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 : 2006**

Instructions

1. This paper consists of sections A, B, C and D.
2. Answer all questions in section A, B and C and **one (1)** questions from section D.
3. Non-programmable calculators may be used.
4. Communication devices and any unauthorised materials are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

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 rotation of the earth causes the following, except

   A Day and night

   B Seasons

   C The difference of one (1) hour between two (2) Meridians of 15°

   D The deflection of winds and ocean currents

   E The daily rising and falling of the ocean tides

The correct answer is B. Seasons are not caused by the rotation of the earth but by the revolution of the earth around the sun combined with the tilt of the earth's axis. Rotation causes day and night, time differences, deflection of winds and tides, but not seasons.

(ii) Which of the following develops at the bottom of a waterfall

A Plunge pool

B Delta

C Differed junction

D Playa

E River regime

The correct answer is A. A plunge pool is formed at the base of a waterfall due to erosion by the falling water.

(iii) The crust is sometimes referred to as

A Lithosphere

B Hydrosphere

C Troposphere

D Mesosphere

E Tropopause

The correct answer is A. The lithosphere is the outer solid part of the earth, which includes the crust.

(iv) The force of water that wears away soft rocks such as clay is known as

A Hydraulic action

B Solution action

C Attrition action
D Corration action
E Siltation action

The correct answer is A. Hydraulic action occurs when the force of moving water breaks down and removes soft rock material.

(v) The name given to a boundary that demarcates solid materials from the molten mantle is
A Asthenosphere
B Gutemberg
C Mohorovicic
D Mesosphere
E Core

The correct answer is C. The Mohorovicic discontinuity (Moho) is the boundary between the crust and the mantle.

(vi) What is the longitude of Morogoro if its local time is 10:00 p.m., whereas the longitude of Accra in Ghana is 0° and the local time is 7:00 p.m.?
A 45° E
B 45° W
C 35° E
D 35° W
E 60° W

The correct answer is A. The difference in time is 3 hours. Each hour corresponds to 15°. 3 × 15° = 45°. Since Morogoro is ahead of Accra, it lies at 45°E.

(vii) ……. is a point where cold air from the polar regions meets warmer air from lower latitudes.
A Polar front
B Tropical maritime
C Cyclone
D Humidity
E Pressure gradient

The correct answer is A. A polar front is the boundary where cold polar air meets warm tropical air.

(viii) Which of the following types of lake does not occur from depositional factors?

A Playa

B Tarn

C Ox bow

D Delta

E Lagoon

The correct answer is B. Tarn is a glacially eroded lake found in mountain hollows, not formed by deposition.

(ix) Salinity of the ocean water increases with

A Increasing rate of evaporation of ocean water

B Distance from the equatorial region

C Depth of the seawater

D Altitude

E Increasing rainfall

The correct answer is A. High evaporation rates remove water but leave salt behind, increasing salinity.

(x) Soil structure refers to the

A Size of soil particles

B Arrangement of soil particles

C Soil minerals and contents

D Soil pH

E Soil catena

The correct answer is B. Soil structure means how soil particles are arranged into aggregates.

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

LIST A	LIST B
(i) Are lines of glacial deposits along the sides of valleys.	C. Lateral moraines
(ii) A tidal wave formed as a result of an earthquake or volcanic eruption.	E. Tsunami
(iii) Small particles of condensed water at the lower part of the atmosphere.	B. Clouds
(iv) Winds blowing from horse latitudes to the equatorial belts.	G. Trade winds
(v) A well developed surface of a limestone region.	A. Karst landscape

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

3. With the aid of a diagram, describe the characteristic features of a shield volcano.

A shield volcano has a broad, gentle slope that resembles a warrior's shield lying on the ground. It is built by low viscosity basaltic lava that flows over great distances before cooling and solidifying. This results in wide and expansive volcanic landforms.

It is characterized by layers of solidified lava flows that spread outward from the central vent. Unlike composite volcanoes, shield volcanoes usually have non-explosive eruptions due to the fluid nature of the magma.

Another feature is the presence of a large central vent through which lava continuously erupts, and sometimes secondary vents may develop on the flanks of the volcano.

The summit of a shield volcano may also contain a shallow depression called a caldera that forms after the magma chamber empties and the surface collapses.

Examples of shield volcanoes are Mauna Loa and Mauna Kea in Hawaii.

(Diagram: Broad, gentle slopes with a central vent and layers of lava flows spreading widely.)

4. Study the following vehicle moving data along Morogoro – Dodoma road and answer the questions that follow:

PERIOD	Dutsan	Landrover	Isuzu	Toyota	Others
8:30 – 10:30 a.m.	100	150	300	240	80
2:30 – 4:30 p.m.	40	60	70	20	50
6:30 – 8:30 p.m.	120	130	90	140	120
TOTAL	260	340	460	400	250

(a) Present the data above by means of a pie chart.

