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: 2012**

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) The outer layers of the earth include:
A. Atmosphere, Lithosphere and Troposphere
B. Atmosphere, Troposphere and Biosphere
C. Atmosphere, Hydrosphere and Biosphere
D. Atmosphere, Lithosphere and Biosphere
E. Atmosphere, Hydrosphere and Lithosphere

Correct answer: E. Atmosphere, Hydrosphere and Lithosphere
Reason: The outer layers of the earth include the atmosphere (air), hydrosphere (water bodies), and lithosphere (solid land).

(ii) Which of the following is the effect of mass wasting?
A. Frost action
B. Interlocking spur
C. Rock fall
D. Exfoliation
E. Rock disintegration

Correct answer: C. Rock fall
Reason: Rock fall is a direct result of mass wasting where rocks fall down due to gravity on steep slopes.

(iii) The columns of clay capped by boulders formed due to rain action are known as:
A. Soil creep
B. Gullies
C. Land slide
D. Earth pillars
E. Cuesta

Correct answer: D. Earth pillars
Reason: Earth pillars are naturally formed columns of clay capped with resistant rocks due to erosion.

(iv) Which of the following features is formed by river erosion?
A. Pot hole
B. Ox bow lake
C. Delta
D. Flood plain
E. Lagoon

Correct answer: A. Pot hole

Reason: Pot holes are formed by river erosion when pebbles rotate in hollows on the riverbed due to fast flowing water.

(v) Rotation of the earth results to:
A. Elliptical orbit
B. Change of seasons
C. Day and night
D. Leap year
E. Standard time

Correct answer: C. Day and night
Reason: The earth's rotation causes different parts of the earth to face the sun and then turn away, resulting in day and night.

(vi) _____ are good examples of fold mountains in Africa.
A. Uluguru and Oldoinyo Lengai
B. Jos and Karoo
C. Elgon and Kilimanjaro
D. Atlas and Cape Ranges
E. Udzungwa and Kilimanjaro

Correct answer: D. Atlas and Cape Ranges
Reason: Fold mountains form due to compression forces, and Atlas and Cape Ranges are classic examples in Africa.

(vii) Which one of the following is a process of wind erosion?
A. Abrasion
B. Corrosion
C. Hydrolysis
D. Exfoliation
E. Attrition

Correct answer: A. Abrasion
Reason: Abrasion is a process where wind-blown particles wear away rock surfaces.

(viii) A great circle is a circle on a globe whose plane:
A. Passes through the centre of the globe
B. Has the shortest distance between two points
C. Is perpendicular with the globe
D. Marks a line of longitude
E. Marks a line of latitude

Correct answer: A. Passes through the centre of the globe

Reason: A great circle divides the earth into two equal halves and passes through the center of the globe.

(ix) The intensity of an earthquake is measured by:
A. Epicentre
B. Seismograph
C. Richter scale
D. Chronometer
E. Mercalli scale

Correct answer: E. Mercalli scale
Reason: The Mercalli scale measures the intensity of an earthquake based on observed effects and damage.

(x) Soil texture refers to:
A. Arrangement of soil particle
B. Size of individual soil particles
C. Soil catena
D. Soil pH
E. Grained structure

Correct answer: B. Size of individual soil particles
Reason: Soil texture is defined by the proportions of sand, silt, and clay particles.

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) The earth's zone which is made up of nickel and iron.
(ii) A wall like feature formed when a mass of magma cuts across the bedding plane.
(iii) The upper most layer of the earth.
(iv) A sheet of magma which lies along the bedding plane.
(v) Magma which reaches the earth's surface and solidifies to form extrusive features.

List B
A. Crust
B. Lava
C. Magma
D. Mode
E. Dyke
F. Sill
G. Core
H. Volcano
I. Batholiths

J. Mantle

Answers:
(i) G
(ii) E
(iii) A
(iv) F
(v) B

3. (a) What is an earthquake?
An earthquake is a sudden and rapid shaking of the Earth's surface caused by the release of energy from the Earth's crust due to tectonic movements or volcanic activity. The energy release creates seismic waves that travel through the earth.

