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: 2016**

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 in the answer booklet provided.

(i) The speed of the earthquake waves in the earth is changed at a line called
A Mohorovicic discontinuity
B Gutenberg discontinuity
C Tectonics
D Tectonics
E Isostatic

Correct answer: A Mohorovicic discontinuity
Reason: The Mohorovicic discontinuity is the boundary between the Earth's crust and mantle, where seismic wave velocity changes significantly.

(ii) Liverpool team scored a goal at 5.00 pm in England (15° W). At what time the goal was scored in Dar es Salaam (45° E)?
A 1.00 p.m
B 7.00 p.m
C 9.45 p.m
D 9.00 p.m
E 6.30 a.m

Correct answer: D 9.00 p.m
Reason: The difference between 15°W and 45°E is 60°, which equals 4 hours. Since Dar es Salaam is east, we add 4 hours to 5:00 pm = 9:00 pm.

(iii) The sun is overhead at tropic of Capricorn every year on
A 22nd December
B 21st March
C 23rd September
D 21st June
E 24th March

Correct answer: A 22nd December
Reason: On 22nd December, the sun is directly overhead at the Tropic of Capricorn, marking the southern hemisphere's summer solstice.

(iv) Day reaches its maximum length on 21st June in
A Southern hemisphere
B Northern Hemisphere
C Arctic Circle
D Polar region
E Tropic of Capricorn

Correct answer: B Northern Hemisphere
Reason: 21st June is the summer solstice in the Northern Hemisphere, when the day is longest.

(v) Which of the following planets have small celestial bodies in orbit around them?
A Mercury, Jupiter and Uranus
B Pluto, Earth and Mars
C Earth, Jupiter and Saturn
D Mercury, Venus and Earth
E Venus, Earth and Saturn

Correct answer: C Earth, Jupiter and Saturn
Reason: These planets have natural satellites (moons) orbiting around them, which are small celestial bodies.

(vi) Deposition of soil materials removed from one horizon to another is called
A Convex sided
B Concave sided
C Gentle sided resistance
D Steep sided resistant
E Steep sided non resistance

Correct answer: B Concave sided
Reason: Concave sided surfaces allow deposition of materials through gravitational and erosional processes.

(vii) The excessive strong wind blowing across an extensive ocean surface is called
A Tsunami
B Ocean currents
C Storm surge
D Hurricane
E Wind

Correct answer: D Hurricane
Reason: A hurricane is a violent tropical storm with strong winds blowing over the ocean surface.

(viii) Rainfall that occurs when the air moves towards a hill or a mountain is called
A Cyclonic
B Orographic
C Convectional
D Showers
E Typhoon

Correct answer: B Orographic
Reason: Orographic rainfall is caused when moist air is forced to rise over mountains or hills, leading to cooling and condensation.

(ix) Mountains can be classified on the basis of
A Their importance
B Their surrounding
C Their composition
D Their formation
E Their height

Correct answer: D Their formation
Reason: Mountains are commonly classified based on how they formed—block, fold, volcanic, or residual.

(x) A channel diverging from the main river and flowing into the sea or a lake by a separate mouth is called
A Tributary
B Stream
C Distributary
D River basin
E Water shade

Correct answer: C Distributary
Reason: A distributary branches off from the main river and flows separately, usually found in deltas.

2. Match the items in List A with the responses in List B by writing the letter of the correct response beside the item number in the answer booklet provided.

List A
(i) Water that flows out of the ground.
(ii) Water that seep out of rocks and into the rock holes.
(iii) Water that enters the rocks of the earth's surface.
(iv) Interaction of water vapour, precipitation, infiltration, runoff, evaporation and condensation.
(v) Water that is saturated in permeable rocks.

List B
A Stalagmite
B Doline
C Water cycle
D Artesian basin
E Aquifer
F Uvula

G Spring
H Ground water
I Juvenile water
J Bore holes
K Well

Answers:
(i) G
(ii) J
(iii) H
(iv) C
(v) E

3. (a) Describe discordant drainage system.
A discordant drainage system is a river drainage pattern where the river flows across the structure of the underlying rocks rather than following the geological features. This occurs when rivers cut across resistant and non-resistant rocks without being deflected, showing that the drainage developed before the formation of the land structure or due to superimposition.

(b) Explain the process of river transport and describe four ways in which a river transports its load.
River transport is the process through which a river moves eroded materials from one place to another. The materials may include sand, silt, clay, pebbles, and dissolved minerals. The transport depends on the river's velocity, volume of water, and nature of the load.

One way is traction, where heavy materials like boulders and large pebbles are rolled along the riverbed due to the force of moving water.

Another method is saltation, in which small pebbles and stones are lifted temporarily and bounced along the bed of the river in a hopping motion.

Suspension involves the transport of fine materials such as silt and clay which are carried within the river water, making it appear muddy or cloudy.

Solution (or corrosion) is the transportation of dissolved minerals in the water. These materials are invisible and are carried in chemical form in the river flow.

