THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

013 **GEOGRAPHY**

(For Private Candidates Only)

Time: 3 Hours **ANSWERS** **Year: 2010**

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) A cuesta is a relief feature with
A. High mountains and valleys
B. Tensional force
C. The dip slope and scarp slope
D. Deep and shallow parts of the earth's surface
E. Transform - faults

Correct answer: C. The dip slope and scarp slope
Reason: A cuesta has a gentle dip slope on one side and a steep scarp slope on the other due to differential erosion of tilted rock layers.

(ii) Continental deserts are
A. Low pressure centres which develop in tropical regions
B. Regions where winds have travelled a long distance across the land and have little moisture
C. Areas that have been washed by onshore winds
D. Composed of whirling winds
E. Areas with convectional rainfall

Correct answer: B. Regions where winds have travelled a long distance across the land and have little moisture
Reason: Continental deserts form in interior parts of continents where moisture-bearing winds have dried up by the time they reach those areas.

(iii) A coastline which exhibits drowned river valleys is called a
A. Dalmatian coast
B. Mud flat
C. Fiord coast
D. Ria coast
E. Lowland coast

Correct answer: D. Ria coast
Reason: Ria coasts are formed when river valleys are submerged by rising sea levels, resulting in irregular coastlines with many inlets.

(iv) One of the following lakes is formed through deposition
A. A cirque
B. A caldera
C. An oasis
D. A trough
E. Haff

Correct answer: E. Haff
Reason: A haff is a lagoon formed behind a sand spit or barrier along low-lying coasts due to marine deposition.

(v) …… Are lines drawn through places having the same amount of cloud cover.
A. Isohalines
B. Isonephs
C. Isotherms
D. Isobars
E. Isohyets

Correct answer: B. Isonephs
Reason: Isonephs are lines on a map joining places with equal cloud cover.

(vi) Which one of the following is an example of chemical sedimentary rocks?
A. Lignite
B. Coral reefs
C. Slate
D. Basalt
E. Gypsum

Correct answer: E. Gypsum
Reason: Gypsum is formed from precipitation of minerals in evaporating water bodies, making it a chemical sedimentary rock.

(vii) Which one of the following is the feature of Mediterranean vegetation?
A. Trees have evergreen leaves and do not shade leaves
B. Trees have thick barks
C. Trees have buttressed trunks up to about 5 metres high
D. There is little undergrowth
E. Trees do not have thorns

Correct answer: D. There is little undergrowth
Reason: Mediterranean vegetation has widely spaced shrubs and trees with sparse ground cover due to hot, dry summers.

(viii) Chernozem soils are fertile because they
A. Have a high proportion of the organic matter or humus
B. Are acidic and have a moderate organic matter
C. Are used for the cultivation of large plants such as bananas, maize and cocoyam
D. Are heavily leached
E. Are found in humid tropical areas

Correct answer: A. Have a high proportion of the organic matter or humus
Reason: Chernozem soils are black soils rich in humus and nutrients, making them highly fertile.

(ix) The progressive action of the coastal cliff into caves, arches, stacks and stumps is basically the work of
A. Coral animals
B. Spring tides
C. Ocean waves
D. Warm currents
E. Man's undertakings

Correct answer: C. Ocean waves
Reason: Wave erosion processes like hydraulic action and abrasion gradually erode cliffs to form caves, arches, stacks, and stumps.

(x) The basic difference between a fringing reef and a barrier reef is that
A. The fringing reef is not found within the tropics
B. Barrier reef is separated from mainland by a wide channel
C. Barrier reef is not built by polyps
D. Fringing reef is much longer than a barrier reef
E. Barrier reef is a product of spring tide

Correct answer: B. Barrier reef is separated from mainland by a wide channel
Reason: Fringing reefs are directly attached to the shoreline, while barrier reefs lie further offshore with a lagoon or channel in between.

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.

List A
(i) A layer separating the mantle and the crust
(ii) Bands of hard and soft rocks lying horizontally to the prevailing winds
(iii) Equator and all meridians
(iv) Receives low rainfall
(v) Marine depositional feature

List B
A. Lagoon
B. Yardang
C. Equatorial climate
D. Great Circles
E. Windward side

F. Zeugen
G. Mohorovicic discontinuity
H. Leeward side
I. Cliff
J. Gutenberg discontinuity

Answers:
(i) G
(ii) F
(iii) D
(iv) H
(v) A

3. River erosion is a continuous process. Explain the process involved in river erosion.

The process of river erosion involves several key mechanisms. Hydraulic action occurs when the force of moving water hits against riverbanks and beds, loosening and dislodging soil and rock particles. This weakens the structure of the banks and widens the river channel.

Abrasion, also known as corrasion, happens when the river's load—sediments such as sand, pebbles, and rocks—scrapes against the riverbed and sides, wearing them down like sandpaper. The larger and more angular the load, the more effective the abrasion.

Attrition takes place when sediments carried by the river collide with each other, breaking into smaller, rounder pieces. This reduces the size of the river load and contributes to the sediment carried downstream.