To draw a pie chart, first find the total vehicles counted:
260 + 340 + 460 + 400 + 250 = 1710 vehicles

Next, calculate the angles for each vehicle category using:
Angle = (Number of vehicles ÷ Total) × 360

Dutsan = (260 ÷ 1710) × 360 = 55°
Landrover = (340 ÷ 1710) × 360 = 72°
Isuzu = (460 ÷ 1710) × 360 = 97°
Toyota = (400 ÷ 1710) × 360 = 84°
Others = (250 ÷ 1710) × 360 = 52°

These angles are then used to plot the respective sectors of the pie chart.

(b) Describe the advantages and disadvantages of the method you have used in (a) above.

An advantage of the pie chart is that it gives a clear visual comparison of the proportions of each vehicle category, making it easy to interpret differences.

Another advantage is that it summarizes complex data in a simple and attractive way that can be quickly understood by readers.

A disadvantage of the pie chart is that it becomes difficult to construct and interpret if the data has too many categories with small differences.

Another disadvantage is that it does not show actual values directly, only proportions, which may limit detailed analysis.

5. Write short notes on how you would prepare yourself for a field research.

To prepare for field research, I would first clearly define the objectives of the research so that the data collected is relevant and focused on the intended goals.

I would then conduct a review of existing literature and secondary sources to understand what has already been studied and to identify gaps that my research should address.

Next, I would prepare the necessary research instruments, such as questionnaires, interview guides, observation checklists, and recording materials, ensuring they are suitable for data collection.

I would also make logistical preparations such as arranging transport, accommodation, and equipment to ensure smooth operations in the field.

Lastly, I would seek the necessary permits and authorization to access the research site, while also briefing assistants or enumerators on the methods to be used.

6. Explain briefly the following concepts as used in survey:

(a) Plane surveying.
Plane surveying is the type of survey in which the earth's surface is considered flat, and the curvature of the earth is ignored. It is usually applied to small areas less than 250 km^2.

(b) Geodetic surveying.
Geodetic surveying is a type of survey in which the curvature of the earth is taken into account. It is used for large areas and provides highly accurate results.

(c) Cadastral surveying.
Cadastral surveying involves the determination and demarcation of property boundaries for legal documentation and land ownership purposes.

(d) Topographic surveying.
Topographic surveying is concerned with determining the natural and man-made features of an area, including elevations and contours, to produce topographic maps.

(e) Cadastral surveying.
Cadastral surveying refers to surveys carried out for recording and registering land parcels for purposes of land ownership, taxation, and transfer.

7. Answer the following questions after a careful study of the map extract of Sengerema, sheet 33/1.

(a) What is the bearing of Ijinga Hill (512060) from Igulumuki Hill (491086)?

The bearing is measured clockwise from north, using the map grid references. From Igulumuki Hill to Ijinga Hill, the bearing is approximately 45°.

(b) Find out the length of the loose surface road which passes across the area from the junction at CBP (483164) to Kamwashi (564114).

By measuring the distance on the map between the two grid references and converting it using the scale of the map, the approximate length is 8.1 km.

(c) Draw a cross-section from Nyamabano Hill grid reference 462146 to Nyamazugo Hill grid reference 500179.

The cross-section should be drawn using a straight line between the two points, transferring spot heights and contours onto a graph, then joining smoothly to show the relief profile.

(d) Use specific examples to outline the economic activities conducted in the area.

Fishing is a major activity, as the area lies near Lake Victoria, which provides fish as a source of food and income.

Agriculture is also practiced, especially subsistence farming of crops like maize and cassava, which support local livelihoods.

Small-scale trading takes place in the region, where goods and fish are exchanged in local markets.

Livestock keeping is another activity, providing meat, milk, and hides for the local population.

Timber extraction and charcoal burning are conducted in areas with woodland, though sometimes leading to deforestation.

(e) Point out the different factors which have determined the population distribution of the area.

The presence of Lake Victoria has attracted settlement along its shores due to fishing and water supply.

Fertile soils in the region support farming, leading to dense populations in agricultural areas.

Transport and communication routes, such as roads, influence where people settle, with higher populations near accessible areas.

Relief also plays a role, with flat and gently sloping areas being more populated than steep hill slopes.

Availability of social services like schools and health centers also influences population concentration in certain areas.

8. Study carefully the photograph provided and answer the questions that follow.

(a) Name the type of photograph provided.
The photograph is a ground photograph because it has been taken from the ground level.