(b) Briefly explain five effects of earthquakes.
Destruction of infrastructure: Earthquakes can damage or collapse buildings, roads, bridges, and railways, leading to high costs of reconstruction.

Loss of life and injuries: Severe earthquakes cause deaths and injuries as people get trapped under debris or suffer trauma from falling structures.

Landslides and avalanches: In hilly areas, earthquakes may trigger landslides that bury settlements, roads, and farmland.

Disruption of services: Earthquakes can damage power lines, water supply systems, and communication networks, affecting daily life and emergency response.

Environmental degradation: Earthquakes may change the landscape, block rivers, cause flooding, or release harmful gases from underground, affecting ecosystems.

(c) Describe four ways of reducing the risks of earthquakes.
Enforcing building codes: Constructing earthquake-resistant buildings using strong materials and techniques minimizes collapse and damage during earthquakes.

Public education and drills: Educating the public on what to do during an earthquake and conducting regular safety drills help reduce panic and casualties.

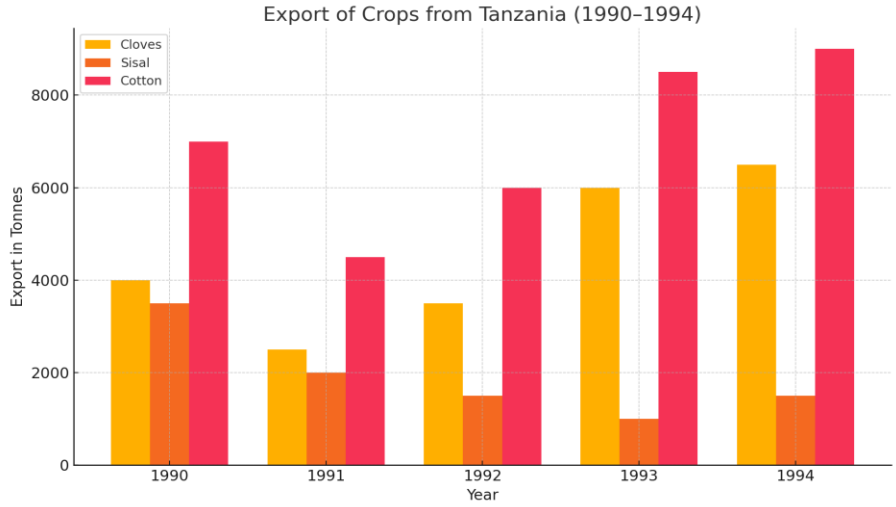
Land use planning: Avoiding construction in earthquake-prone areas such as fault lines and unstable slopes reduces vulnerability.

Early warning systems: Installing seismometers and alert systems helps detect tremors early and warn populations in time to take safety measures.

4. Carefully study the hypothetical data presented below showing the export of crops from Tanzania.

Year	Cloves	Sisal	Cotton
1990	4000	3500	7000
1991	2500	2000	4500
1992	3500	1500	6000
1993	6000	1000	8500
1994	6500	1500	9000

(a) Present the data using compound bar graph.



(b) Explain two advantages and disadvantages of compound bar graph.

One advantage is that it allows comparison of multiple data sets in one visual, making it easier to interpret relationships among different variables like cloves, sisal, and cotton exports. It also saves space and time since all data is presented in a single graph.

However, a disadvantage is that it can be difficult to interpret when there are too many categories or values, especially when colors or patterns are not clearly differentiated. Another disadvantage is that it may hide individual data trends because the bars are stacked or grouped together.

5. (a) What is meant by sampling techniques as used in research?
Sampling techniques refer to the methods used by researchers to select a portion of a population for study. These techniques help gather data from a representative group when studying the entire population is impractical due to time, cost, or size.