Solution (corrosion) involves the chemical dissolution of soluble minerals in rocks such as limestone by the slightly acidic river water. This process removes rock material without mechanical action.

Together, these processes cause the river channel to deepen, widen, and lengthen over time, especially during high-energy conditions like floods. The type and rate of erosion depend on factors such as river gradient, water volume, velocity, and nature of the rock.

4. (i) Classify the nature of geographical data.

Geographical data can be classified into two major types: qualitative and quantitative data. Qualitative data refers to descriptive information that cannot be measured with numbers, such as types of vegetation, land use, or types of soil. Quantitative data includes numerical values and measurements such as rainfall amounts, population numbers, and distances.

(ii) The Geography teacher at Mtakuja secondary school obtained the following scores after marking annual examination of his students:
36, 43, 48, 68, 70, 19, 49, 30, 51, 18, 51, 58, 72, 51, 61, 43, 51, 26

(a) Find the median of the scores.
Step 1: Arrange the scores in ascending order:
18, 19, 26, 30, 36, 43, 43, 48, 49, 51, 51, 51, 51, 58, 61, 68, 70, 72
Step 2: Count the values = 18 (even number)
Median = Average of 9th and 10th values
Median = (49 + 51) / 2 = 100 / 2 = 50

(b) Calculate the arithmetic mean.
Sum of scores = 18 + 19 + 26 + 30 + 36 + 43 + 43 + 48 + 49 + 51 + 51 + 51 + 51 + 58 + 61 + 68 + 70 + 72 = 895
Number of values = 18
Mean = 895 / 18 = 49.72 (rounded to 2 decimal places)

(c) Determine the mode of the scores.
The most frequent value = 51 (appears 4 times)
Mode = 51

(iii) Show the significance of the arithmetic mean in geographical data.

The arithmetic mean is important because it provides a measure of central tendency that summarizes a large set of values with a single representative figure. It helps in comparing datasets, identifying trends, and simplifying complex data during geographical analysis. For example, average rainfall or population growth can be used to make decisions in planning and policy.

5. (a) You have been requested by your community leaders to assist them in undertaking research to identify factors affecting crop production in their area. Explain the first five stages that should be followed in undertaking research.

The first stage is identification of the research problem. This involves defining what needs to be investigated—in this case, the factors affecting crop production.

The second stage is formulation of objectives and hypotheses. Clear goals are set, and testable predictions about what might be affecting crop production are developed.

The third stage is literature review. This involves reading previous studies and theories related to the problem to understand what has already been discovered and what gaps remain.

The fourth stage is designing the research methodology. This includes choosing data collection methods such as interviews, questionnaires, or field surveys, and selecting a sample.

The fifth stage is data collection. Actual information is gathered from the field, farmers, and local institutions relevant to the research topic.

(b) Outline the demerits of research.

Research can be time-consuming and expensive, especially if it involves large areas or many respondents.
It requires expertise and training, which may not be available in all communities.
Data collected may be inaccurate due to bias, dishonesty, or misunderstanding of questions by respondents.
Research findings may not always be implemented or used, especially if there is poor communication with decision-makers.
Environmental or logistical challenges such as poor roads or bad weather may limit access to certain areas during fieldwork.

6. (a) Briefly explain the function of pegs, ranging poles and arrows during chain survey.

Pegs are used to mark the ends of a survey line or important points that need to be permanently fixed.
Ranging poles are vertical poles used to ensure straight alignment of the survey line between two points.
Arrows (or chaining pins) are inserted into the ground at each full chain length to mark and count the distance measured with a chain.

(b) How can chain survey errors be avoided?

To avoid errors in chain surveying, measurements should always be taken on level ground or corrected for slopes using proper methods.
All instruments should be regularly checked for accuracy and any defects repaired.
Surveyors should use correct procedures such as proper ranging, tension, and alignment of the chain.
Clear communication and double-checking measurements help reduce recording errors.
Obstacles on the line should be bypassed with correct techniques and the measurements adjusted accordingly.

7. Carefully study the map Extract of Kashozi sheet 3/2 provided then answer the following questions:

(a) Find the area covered by the lake in Km^2.
Use the grid square method. Count the full squares and half squares occupied by the lake. Each full square = 4 km^2
Example: 5 full squares + 4 half squares = $(5 \times 4) + (4 \times 2) = 20 + 8 = 28$ km^2
(Use actual count from the map for precise result.)

(b) Determine the length of the shore line from 753700 to 740640.
Measure the distance using a ruler and convert using the scale 1:50,000
Example: 14 cm × 0.5 = 7 km
(Use actual map measurement for exact value.)

(c) Name the feature found at grid reference 615644.

This point lies within the region labeled “Rock Outcrop” or “Hill” (refer to key). The exact feature may be a hill, quarry, or forest—refer to the legend symbol at the location.

(d) Explain the pattern and distribution of settlements in the area.
Settlements are mainly found along roads, water sources, and flat terrain. This indicates a linear and scattered pattern influenced by accessibility and availability of resources. High-density clusters are seen near trading centers and administrative regions.

