kenya:</p> <p><b>1. Increased Frequency of Droughts</b></p> <ul style="list-style-type: none"> <li>● <b>Impact:</b> Droughts have become more frequent and prolonged in Kenya, particularly in arid and semi-arid regions. This has led to water shortages, reducing soil moisture critical for crop growth. Crops such as maize, beans, and sorghum, which are staple foods, suffer from stunted growth and lower yields due to insufficient water.</li> <li>● <b>Outcome:</b> Farmers in drought-prone regions face crop failures, forcing them to rely on food aid or switch to drought-tolerant crops, which may have lower market value or less nutritional content.</li> </ul> <p><b>2. Shifts in Growing Seasons</b></p> <ul style="list-style-type: none"> <li>● <b>Impact:</b> Unpredictable weather patterns and shifts in the timing of rainy and dry seasons make it difficult for farmers to plan their planting and harvesting schedules. Delayed rains or shortened rainy seasons reduce the time crops have to mature, affecting yields.</li> <li>● <b>Outcome:</b> Farmers experience inconsistent crop production and may miss planting windows, leading to lower agricultural productivity. Shifting seasons can also disrupt traditional farming knowledge, making it harder to predict successful growing periods.</li> </ul> <p><b>3. Increased Pest and Disease Outbreaks</b></p> <ul style="list-style-type: none"> <li>● <b>Impact:</b> Warmer temperatures and changing rainfall patterns have created more favorable conditions for pests and diseases. For example, the fall armyworm, which thrives in warmer climates, has become a major threat to maize crops in Kenya. Additionally, diseases such as maize lethal necrosis have also become more prevalent.</li> </ul>	5x1=5 Marks

	<ul style="list-style-type: none"> <li>● <b>Outcome:</b> Pest and disease outbreaks increase crop losses, requiring farmers to invest in pesticides, which are often expensive. This reduces profitability and leads to higher food prices.</li> </ul> <p><b>4. Soil Degradation and Erosion</b></p> <ul style="list-style-type: none"> <li>● <b>Impact:</b> More intense rainfall events associated with climate change have increased soil erosion in many regions of Kenya. Heavy rains wash away topsoil, which is rich in nutrients, leaving behind degraded soil that is less fertile and harder to farm.</li> <li>● <b>Outcome:</b> Farmers experience lower yields due to reduced soil fertility and may need to invest in expensive fertilizers to replenish lost nutrients. In some cases, farmers are forced to abandon degraded land altogether, reducing the amount of arable land available for cultivation.</li> </ul> <p><b>5. Changes in Water Availability for Irrigation</b></p> <ul style="list-style-type: none"> <li>● <b>Impact:</b> Climate change has affected the availability of water for irrigation, particularly in regions that rely on rivers, lakes, and groundwater sources. Reduced rainfall and higher evaporation rates due to rising temperatures have decreased water levels in key water bodies like Lake Naivasha and the Tana River.</li> <li>● <b>Outcome:</b> Farmers in irrigated regions face water shortages, limiting their ability to grow crops year-round. This has forced some farmers to reduce the number of growing cycles or switch to less water-intensive crops, which may be less profitable.</li> </ul> <p><b>Summary</b></p> <p>Climate change in Kenya has manifested through more frequent droughts, shifting growing seasons, increased pest outbreaks, soil degradation, and reduced water availability for irrigation. These impacts collectively threaten food security, reduce agricultural productivity, and increase the vulnerability of small-scale farmers who are dependent on consistent climate patterns.</p>	
b)	<p><b>Discuss five instruments that are kept in a Stevenson screen in the weather station.(5 marks)</b></p> <p><b>1. Thermometer</b></p> <ul style="list-style-type: none"> <li>● <b>Purpose:</b> Measures air temperature.</li> <li>● <b>Types:</b> <ul style="list-style-type: none"> <li>○ <b>Mercury Thermometer:</b> Uses mercury to provide accurate temperature readings but is less common today due to concerns about mercury toxicity.</li> <li>○ <b>Alcohol Thermometer:</b> Uses alcohol, which is dyed for visibility, and is commonly used in modern weather stations.</li> </ul> </li> <li>● <b>Placement:</b> Typically mounted on a metal or wooden bracket inside the Stevenson screen to ensure it is shielded from direct sunlight but exposed to the air temperature.</li> </ul> <p><b>2. Hygrometer</b></p> <ul style="list-style-type: none"> <li>● <b>Purpose:</b> Measures relative humidity.</li> <li>● <b>Types:</b> <ul style="list-style-type: none"> <li>○ <b>Sling Psychrometer:</b> Consists of two thermometers, one with a wet bulb and one with a dry bulb. The difference in their readings is used to calculate relative humidity.</li> <li>○ <b>Electronic Hygrometer:</b> Uses sensors to measure humidity levels and often includes digital displays for ease of reading.</li> </ul> </li> <li>● <b>Placement:</b> Positioned inside the Stevenson screen to measure the humidity of the air without interference from direct sunlight or precipitation.</li> </ul> <p><b>3. Barometer</b></p> <ul style="list-style-type: none"> <li>● <b>Purpose:</b> Measures atmospheric pressure.</li> <li>● <b>Types:</b> <ul style="list-style-type: none"> <li>○ <b>Mercury Barometer:</b> Uses mercury in a glass tube to measure atmospheric pressure. It's less common in modern setups due to the mercury hazard.</li> <li>○ <b>Aneroid Barometer:</b> Uses a sealed metal chamber that expands and contracts with changes in pressure, providing a pressure reading without mercury.</li> </ul> </li> <li>● <b>Placement:</b> Generally placed inside the Stevenson screen to protect it from direct weather elements and to ensure accurate pressure measurements.</li> </ul> <p><b>4. Thermograph (Optional)</b></p> <ul style="list-style-type: none"> <li>● <b>Purpose:</b> Records temperature continuously over time.</li> </ul>	5x1=5 Marks

	<ul style="list-style-type: none"> <li>● <b>Mechanism:</b> Uses a rotating drum and a pen or electronic sensor to create a continuous record of temperature changes.</li> <li>● <b>Placement:</b> Often included inside the Stevenson screen if continuous temperature recording is required for detailed climate studies.</li> </ul> <p><b>5. Hygrograph (Optional)</b></p> <ul style="list-style-type: none"> <li>● <b>Purpose:</b> Records relative humidity continuously.</li> <li>● <b>Mechanism:</b> Similar to the thermograph, it uses a rotating drum and a pen or electronic sensor to record changes in humidity over time.</li> </ul> <p><b>Placement:</b> Positioned inside the Stevenson screen if continuous humidity data is needed.</p>	
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