(b) Briefly explain the following concepts as they are applied in sampling:

(i) A sample
A sample is a smaller, manageable group of people or items selected from a larger population, intended to represent the entire population during a study.

(ii) Random sampling
This is a method where every individual in the population has an equal chance of being selected. It is free from bias and provides a reliable representation of the population.

(iii) Systematic sampling
This technique involves selecting every nth individual from a list or sequence. For example, choosing every 10th name from a list of students. It is simple and ensures an even spread across the population.

(iv) Stratified sampling
In this method, the population is divided into subgroups (strata) based on shared characteristics such as age or gender, and a sample is taken from each group. This ensures balanced representation from all key subgroups.

(c) Outline the procedures of conducting an interview.
First, plan the interview by defining objectives and preparing guiding questions. Then, select the respondents who fit the study criteria. After that, schedule and conduct the interviews in a conducive environment. Record responses accurately either by writing or using a recorder. Finally, thank the respondent and analyze the collected data for reporting.

6. (a) (i) Define the term levelling survey.
Levelling survey is a surveying method used to determine the height or elevation of points on the ground relative to a common reference point, usually sea level. It is used to assess the flatness or slope of land.

(ii) State four benefits of levelling survey.
It helps in designing drainage systems and irrigation channels by showing land gradients.
It ensures accuracy in the construction of buildings, roads, and bridges by identifying elevation levels.
It is essential in mapping and producing contour maps.
It helps in flood control by identifying low-lying areas prone to water accumulation.

(b) Explain essential equipment used in levelling surveying.
Levelling staff: A graduated rod used to measure vertical distances from the ground. It is placed at different points and read through the level.
Dumpy level or automatic level: An optical instrument mounted on a tripod, used to take horizontal sight readings to measure elevation differences.
Tripod stand: A three-legged stand that holds the level steady during measurement.
Plumb bob: A weight suspended on a string used to ensure vertical alignment of the levelling staff.
Tape measure: Used to measure horizontal distances between survey points.

7. Study the printed map extract of Korogwe (Series Y742 sheet 129/2), then answer the following questions:

(a) Describe the relief of the mapped area.
The relief of the mapped area is characterized by a mixture of highlands and lowlands. The northern and northwestern parts of the map show numerous close and irregular contour lines indicating hilly and mountainous terrain such as Mount Lutindi. The central region, particularly around Korogwe town, is relatively flat with gentle slopes, indicated by widely spaced contours. Additionally, river valleys are observed, and the general elevation decreases from northwest to southeast, reflecting a varied terrain.

(b) Calculate the area of the whole map of Korogwe in Km^2 by using grid squares.
The map is based on a scale of 1:50,000 and contains 12 columns and 10 rows of grid squares. Each grid square on a 1:50,000 map represents 2 km by 2 km = 4 km^2.
Therefore, area = 12 × 10 × 4 km^2 = 480 km^2.

(c) Examine the settlement patterns of the area.
The map shows a nucleated settlement pattern around Korogwe town where buildings are concentrated, indicating an urban center. There is also evidence of linear settlement along major roads and rivers, suggesting that transport routes and water availability influence settlement. Scattered rural settlements appear in the surrounding regions, showing dispersed settlement in agricultural and hilly areas.

(d) Express the scale of the map into statement scale.
The scale of the map is 1:50,000.
Statement scale: 1 cm on the map represents 0.5 km or 500 meters on the ground.
Therefore, statement scale: 1 cm to 0.5 km.

8. (a) Name three types of geographical photographs.
Ground photographs
Aerial photographs
Satellite photographs

(b) Specify the type of geographical photograph which is:
(i) taken horizontally on the ground.
Ground photograph
(ii) used in map making.
Aerial photograph

(c) Explain five differences between the photograph you have mentioned in (b)(ii) above and topographical maps.
Aerial photographs are real images captured from aircraft, while topographical maps are drawn representations based on data and symbols.