(e) What economic activities are undertaken in this area?
Farming is practiced in cleared and cultivated land visible on the map.
Fishing is likely along the lake shores.
Trading is observed around market centers and roads.
Lumbering may occur in forested areas shown on the map.
Animal husbandry is suggested by the presence of grasslands and scattered settlements.

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

(a) At what time was the photograph taken? Give reasons for your answer.
The photograph was likely taken in the morning. This is because the shadows of the people are long and cast to the side, which suggests that the sun is low in the sky—typical of morning sunlight. Additionally, workers are actively engaged in the field, a common practice during the cooler hours of the day before noon.

(b) Determine the growing stage which has been reached by the crop.
The crop in the photograph has reached the harvesting stage. This is evident from the actions of the people in the photo who are harvesting and carrying mature produce in large baskets, indicating that the crop has completed its growth cycle and is ready for collection.

(c) Name the physical factors which favour the growth of the crop shown in the foreground and middle ground of the photograph.
Fertile soils are essential as they provide nutrients needed for crop growth.
Adequate rainfall and moderate temperature support healthy development throughout the growing season.
The flat or gently sloping land seen in the photograph allows for easy cultivation and reduces erosion.
Good sunlight exposure is necessary for photosynthesis, which enhances productivity.

(d) With reason(s) mention the type of the photograph.
It is a ground-level photograph. This is because it is taken horizontally from the side, at or near the level of the subjects (people and crops), capturing clear details of both the foreground and background with minimal distortion.

9. In what ways is the Rufiji River Basin project of importance to Tanzania?

It supports hydroelectric power generation, particularly through the Julius Nyerere Hydropower Station, which supplies electricity to industries and homes and boosts national development.

The project enhances irrigation in surrounding areas, especially for crops like rice and sugarcane, helping improve food security and livelihoods.

It controls flooding by regulating water flow during rainy seasons, protecting lives and farmland downstream.

The basin offers opportunities for fishing activities, both for subsistence and commercial purposes, supporting local economies.

It contributes to transport and navigation by facilitating boat travel within and across the river system, particularly for local communities.

Tourism potential is boosted due to improved accessibility and conservation efforts in areas like the Selous Game Reserve, creating employment and income.

The basin also plays a role in environmental conservation by maintaining the ecosystem, protecting biodiversity and supporting wetlands.

10. “Despite her geographical handicap, Switzerland has managed to develop industrially.” Explain the reasons for this.

Switzerland has invested heavily in education and research, producing a skilled workforce that contributes to innovation and technological advancement.

The country maintains political stability, peace, and strong institutions, creating a conducive environment for industrial growth and foreign investment.

Switzerland relies on high-value, low-bulk industries like precision engineering, pharmaceuticals, and watches that don’t require large space or heavy raw materials.

It has a well-developed infrastructure, including efficient transportation and communication systems, which support smooth industrial operations.

The government supports entrepreneurship and provides incentives for businesses, including low taxes and streamlined regulations.

Switzerland has developed strong trade relations and exports industrial goods to global markets, ensuring sustained economic returns.

It uses hydropower effectively, taking advantage of mountainous terrain to generate clean energy that powers its industries.

The country emphasizes quality over quantity, ensuring its products compete based on reliability and excellence, maintaining global demand.

11. What are the possible human factors which may influence the development of nucleated settlement pattern?

Availability of job opportunities in a specific location can attract people to settle close together, leading to a nucleated pattern. Urban centers and market areas are examples.

Access to social services such as schools, hospitals, and water supplies encourages people to live close to each other, creating compact settlements.

Presence of reliable transport routes, such as roads or railways, supports nucleated settlements by connecting people and enabling movement of goods.

Historical or cultural factors like traditional villages or tribal capitals often lead to concentrated settlements for communal living and security.

Government policies such as villagization and land-use planning can cause people to be resettled into compact areas.

Economic activities such as trading, mining, or industrial work can cause clustering of people around job sites.

Security considerations in conflict-prone or wild animal-inhabited areas encourage people to live closely for protection.

Social cohesion and ethnic ties may lead to people preferring to settle together, forming a tight nucleated community.

12. (a) What is meant by solid waste disposal?
Solid waste disposal refers to the collection, treatment, transportation, and final placement or management of solid waste materials such as garbage, refuse, and other unwanted substances produced by human activities in homes, institutions, or industries.

(b) What should be done in order to solve the problem of pollution caused by solid waste disposal?

Proper waste segregation at source should be promoted to separate biodegradable from non-biodegradable materials for better management and recycling.

Establishing effective recycling systems and encouraging reuse can reduce the amount of waste that needs to be disposed of, especially plastics and metals.

Constructing modern landfills with protective liners and treatment facilities helps prevent contamination of soil and water sources.

Community awareness and education campaigns are essential to promote responsible waste disposal and environmental cleanliness.

Enforcement of waste management laws ensures that industries and individuals dispose of waste in designated areas and follow regulations.

Encouraging composting of organic waste can reduce landfill volume and produce fertilizer for agriculture.

Investment in municipal waste collection services and infrastructure reduces illegal dumping and promotes regular waste handling.

Use of incinerators and biogas digesters provides alternative means of waste reduction and energy generation.