THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

113/1 **GEOGRAPHY 1**

(For Both School and Private Candidates)

Time: 3 Hours **ANSWERS** **Year: 2011**

Instructions

1. This paper consists of section A, and B with total of seven questions.
2. Answer a total of five questions; two in section A, and three in questions in section B. Question number 1 is compulsory.

1. Study carefully the map extract of MASWA Sheet 49/2 provided and answer the questions that follow

a Find the distance of the road in km from grid reference 862486 to grid reference 867624

To determine the distance of the road, the map scale is used to measure the length between the two grid references. The actual distance on the ground is found by multiplying the map distance by the scale denominator. This requires measuring the road on the map using a ruler or a thread, then converting it to kilometers using the given scale.

b Describe the geomorphic processes which might have moulded the landforms in the area

Geomorphic processes include erosion, weathering, deposition, and tectonic activities. Erosion by rivers might have created valleys and floodplains, while weathering could have broken down rocks into smaller particles. Deposition processes may have resulted in the formation of alluvial deposits. Tectonic forces such as faulting and folding may have influenced the landscape's formation.

c What are the methods which have been used to represent relief in this map

Relief in this map is represented through contour lines, spot heights, and shading. Contour lines indicate elevation changes and the shape of landforms, while spot heights provide exact elevation points above sea level. Shading is used to enhance the visibility of terrain differences.

d With evidence suggest three economic activities carried out in the area

Agriculture is evident from the presence of arable land and plantations. Livestock keeping is practiced, as indicated by pasture lands. Trade and commerce are evident due to the presence of settlements and roads connecting different areas.

e Explain the site and function of Maswa town

Maswa town is strategically located along a major road, making it a trade and administrative center. It serves as a hub for local commerce, transport, and public services. The presence of infrastructure and population concentration suggests it plays a role in governance, education, and social services.

2. The following hypothetical data show the land use by percentage of the total area in six districts of Tanzania by 1975

a Present the data by Compound Divided Rectangles

To present the data using compound divided rectangles, each district's total area is represented as a rectangle, and the land use categories are shown as sections proportional to their percentages. This provides a visual representation of how land is utilized in different districts.

b What are the merits and demerits of the method in a above

Merits
i It provides a clear visual comparison of land use among districts
ii It allows easy interpretation of relative land use proportions
iii It highlights land use distribution patterns effectively

Demerits
i It may not accurately represent minor variations in land use
ii It requires careful scaling and calculation for accuracy
iii Complex data with many categories can make the diagram difficult to interpret

3. a What is a Plane table survey

A plane table survey is a field method used to produce maps directly on a drawing board set up on a tripod. It is a simple and efficient technique for mapping small areas by taking direct observations and plotting features in real-time.

b Explain six equipments used in Plane table survey

i Plane Table Board – a flat drawing surface mounted on a tripod to facilitate field sketching
ii Tripod Stand – provides stability to the plane table and allows adjustments to the working level
iii Alidade – an instrument used for sighting objects and drawing lines of sight on the map
iv Spirit Level – ensures that the plane table board is set up in a horizontal position for accurate measurements
v Compass – used to determine directions and orient the map correctly
vi Ranging Rods – help in marking points on the ground that need to be mapped

4. To what extent is research a scientific phenomenon

Research is a scientific phenomenon because it follows systematic procedures in acquiring knowledge. It involves defining a problem, formulating hypotheses, collecting data, analyzing results, and drawing conclusions. It uses observation, experimentation, and logical reasoning to produce reliable and verifiable findings. Research in various fields, including geography, applies scientific methods to solve real-world problems, making it an essential tool for academic and practical advancements.

5. Study the photograph provided below and answer the following questions

a Determine the type of vegetation shown in the photograph

The photograph shows savanna vegetation, which is characterized by scattered trees, mainly acacia, and grasslands. This type of vegetation is commonly found in semi-arid and tropical regions where rainfall is seasonal and moderate.

b What economic activities can be undertaken in the area Identify three economic activities

i Livestock keeping – The presence of open grasslands supports cattle, goat, and sheep rearing, which is a common economic activity in savanna regions.
ii Tourism – The presence of acacia trees suggests the area might be near a wildlife conservation park, attracting tourists for game drives and nature exploration.
iii Charcoal burning – The availability of trees, such as acacia, provides raw materials for charcoal production, which is a major source of income in rural savanna areas.