(b) Name the crop shown in the foreground of the photograph.
The crop shown in the photograph is maize.

(c) State the characteristics of the climate which favour the growth of the crop mentioned in (b) above.
Maize requires a warm climate with temperatures ranging between 18°C and 27°C for optimal growth.

It also requires moderate to high rainfall, ranging between 500 mm and 1200 mm annually, well-distributed throughout the growing season.

Maize does well under plenty of sunshine, as it is a tropical crop that depends on solar energy for photosynthesis.

The crop requires well-drained fertile soils, such as loamy soils, that retain enough moisture but do not get waterlogged.

Seasonal variations that allow planting and harvesting at specific periods also support maize production.

(d) Comment on the stage which might have been reached by the crop mentioned in (b) above.
The maize crop appears to be in the maturity stage, as the cobs are visible and the leaves are fully developed.

This stage is typically reached after several months of growth and is close to the harvesting period.

The maturity stage indicates that the crop has passed through germination, vegetative growth, and flowering stages.

At this stage, the yield can be determined, and farmers may begin preparing for harvesting soon.

9. Describe the usefulness and disadvantages of exploiting Rufiji and Kagera river basins.

The Rufiji and Kagera river basins are useful for irrigation, as they provide water for growing crops and supporting agriculture.

They also provide fishing grounds, which serve as a source of food and income for local communities.

Another usefulness is hydroelectric power generation, especially the Rufiji basin where the Stiegler's Gorge project is located.

The river basins support navigation and transport, particularly for local movement of goods and people.

They also provide water supply for domestic and industrial use in the surrounding regions.

On the other hand, exploitation of these river basins may lead to environmental degradation such as deforestation and loss of biodiversity.

Over-exploitation of water for irrigation can result in reduced water flow, affecting downstream users and ecosystems.

Flooding is another disadvantage, as heavy rainfall may cause rivers to overflow, leading to destruction of property and displacement of people.

Conflicts may also arise among communities and nations over the shared use of water resources, especially in the Kagera basin.

10. Which factors have influenced the success of commercial beef keeping in the mid-plains of U.S.A.?

One factor is the presence of extensive grasslands which provide natural pasture for cattle, reducing feeding costs.

Another factor is the availability of capital and modern technology, which allow farmers to establish large ranches and mechanize operations.

A well-developed transport network supports the beef industry by enabling cattle to be moved easily from ranches to markets and processing plants.

The presence of a large domestic and international market ensures steady demand for beef products.

Government support and agricultural policies, such as subsidies and veterinary services, also promote beef production.

Finally, favorable climate with moderate rainfall and warm temperatures supports year-round grazing and cattle rearing.

11. (a) What is meant by the term "settlement"?

Settlement refers to a place where people establish a community and live together. It involves the grouping of houses, infrastructure, and social services in a specific location where people carry out

activities such as farming, trade, and administration. Settlements may vary in size, function, and form depending on physical environment, economy, and culture.

(b) Explain three (3) main types of rural settlement.

The first type is dispersed settlement, where houses are scattered over a wide area, usually found in farming regions where each family lives on its own land. This type is common in areas with abundant land and resources, and it allows farmers to work close to their fields.

The second type is nucleated settlement, where houses are clustered together in a compact form. This type is often found in areas where people need security or access to common resources like water, markets, and social services. It promotes social interaction and sharing of resources among community members.

The third type is linear settlement, where houses and other structures are arranged along a road, river, or railway. This type develops in areas where transport and communication routes influence settlement patterns. It provides easy access to movement and trade opportunities.

12. (a) What is acid rain?

Acid rain refers to precipitation such as rain, snow, or fog that has high levels of acids, mainly sulfuric acid and nitric acid. It forms when sulfur dioxide and nitrogen oxides released into the atmosphere from burning fossil fuels and industrial activities combine with water vapor and fall back to the earth in acidic form.

(b) Discuss the effects of acid rain.

One effect of acid rain is environmental degradation, as it damages forests by leaching important nutrients from the soil and weakening trees, making them more susceptible to diseases and harsh weather.

Another effect is the acidification of lakes, rivers, and other water bodies, which harms aquatic life such as fish, insects, and plants, reducing biodiversity in affected ecosystems.

Acid rain also corrodes buildings, monuments, and infrastructure made of limestone, marble, and metal. This causes economic costs for maintenance and restoration of cultural heritage sites.

Additionally, acid rain negatively impacts agriculture by reducing soil fertility through the removal of essential minerals like calcium and magnesium, which are replaced by toxic substances such as aluminum.

It also poses health risks to humans, as the gases that cause acid rain can contribute to respiratory problems such as asthma, bronchitis, and lung irritation.