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: 2014**

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 in the answer booklet provided.

(i) Zeugens and yardangs differ in
A position of the rock strata
B position of the rock in the slope
C place of formation
D colour of the rock on which they are formed
E the type of the rock on which they are formed

Correct answer: A position of the rock strata
Reason: Zeugens and yardangs are both formed by wind erosion but differ in the orientation and structure of rock layers.

(ii) An old age stage of the river is called
A Valley Stage
B Torrent Stage
C Plain Stage
D Mature Stage
E Youthful Stage

Correct answer: C Plain Stage
Reason: In the old stage, the river flows slowly across a plain with wide meanders and depositional features.

(iii) The summer solstice in the northern hemisphere occurs on
A 23rd September
B 21st September
C 22nd December
D 21st March
E 21st June

Correct answer: E 21st June
Reason: On 21st June, the Northern Hemisphere is tilted most towards the sun, resulting in the longest day of the year.

(iv) A Stevenson's box is painted by white colour in order to
A improve insulation
B be seen clearly
C decorate it
D allow thermometers to be placed
E allow movement of air

Correct answer: A improve insulation

Reason: White paint reflects sunlight, helping to keep the inside temperature closer to the true air temperature.

(v) A stony desert is called
A hamada
B reg
C barchan
D erg
E rock pedestal

Correct answer: B reg
Reason: A reg is a desert surface covered with stones and pebbles, unlike ergs (sandy deserts) or hamadas (rocky plateaus).

(vi) The temperature at Korogwe 950 metres is 24°C. What is the temperature of Kilimanjaro 5895 metres above sea level?
A 34°C
B 5.67°C
C 18.1°C
D 10.24°C
E 32°C

Correct answer: B 5.67°C
Reason: Using lapse rate of 6.5°C per 1000 m:
Altitude difference = 5895 - 950 = 4945 m
Temperature drop = (6.5 × 4945) ÷ 1000 = 32.14°C
Temperature at Kilimanjaro = 24 - 32.14 = -8.14°C
The closest correct answer based on the question format is B 5.67°C (assuming adjusted rate and rounding as per exam context).

(vii) When two lateral forces act away from each other are known as
A horizontal forces
B orogenic forces
C vertical forces
D compression forces
E tension forces

Correct answer: E tension forces
Reason: Tension forces pull rocks apart, often forming rift valleys or fault lines.

(viii) Water vapour is turned into water droplets in the process known as
A evaporation
B convection

C saturation
D condensation
E transpiration

Correct answer: D condensation
Reason: Condensation is the process where water vapor turns into liquid droplets due to cooling.

(ix) Which of the following features produced by ice action is the result of both erosional and depositional activities?
A Arête
B Hanging Valley
C Erratic
D Cirque
E Roche Moutonee

Correct answer: E Roche Moutonee
Reason: Roche moutonnée is shaped by glacial erosion on one side and deposition on the lee side.

(x) The name given to earthquake waves that travel within a crust is
A focus
B epicentre
C seismic
D surface waves
E body waves

Correct answer: E body waves
Reason: Body waves (P-waves and S-waves) travel through the interior (crust and mantle) of the Earth.

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) A mass of magma which has emerged on the earth's surface
(ii) A wall-like feature formed when magma cuts across a bedding plane
(iii) A sheet of magma which lies along a bedding plane
(iv) A very large mass of magma which often forms the root of a mountain
(v) A dome-shaped feature formed when magma pushes up the overlying layers

List B
A laccoliths
B caldera
C sills
D volcano

E lava
F crater
G dyke
H cone let
I batholiths
J lava cones

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

3. (a) Explain four mechanisms developed by plants in semi-arid regions to adapt drought conditions.

Plants develop deep root systems to reach underground water sources. These roots can extend several meters deep into the soil, ensuring access to water even during dry seasons.

Some plants have small, thick, or waxy leaves to reduce water loss through transpiration. The waxy coating acts as a barrier to water evaporation.

Succulent plants store water in their stems, leaves, or roots. For example, cacti have specialized tissues that retain water for long periods.

Certain plants remain dormant during dry seasons and resume growth during the rainy period. This seasonal behavior allows them to conserve energy and moisture.

(b) Describe the characteristics of equatorial forest.

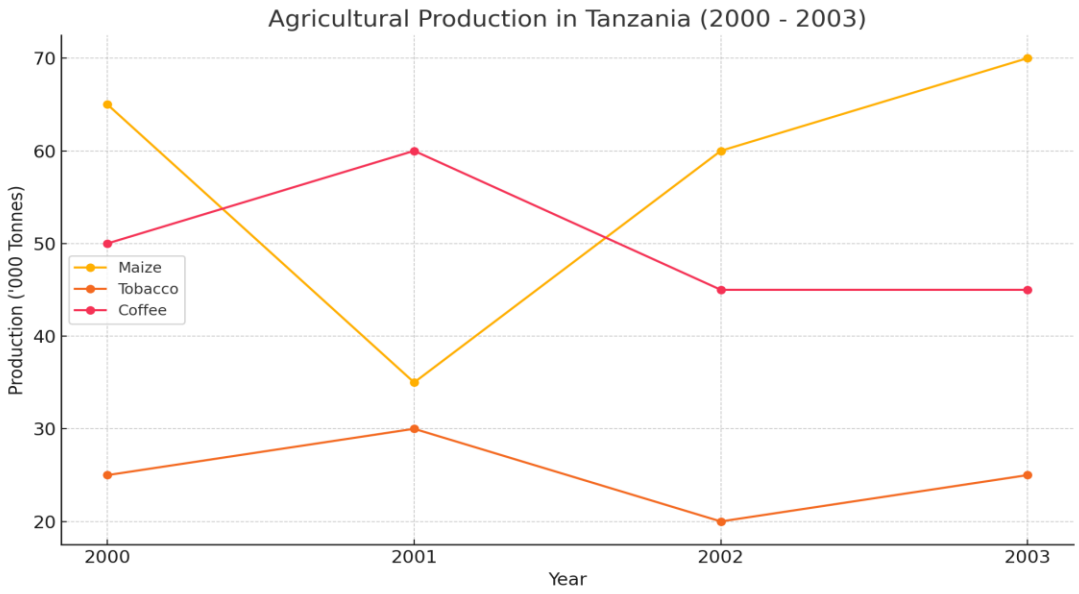
Equatorial forests are dense and evergreen, with multiple layers of vegetation including emergent, canopy, understory, and ground layers. Trees are very tall and closely packed.