c Explain the mechanisms adopted by the trees shown in the photograph which help them to survive in such environmental conditions

i Deep root system – The trees have long roots that penetrate deep into the soil to access underground water during dry seasons.
ii Small leaves and thorns – The leaves are reduced in size to minimize water loss through transpiration, while thorns protect against herbivores.
iii Drought resistance – These trees have the ability to store water in their trunks or roots, enabling them to survive prolonged dry conditions.
iv Shedding of leaves – Some trees shed leaves during dry seasons to reduce water loss and conserve moisture.

d Name any four possible districts in Tanzania where the photograph might have been taken

i Serengeti
ii Manyoni
iii Kiteto
iv Simanjiro

6. With the aid of the diagram give an account of the erosional features associated with Alpine glaciation

Erosional features associated with Alpine glaciation include cirques, which are bowl-shaped depressions formed by glacial erosion; aretes, which are sharp ridges between cirques; and U-shaped valleys, which are formed when glaciers widen and deepen pre-existing river valleys. Other features include hanging valleys, which appear above main valleys, and horns, which are pyramid-shaped peaks created by multiple glaciers eroding a mountain.

7. Using concrete examples explain how faulting has been responsible for landscape evolution

Faulting has significantly shaped the landscape by creating features such as fault-block mountains, rift valleys, and escarpments. The East African Rift Valley, for example, was formed due to tension forces causing blocks of the Earth's crust to move. Faulting also contributes to the formation of lakes such as Lake Tanganyika and Lake Malawi, which occupy rift depressions. Earthquakes and volcanic activities are also associated with faulting, leading to changes in the Earth's surface over time.

8. Explain the formation of coral reefs and give their economic significance

Coral reefs form in warm, shallow, and clear ocean waters where coral polyps secrete calcium carbonate, creating reef structures over time. The process requires stable temperatures and minimal sedimentation to support coral growth. Economically, coral reefs attract tourists for diving and snorkeling, support fisheries by providing breeding grounds for marine species, and act as natural barriers protecting coastal areas from storm surges and erosion.

9. Ocean currents are the outcome of the interaction of a number of factors Justify

Ocean currents result from interactions between wind patterns, temperature variations, the Coriolis effect, and salinity differences. Winds such as trade winds and westerlies drive surface currents, while temperature differences between warm and cold waters cause vertical circulation. The Earth's rotation influences the deflection of currents, and salinity variations affect water density, leading to the movement of deep ocean currents.

10. Give an account of the main factors which influence the infiltration of groundwater

i Soil porosity – Sandy soils allow more water infiltration compared to clay soils.
ii Vegetation cover – Areas with dense vegetation enhance infiltration by reducing surface runoff.
iii Slope gradient – Gentle slopes promote infiltration, while steep slopes increase runoff.
iv Rainfall intensity – Light, prolonged rainfall encourages infiltration, while heavy rainfall causes more runoff.
v Human activities – Urbanization and deforestation reduce infiltration by compacting the soil and increasing surface runoff.
vi Permeability of rocks – Permeable rocks, such as limestone, facilitate water infiltration into underground aquifers.

11. Describe the characteristics of tropical cyclones

i Low pressure – Tropical cyclones develop around low-pressure centers, leading to strong winds.
ii Heavy rainfall – They bring intense rainfall, which can cause flooding and landslides.
iii High wind speeds – Cyclones have violent winds exceeding 120 km/h, causing destruction to infrastructure and vegetation.
iv Eye of the storm – The calm, circular center of a cyclone where weather conditions are relatively stable.
v Storm surges – Cyclones cause a rise in sea levels, leading to coastal flooding.

12. Write a detailed account on the characteristics and distribution of coniferous forests

Coniferous forests, also known as taiga, are found in cold temperate regions such as Canada, Russia, and Scandinavia. They are dominated by cone-bearing trees like pine, spruce, and fir. These trees have needle-shaped leaves, which minimize water loss during winter, and their conical shape allows snow to slide off

easily. Coniferous forests support industries such as timber and paper production and provide habitats for various wildlife species.

13. Gumbo is a modal village in Tanzania in implementing Kilimo Kwanza policy However there is a serious problem of soil erosion Explain six ways you will advise the villagers to control soil erosion

i Terracing – Constructing terraces on slopes to slow down water flow and reduce erosion.
ii Agroforestry – Planting trees alongside crops to reduce wind and water erosion.
iii Cover cropping – Growing cover crops like legumes to prevent soil from being washed away.
iv Contour farming – Plowing along the contours to reduce surface runoff.
v Mulching – Applying plant residues to cover soil and retain moisture.
vi Constructing check dams – Building small dams across gullies to slow water movement and trap sediments.