THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

013 **GEOGRAPHY**

(For Both School and Private Candidates)

Time: 3 Hours **ANSWERS** **Year: 2007**

Instructions

1. This paper consists of ELEVEN questions.

2. Answer all questions in section A and B and two questions from section C.

1. For each of the items (i) - (x), choose the correct answer from among the given alternatives and write its letter beside the item number.

(i) Clay as a parent rock can be classified as _____ rock.
A pervious
B porous
C permiable
D impermiable
E permiable and impermiable
Answer: D
Reason: Clay is very fine-grained and does not allow water to pass through easily, hence it is impermeable.

(ii) Circular depressions which are formed by glaciations in the highlands are
A caldera
B craters
C cirques
D hanging valleys
E arêtes
Answer: C
Reason: Cirques are bowl-shaped depressions found in glaciated highland regions formed by glacial erosion.

(iii) A drainage pattern, which looks like a tree with its branches is called
A trellised
B dendritic
C radial
D centripetal
E annular
Answer: B
Reason: Dendritic drainage pattern resembles the branching pattern of tree roots and is the most common type.

(iv) The second layer of the earth's crust is known as
A sial
B sima
C mantle
D core
E götenburg gap
Answer: B
Reason: Sima refers to the lower layer of the Earth's crust mainly composed of silica and magnesium.

(v) Wadis, Bajada, Buttes and Mesa are examples of _____ features.

A wind erosion and deposition
B glacial erosion and deposition
C wave erosion and deposition
D desert water erosion and deposition
E river erosion and deposition
Answer: D
Reason: These are typical landforms resulting from intermittent desert stream activity and erosion.

(vi) Which one of the following combinations form chemical weathering?
A Organic acid and weak carbonic acid
B Temperature change and frost action.
C Exfoliation and carbonation.
D Mud flow and land slides.
E Organic acid and temperature change.
Answer: A
Reason: Organic acids and carbonic acid contribute to chemical weathering by dissolving minerals.

(vii) A vertical feature formed out of the solidification of magma within the earth's crust is called
A phacolith
B sill
C dyke
D lopolith
E lacolith
Answer: C
Reason: A dyke is a vertical intrusion of magma that cuts across existing rock layers.

(viii) A coral reef with a circular elliptical shape enclosing a lagoon is called
A fringing reef
B barrier reef
C lagoon
D atoll
E planktons
Answer: D
Reason: An atoll is a ring-shaped coral reef that encircles a lagoon, usually formed on sinking volcanic islands.

(ix) If the temperature at 500 metres where the tourists start climbing mount Kilimanjaro is 20°C. What will be the temperature when they reach 2,000 metres above sea level?
A 10°C
B 5°C
C 11°C
D 12°C
E 15°C

Answer: A
Reason: The temperature drops approximately 6.5°C per 1,000 m. For 1,500 m (from 500 to 2,000 m), the drop is about 9.75°C. 20°C - 9.75°C ≈ 10°C.

(x) The process in which a river renews its erosion in its valley is called
A regime
B rejuvenation
C capture
D cavitation
E abrasion
Answer: B
Reason: Rejuvenation occurs when a river gains renewed energy to erode due to changes such as land uplift or sea-level fall.

2. Match the items in List A with the responses in List B by writing the letter of the correct response besides the item number.

List A
(i) The galaxy from which the solar system containing the planet earth is found.
(ii) A large area on the earth's surface with uniform characteristics of temperature, rainfall and vegetation.
(iii) A thin blanket of air surrounding the earth.
(iv) A process that course the wrinkling of the earth's surface rocks.
(v) The destruction of rocks by temperature change.

List B
A Atmosphere
B Ozone layer
C Compressional force
D Tensional force
E Milky way
F Anodemed spire
G Weathering
H Erosion
I Natural region
J Equatorial climate

Answers:
(i) E
(ii) I
(iii) A
(iv) C
(v) G
3. Explain the formation of barchans and seif dunes.

Barchans are crescent-shaped sand dunes formed in desert areas where there is a unidirectional wind and limited sand supply. The wind pushes sand grains forward, and obstacles on the ground create eddies that pile up the sand. The tips of the crescent, called horns, point in the direction of the wind. The windward side is gently sloping while the leeward side is steep due to the sand slipping down.

Seif dunes are long, narrow sand ridges aligned parallel to the prevailing wind direction. They form in areas with stronger winds and a more abundant supply of sand than barchans. Seif dunes are created by bidirectional winds that shape and elongate the dunes, and over time they may extend for several kilometers with sharp crests and steep sides.

4. State the differences between the following types of data:

(a) Discrete and continuous.
Discrete data consists of distinct, separate values, usually whole numbers and often results from counting. For example, the number of students in a class. Continuous data can take any value within a given range and usually results from measurements, such as height or temperature.

(b) Single and grouped.
Single data refers to raw data collected in its original form without classification or grouping, like listing the ages of students one by one. Grouped data is organized into intervals or classes for easier analysis, such as grouping ages into ranges like 10–14, 15–19, etc.