Aerial photographs lack standard keys or legends, making interpretation dependent on observation, whereas topographical maps have symbols and legends for easy reading.

Aerial photographs provide a snapshot at a specific time, while topographical maps are general and updated periodically.

Aerial photographs show natural and man-made features in their true appearance, while maps use symbols to represent features.

Photographs are difficult to measure directly without tools, but maps provide measurable scales for accurate distance and area calculations.

9. By using concrete examples, explain five negative effects of tourism in East Africa.

Environmental degradation is a major issue. Tourism activities in wildlife parks like Serengeti and Maasai Mara lead to soil erosion, vegetation destruction, and disturbance to animal habitats.

Pollution increases in tourist destinations. Hotels and resorts near beaches like Zanzibar and Diani produce solid waste and sewage, which if not managed properly pollute the environment.

Cultural erosion occurs due to interactions with foreign tourists. Local communities in places like Kilimanjaro experience dilution of traditions, dress codes, and behaviors as they imitate foreign lifestyles.

Inflation can rise in tourist towns. Due to increased demand for services, prices of goods and housing may increase, making it hard for local residents to afford basic needs.

Seasonal employment is common in tourism, where jobs are available only during peak seasons. Workers in lodges and parks often lose jobs or income during low seasons.

10. Elaborate eight reasons indicating why the transportation sector is important to the economy of Tanzania.

It facilitates trade by enabling the movement of goods from production centers to markets. For example, Tanzam Highway connects Zambia and Dar es Salaam port.

Transportation promotes tourism by providing access to national parks and tourist attractions. Improved roads and airports make places like Serengeti and Zanzibar reachable.

It supports agriculture by transporting produce from farms to processing industries or markets. Rural feeder roads help farmers access urban markets efficiently.

Transport creates employment in construction, driving, logistics, and maintenance. Many Tanzanians are employed as drivers, porters, and mechanics.

It enhances regional integration and cooperation. Railways and highways linking Tanzania to neighbors like Kenya, Rwanda, and Uganda strengthen economic ties.

It stimulates industrial growth. Industries depend on roads, railways, and ports to receive raw materials and distribute finished products.

It contributes to national income through taxes, tolls, and fuel levies collected from transport services and infrastructure users.

It promotes urbanization as good transport networks attract investments and services that lead to the growth of towns and cities.

11. Explain eight environmental problems related to the rapid population growth.

Deforestation increases as people clear forests for farming, settlement, and firewood, reducing biodiversity and disturbing the carbon cycle.

Soil erosion becomes widespread due to over-cultivation and deforestation, especially on marginal lands where poor farming practices are used.

Water pollution rises from domestic waste and agricultural runoff, especially in unplanned urban settlements without proper sanitation.

Air pollution results from increased vehicles, industries, and charcoal burning, reducing air quality and contributing to climate change.

Loss of biodiversity occurs as more land is used for human settlement and agriculture, leading to destruction of natural habitats.

Overgrazing in rural areas by large livestock populations depletes vegetation cover and causes land degradation.

Shortage of clean water increases as population pressure overwhelms existing water sources, leading to health problems.

Increased solid waste generation in towns and cities becomes unmanageable, resulting in dirty environments and blocked drainage systems.

12. (a) Describe five objectives of conducting census in a country.

To determine the total population of the country for national planning and policy-making.

To identify the population distribution and density, which helps in infrastructure and service allocation.

To assess demographic characteristics such as age, sex, education, and employment, guiding social programs.

To provide data for electoral processes, including boundary delimitation and fair representation.

To monitor population trends such as growth rate, migration, and urbanization for future projections.

(b) Explain three limitations of census in African countries.

High costs and limited funding hinder full coverage and quality data collection.

Inaccessibility of remote areas due to poor transport infrastructure affects accuracy and completeness.

Illiteracy and fear among citizens may lead to misinformation or refusal to participate in the census process.