4. (a) (i) Define simple divided circle.
A simple divided circle, also known as a pie chart, is a circular diagram divided into sectors where each sector represents a proportion or percentage of a whole. It is used to show how different parts contribute to a total.

(ii) Give four merits of using simple divided circle.

A simple divided circle is easy to read and interpret as it gives a clear visual comparison of data proportions.
It effectively shows the relative size of each component compared to the whole, making it ideal for showing percentages.
It attracts attention and is suitable for presenting summarized data in reports or presentations.
It allows for easy comparison of the magnitude of parts, especially when there are few components.

(b) (i) Draw the above bar graph to a simple divided circle by showing all the procedures.
(This requires graphical representation, which can be generated separately as an image with step-by-step conversion.)

(ii) Give two possible factors for variation of crops production in the above bar graph provided.
Variation in soil fertility may result in some crops performing better in certain areas than others. Crops like cassava may thrive more due to favorable soils.
Availability of rainfall or irrigation can cause differences in yield, as water-intensive crops such as maize or millet may produce less in drier conditions.

5. (a) Point out four objectives of doing research in Tanzania.
To find solutions to existing social, economic, or environmental problems affecting communities.
To gather data that can be used for effective planning and policy formulation by the government or institutions.
To increase knowledge and understanding about a specific topic, phenomenon, or issue within the Tanzanian context.
To evaluate the impact of existing projects, policies, or developments and suggest improvements.

(b) Describe the following terms as used in research:

(i) Case study
A case study is a detailed examination of a specific individual, group, event, or institution to explore causes, effects, and results within a real-life context.

(ii) Feasibility study
A feasibility study is an assessment done before starting a project to evaluate its practicality, including economic, technical, and legal aspects.

(iii) Participatory observation
Participatory observation is a data collection method where the researcher involves themselves in the daily activities of the study group to observe behaviors and interactions.

(iv) Research hypothesis
A research hypothesis is a tentative statement or prediction that can be tested through investigation, which proposes a relationship between two or more variables.

(v) Research problem
A research problem is the issue or challenge that a study seeks to investigate, understand, or solve through scientific inquiry.

6. (a) Explain two major forms of measurements in land surveying.
Linear measurement involves measuring distances between two points on the ground using tapes, chains, or electronic devices.
Angular measurement involves measuring angles between survey lines using instruments like theodolites or compasses to determine direction and orientation.

(b) (i) Define leveling.
Leveling is a surveying process used to determine the relative height of different points on the Earth's surface to create accurate maps or establish reference elevations.

(ii) Explain four significances of leveling.
It is used in construction to ensure foundations, roads, and drainage systems are built on level ground or with the correct slope.
It helps in flood control and irrigation by designing channels and structures based on elevation differences.
It supports the preparation of topographic maps by showing contours and land gradients.
It assists in setting up benchmarks for future surveys or engineering works.

7. Carefully study the map extract of Hanang (Sheet 84/4) and answer the following questions:

(a) Express the map scale as a statement.
Scale 1:50,000 means 1 cm on the map represents 50,000 cm (0.5 km) on the ground. The statement scale is: 1 cm represents 0.5 km.

(b) Find the bearing of grid reference 720220 to 680180.
Using a protractor on the map, the bearing from 720220 to 680180 is approximately 225° (southwest direction).

(c) Giving three evidences from the map, suggest the climate of the mapped area.
Presence of swamps and seasonal rivers indicates seasonal rainfall.
Scattered trees and thicket suggest semi-arid to moderate rainfall climate.
Salt and soda lakes indicate high evaporation and semi-arid climate characteristics.

(d) Suggest with evidence, five major economic activities which might take place in the area.
Farming: Presence of scattered settlements and open land suggests subsistence or small-scale farming.
Livestock keeping: Presence of grassland and seasonal swamps support grazing and pastoralism.
Fishing: Presence of salt and soda lakes implies local fishing may be practiced.
Mining: Presence of spot heights and varied relief may indicate mineral resources.

Tourism: The presence of features like craters and hills may attract tourists for geographical and scenic purposes.

(e) Give four supportive contents of a topographical map provided.
Grid references for locating specific points.
Contours and spot heights to represent relief.
Legend/key showing symbols and land features.
Scale to measure distances and interpret the area covered.

(f) Mention three factors which affected the contents of the map given.
Nature of the landscape (relief and drainage) determines what features appear.
Human activities such as farming, roads, and settlement development influence map content.
Availability of resources such as water and minerals shape the land use patterns shown on the map.

8. Study the photograph provided below and then answer the questions that follows:

(a) Name the type of photograph.
It is a ground-level or horizontal photograph.

(b) Give three characteristics of the type of photograph in (a) above.
It is taken from ground level and shows the front and side views of objects.
The foreground appears larger while the background appears smaller.
It shows clear details of the objects like animals and vegetation from a human-eye perspective.