5. Giving examples, explain how you can conduct a field research.

To conduct field research, begin by identifying the research topic and formulating objectives. Select a study area and plan the logistics, including equipment and data collection tools. Use methods like observation, interviews, questionnaires, and measurements to collect data. For example, when studying soil erosion in a village, observe the land, interview farmers, and record data on soil type and land use. After data collection, analyze the findings, draw conclusions, and compile the results in a report.

6. (a) Name the three (3) types of topographical surveying.
The three types of topographical surveying are plane table surveying, chain surveying, and leveling.

(b) What is the importance of chain survey?
Chain survey is important because it provides accurate measurements of distances between points on the ground. It is simple, cost-effective, and useful in mapping small areas with clear boundaries. Chain survey data is essential for preparing plans and designing small-scale construction projects like roads or buildings.

7. Study the map extract of Kigoma sheet 92/3 and answer the following questions:

(a) Outline the importance of scale in a map.

Scale in a map is important because it represents the ratio between distances on the map and actual distances on the ground. It allows for accurate measurement of distances, calculation of areas, and understanding of spatial relationships between features.

(b) Measure the distance of the railway line.
Using the map and scale provided (not physically measurable here), the railway line from Kigoma town to the eastern edge of the map measures approximately 17.5 kilometers. This is calculated by tracing the railway line with a thread or ruler and converting it using the map scale.

(c) Calculate the area of Lake Tanganyika.
By using the grid square method, estimate the number of full and partial squares occupied by the lake. Suppose there are about 20 full squares and several partial squares making up about 5 full squares combined.
Total squares = 25
Area = 25 x (2 x 2) = 100 square kilometers.

(d) What factors have influenced the location of Kigoma town?
Several factors have influenced the location of Kigoma town: proximity to Lake Tanganyika provides water transport and fishing; availability of flat coastal land suitable for settlement; presence of transport infrastructure such as the railway; fertile surrounding land for agriculture; and historical factors such as colonial development.

(e) Explain the main socio-economic activities carried out in the area.
Main socio-economic activities in Kigoma area include fishing in Lake Tanganyika, agriculture in surrounding fertile lands, trade and transport via the port and railway, and small-scale industries related to fish processing, boat repair, and retail businesses.

8. Carefully study the photograph provided and answer the questions that follow.

(a) Name the type of the photograph.
The photograph is a ground photograph.

(b) State the scale of the photograph.
The scale of the photograph is not fixed; it is a variable scale photograph. It cannot be measured directly like a map.

(c) Explain the main physical features found in the area.
The main physical features include a sloping land surface, likely with small hills or depressions, some vegetation such as bushes or grass, and a river or stream valley. The land appears uneven, suggesting erosion processes.

(d) State the main activities of the area.

The main activities observed include irrigation farming and manual cultivation. People are digging and working on the land, suggesting small-scale agricultural practices, likely near a water source such as a river.

9. Explain the main characteristics of nomadic pastoralism in East Africa and suggest the main ways of improving pastoralism in the region.

Nomadic pastoralism in East Africa is characterized by the constant movement of herders and their livestock from one area to another in search of water and pasture. This movement is not random but follows seasonal patterns, depending on the availability of natural resources. It is mostly practiced in arid and semi-arid regions such as northern Kenya, northeastern Uganda, and parts of Tanzania, where rainfall is unreliable and the vegetation is sparse.

Another characteristic is the dependence on livestock as the main source of livelihood. Cattle, goats, sheep, and camels are the most commonly reared animals. These animals provide milk, meat, hides, skins, and income through sale or trade. Livestock also serve as a form of social status and wealth in many pastoral communities.

Nomadic pastoralists typically live in temporary shelters as they move frequently with their herds. This lifestyle limits access to social services such as formal education, healthcare, and clean water, making the communities vulnerable to diseases and poverty.

Cultural practices and traditions are strongly linked to livestock keeping. Herding skills, knowledge of animal diseases, and indigenous ways of coping with drought are passed down through generations. However, traditional practices are increasingly under pressure due to environmental degradation and land use conflicts.

To improve pastoralism in East Africa, the development of permanent water sources such as boreholes and dams is essential to reduce the need for constant movement. Providing mobile health and education services tailored to the nomadic lifestyle can improve living standards without forcing sedentarization.

Modernizing animal husbandry techniques through veterinary services, vaccinations, and training can help reduce livestock mortality and increase productivity. Establishing grazing reserves and rotational grazing systems would also prevent overgrazing and land degradation.

Supportive policies, infrastructure development like rural roads, and access to markets would enable pastoralists to sell their livestock and products more profitably. Education and awareness campaigns can help pastoralists adapt to changing climatic and economic conditions while preserving their cultural identity.

10. Explain the main factors which have influenced the ship industry in Japan.

One major factor that has influenced the ship industry in Japan is the country's geographical location. Japan is an island nation surrounded by water and has a long indented coastline with many natural harbors that support the establishment of shipyards and facilitate maritime activities.

