

**Name: Noor Hafow Bare**

**Reg Number: S110/p2234/23**

**School of pure and applied science**

**Department of information science**

**Unit Name: Environmental education**

**Unit code: GCC 212**

**a. Malthusian Theory**

The Malthusian Theory, introduced by Thomas Malthus, suggests that population growth often surpasses the rate of agricultural production, leading to resource shortages. In Kenya, this theory is applicable when examining the impact of rapid population growth on resources such as water, fertile land, and forests. Urban sprawl further reduces agricultural land, worsening food insecurity and environmental challenges. Malthusian principles can inform policies aimed at controlling population growth sustainably, managing resources efficiently, and adopting modern agricultural technologies to secure food supplies while protecting the environment.

**b. Green Revolution**

The Green Revolution refers to advancements in agriculture through high-yield crop varieties, improved techniques, and chemical inputs to increase food production. In Kenya, it has been employed to alleviate hunger and enhance food security. However, its environmental implications are mixed; while it boosts yields, the excessive use of fertilizers and pesticides contributes to soil erosion and water contamination. Adopting eco-friendly practices like organic farming and precision agriculture can help achieve a balance between high productivity and environmental preservation, supporting Kenya's pursuit of sustainable agriculture.

**c. Cost-Benefit Analysis**

Cost-Benefit Analysis (CBA) is a framework for comparing the economic costs and benefits of various projects to determine their viability. In Kenya, CBA informs decisions on initiatives like building dams, afforestation, or waste management. For example, the development of Nairobi National Park for tourism requires evaluating conservation benefits against financial returns from infrastructure expansion. By employing CBA, Kenya can prioritize initiatives that optimize long-term environmental and economic gains, ensuring community well-being and biodiversity protection.

**d. Sequestration**

Sequestration involves capturing and storing atmospheric carbon dioxide (CO₂) to combat climate change. Kenya has embraced sequestration through reforestation, agroforestry, and soil carbon storage. The Mau Forest Complex serves as a significant carbon sink, aiding climate regulation. These efforts also enhance biodiversity, conserve water, and support livelihoods. Kenyan policies emphasizing tree planting and sustainable land use amplify these benefits, contributing to both local and global climate resilience efforts.

**e. Carbon Capturing**

Carbon capturing entails trapping CO₂ emissions from industrial and energy-related activities to prevent atmospheric release. In Kenya, such technologies are emerging in sectors like cement manufacturing and energy production. Integrating renewable energy sources, such as geothermal and solar power, reduces carbon emissions. Additionally, international carbon trading programs like the Clean Development Mechanism (CDM) offer financial incentives for Kenyan industries to adopt low-carbon technologies, supporting the global drive toward emission reductions.

**f. Disaster Preparedness (10 marks)**

Disaster preparedness involves measures to reduce risks and respond to environmental hazards such as droughts, floods, and landslides. Kenya faces frequent climate-related disasters, including prolonged droughts in arid areas and urban flooding. Strategies such as early warning systems, community awareness campaigns, and emergency response infrastructure are critical. The Kenya Meteorological Department plays a key role in forecasting extreme weather to help communities prepare. Investments in resilient infrastructure and resource allocation enhance Kenya's ability to manage environmental emergencies effectively.

**g. Blue Agricultural Economy (10 marks)**

The blue agricultural economy emphasizes the sustainable use of water resources for agriculture and aquaculture. In Kenya, this is vital due to the dependency on freshwater and marine ecosystems. Initiatives like fish farming in Lake Victoria and irrigation in arid regions bolster food security and water conservation. However, issues such as overfishing and pollution threaten these ecosystems. Implementing policies for efficient water management, pollution control, and sustainable aquaculture ensures that Kenya balances economic development with environmental stewardship in its blue economy agenda.