(c) Explain four possible factors which may cause the loss of biodiversity in the photograph.
Deforestation may lead to habitat destruction, reducing the number of species.
Poaching or illegal hunting can reduce the population of wildlife such as giraffes.
Climate change may alter the vegetation and water sources, affecting animal survival.
Human settlement and land conversion into agriculture may encroach natural habitats.

(d) Give two economic importance of the area.
It supports tourism by attracting visitors who come to see wildlife like giraffes.
It provides employment opportunities through conservation, guiding, and hospitality services.

(e) In three points, describe the importance of the vegetation shown in the area.
It provides food and habitat for herbivores and other wildlife, supporting biodiversity.
Vegetation prevents soil erosion and maintains ecological balance in the savanna.
It serves as a carbon sink by absorbing carbon dioxide, contributing to climate regulation.

9. Evaluate six factors that determine exploitation of minerals in a country.

The availability and accessibility of mineral deposits is a key factor in exploitation. Minerals that are located near the surface or in areas that are easy to access are more likely to be exploited compared to those buried deep underground or in remote regions.

The level of technology available influences mineral exploitation. Advanced technology allows for efficient and cost-effective extraction, processing, and transportation of minerals. Countries with modern mining equipment and techniques are more successful in mineral exploitation.

Availability of capital is another crucial factor. Mining is a capital-intensive activity that requires large investments in machinery, labor, exploration, and infrastructure. Countries or companies with sufficient financial resources can easily invest in mineral exploitation.

Infrastructure such as roads, railways, and electricity supply determines the extent of mineral exploitation. Well-developed infrastructure facilitates the transportation of machinery, labor, and minerals, making mining more profitable and sustainable.

Government policy and legislation also affect mineral exploitation. Supportive policies such as tax incentives, licenses, and investment guarantees encourage private investors to explore and exploit mineral resources. On the other hand, restrictive regulations may discourage investment.

Market demand for specific minerals determines the pace of exploitation. If there is high demand and favorable prices in the global or local market, countries are more likely to invest in mining operations to maximize profits from those minerals.

10. Explain six factors that hinder development of river transportation in Africa.

One major factor is the presence of waterfalls and rapids. Many African rivers such as the Congo and Nile have waterfalls and rapids that make navigation difficult and dangerous, limiting continuous river transport.

Seasonal variation in water levels affects river transportation. Some rivers dry up during the dry season and flood during the rainy season, making it difficult to maintain consistent navigation throughout the year.

Shallow depth and silting of river channels hinder transportation. Many rivers accumulate sediments which reduce depth and make them unnavigable for larger boats and ships, requiring regular dredging.

Lack of infrastructure such as ports, terminals, and storage facilities discourages investment in river transport. Without proper facilities, loading and offloading of goods become inefficient and costly.

Limited capital and investment in the sector is also a hindrance. Many African countries lack the financial resources to develop river transport infrastructure and invest in appropriate vessels, reducing its viability as a transport option.

Political instability and insecurity along river routes discourage the use of waterways. In regions affected by conflict or piracy, people and companies avoid river transport due to safety concerns.

11. Describe five measures to control floods to the environment.

Construction of dams and reservoirs is an effective measure to control floods. These structures store excess water during heavy rains and release it gradually, preventing overflow and flooding of nearby areas.

Afforestation and reforestation help control floods. Planting trees increases water infiltration, reduces surface runoff, and stabilizes the soil, thereby minimizing the risk of floods.

Construction of drainage systems and flood channels helps direct excess water away from populated or vulnerable areas. This prevents water accumulation and allows smooth flow to rivers and other water bodies.

Zoning and proper land use planning can reduce flood risks. Authorities should restrict construction in flood-prone areas such as riverbanks and wetlands to minimize damage during floods.

Early warning systems and community awareness campaigns enable timely evacuation and preparation. When people are informed in advance about possible floods, they can take precautions to protect life and property.

12. Analyse eight problems associated with growth of urban settlement.

One problem is overcrowding. Rapid population growth in urban areas leads to high population density, resulting in limited living space and pressure on social services like schools, hospitals, and water supply.

Increased pollution is another issue. Urban growth brings more vehicles, industries, and waste, which lead to air, water, and land pollution, posing health risks to urban dwellers.

Unemployment becomes a challenge. Many people migrate to cities in search of jobs, but employment opportunities are limited, leading to joblessness, underemployment, and expansion of the informal sector.

Traffic congestion is a common problem. As more people acquire vehicles, roads become overcrowded, leading to delays, accidents, and increased fuel consumption.

Inadequate housing leads to the development of slums. Many urban areas face a shortage of affordable housing, forcing people to live in poorly planned, overcrowded, and unsanitary settlements.

Crime and insecurity often increase with urban growth. Overpopulation, poverty, and unemployment can lead to increased crime rates such as theft, robbery, and violence.

Pressure on infrastructure such as sewage systems, electricity, and water supply can cause frequent breakdowns and health risks. Overuse and poor maintenance lead to inefficiency.

Loss of agricultural land and green spaces occurs as cities expand. Urban growth often involves clearing of forests, wetlands, and farmland to build residential and industrial areas, reducing food production and environmental quality.