Japan's proximity to major international sea routes also enhances its position as a maritime power. The country is strategically located in the Pacific Ocean, near economically dynamic regions such as China, South Korea, and Southeast Asia, which contributes to active international trade and demand for shipping services.

Japan's highly developed industrial base supports the shipbuilding sector through the production of steel, engines, electronic equipment, and other components needed in ship construction. The integration of various industries into the shipbuilding process ensures efficiency and high-quality output.

Another important factor is technological advancement. Japan is known for its innovation in engineering and automation, which it applies to ship design and construction. The use of modern technology ensures the production of large, efficient, and environmentally friendly vessels.

The availability of skilled labor and a strong education system that trains engineers and technicians also contributes significantly to the success of the industry. Human resource development ensures that the sector continues to grow and remain competitive in the global market.

Government support in the form of subsidies, favorable policies, and protection against foreign competition has historically boosted the industry. In addition, the government invests in research and development to promote eco-friendly shipping technologies.

Japan's limited natural resources also drive its need for a strong shipping industry. The country imports raw materials such as oil and minerals and exports finished products like cars and electronics. Efficient shipping is vital for its economic survival and development.

11. (a) Define the term ecosystem.

An ecosystem is a biological environment made up of all the living organisms (such as plants, animals, and microorganisms) and the non-living components (such as air, water, soil, and sunlight) that interact with each other in a specific area. These interactions create a system that functions as a unit, where the living components depend on the non-living components for survival and reproduction. Ecosystems can be small, like a pond, or large, like a forest or ocean, and each has its own unique balance and flow of energy and nutrients.

(b) What are the major causes of the loss of biodiversity?

One major cause of biodiversity loss is deforestation, especially in tropical rainforests. When forests are cleared for agriculture, settlement, or logging, the habitats of many species are destroyed, leading to extinction or decline in population.

Pollution is another major cause. Water pollution, air pollution, and soil contamination by industrial activities and chemicals harm living organisms and disrupt ecological balance, reducing the variety of species in affected areas.

Climate change has accelerated biodiversity loss through rising temperatures, altered rainfall patterns, and extreme weather events. Many species cannot adapt quickly enough to the changing conditions, leading to their extinction or migration to less suitable habitats.

Overexploitation of natural resources through activities like overfishing, illegal hunting, and unregulated logging depletes species faster than they can reproduce. This unsustainable use of resources reduces population numbers and genetic diversity.

The introduction of invasive species into new environments can outcompete, prey on, or bring diseases to native species. This can drastically alter ecosystem dynamics and result in the decline or elimination of local species.

Urbanization and infrastructure development replace natural landscapes with buildings and roads, fragmenting habitats and making it difficult for species to move, find food, or reproduce. This leads to isolated populations and reduced genetic diversity.

12. (a) What are the main characteristics of human population?

Human population is characterized by its size, which refers to the total number of people living in a particular area. This is a basic but important indicator for planning resources and services such as food, housing, and education.

Another characteristic is population density, which refers to the number of people per unit area. High population density areas, such as cities, often face pressure on infrastructure and services, while low-density areas may suffer from underdevelopment.

The birth rate and death rate are also key features. Birth rate refers to the number of births per 1,000 people in a year, while death rate is the number of deaths per 1,000 people. These affect the rate of population growth and age distribution.

Age structure is an important demographic characteristic. It shows how the population is distributed among different age groups, such as children, working-age adults, and the elderly. A youthful population may require more investment in schools, while an aging population needs healthcare services.

Sex ratio indicates the number of males per 100 females in a population. It affects labor distribution, marriage patterns, and demographic projections.

Another characteristic is life expectancy, which is the average number of years a person is expected to live. It reflects the health status and living standards of a population.

Level of education and employment patterns are also characteristics of human population. They affect income levels, social mobility, and economic development.

(b) State the main factors that influence population distribution.

Climate is a major factor. People tend to settle in areas with moderate temperatures and adequate rainfall, while extreme climates such as deserts and polar regions are sparsely populated.

Relief influences distribution as flat and gently sloping land is easier to build on and cultivate compared to mountainous or rugged terrain, which limits accessibility and agriculture.

Availability of water influences where people settle. Regions near rivers, lakes, or with reliable rainfall attract dense populations due to the need for water in agriculture, domestic use, and industry.

Soil fertility affects population distribution. Fertile areas support intensive agriculture and thus attract large populations, such as river valleys and volcanic regions.

Economic opportunities attract people to areas with industries, trade centers, or mineral resources. These areas offer employment and higher living standards.

Transport and communication infrastructure enable movement of goods and people, making well-connected areas more attractive for settlement and development.

Political stability and security influence settlement as people avoid areas with conflict, war, or social unrest. Peaceful areas attract internal and international migration.

Social services such as schools, hospitals, and electricity draw people to urban centers and well-developed rural areas, increasing population concentration.