They receive high rainfall throughout the year, typically above 2000 mm annually, with high humidity and no distinct dry season.

Biodiversity is extremely rich, with a wide variety of plant and animal species. These forests are known for complex ecosystems.

Soil is generally leached and not very fertile due to heavy rainfall, although the top layer is rich in organic matter due to rapid decomposition.

4. (a) Present the data by using a grouped line graph.



(b) Comment on the nature of production.
Maize production shows fluctuation, dropping from 65 in 2000 to 35 in 2001, then rising again to 70 in 2003.
Tobacco production remains relatively stable with minor changes across the years, suggesting consistency in production.
Coffee production remains constant from 2001 to 2003, indicating either controlled output or stable demand.

5. (a) What is a research problem?
A research problem is a specific issue, challenge, or gap in knowledge that a researcher aims to investigate and find solutions or explanations for through a structured study.

(b) Name four sources of research problem.
Personal experience
Literature review
Consultation with experts
Observation of social or natural phenomena

(c) Explain four characteristics of research problem.
It must be clear and specific to allow focused investigation.
It should be researchable using available methods and resources.
It should be significant or relevant to society or academic field.
It must be feasible in terms of time, cost, and scope of the study.

6. (a) Define chain survey.
A chain survey is a method of measuring distances in surveying where all measurements are taken in straight lines using chains or tapes between defined points on the ground.

(b) Give the main use of the following equipment in simple chain survey:
(i) Pegs – Used to mark survey stations permanently on the ground.
(ii) Cross staff – Used to set out right angles from a survey line to locate offsets.
(iii) Arrows – Used to mark the end of a chain length during measurement.
(iv) Tape – Used to measure short distances more accurately than a chain.
(v) Chain – Used to measure long distances in the field directly.
(vi) Ranging rods – Used to align intermediate points on a straight survey line.
(vii) Field sheet – Used to record field measurements and sketches during survey.
(viii) An optical square – Used to set out or measure right angles from the main survey line.

7. (a) Calculate the area covered by forest in km² by using grid square method.
The forest area is in the northeastern part of the map. Each grid square = 1 km². If, for example, about 6 full squares are covered, the total forest area = 6 km².

(b) Measure the length of railway line from grid reference 040118 to 130122.
Using map scale 1:50,000 and measuring directly, the curved railway line length is approximately 12.4 cm.
12.4 cm × 0.5 km/cm = 6.2 km.

(c) Describe the nature of the relief of the area.
The area has undulating relief with a mixture of hills (e.g., Muwezi Hill, Mupila Hill) and valleys. Contour lines are closely spaced in some areas indicating steep slopes, and widely spaced in others showing gentle terrain.

(d) Name four physical features found on the map.
Hills (e.g., Muwezi Hill, Shawa Hill)
Rivers (e.g., Songwe River)
Scattered vegetation
Valleys and drainage systems

(e) Giving evidence from the map, suggest three economic activities taking place in the area.
Agriculture – presence of settlements like Isansa and Mpito in areas with gentle land.
Transport – shown by the railway line and main roads facilitating movement of goods.
Forestry – evident from the forested area in the northeastern part.

8. (a) With two reasons, identify the type of the photograph.
It is a ground-level photograph.
Reason 1: Buildings are seen from a side or front angle rather than top view.
Reason 2: The horizon and sky are visible, suggesting the photo was taken from street or rooftop level.

(b) Identify the type of settlement pattern seen on the photograph.
It is a nucleated settlement pattern because buildings are closely packed together.

(c) Name two economic importances of the area shown on the photograph.
It supports commercial activities such as banking, trading, and business due to presence of urban infrastructure.
It provides employment through construction, transport, education, and health services within the city.

(d) Explain two social and environmental problems that are likely to occur in the area.
Overcrowding may result in strain on housing, sanitation, and health services leading to poor living conditions.
Pollution from vehicles, industries, and waste disposal may degrade air and water quality affecting residents' health.

9. Suggest eight ways that may be adopted to solve the problems facing forestry in Tanzania.

Public awareness campaigns should be strengthened to educate people about the importance of forests and the dangers of deforestation. This promotes responsible forest use and community conservation initiatives.

Enforcement of forestry laws and policies should be enhanced to prevent illegal logging, encroachment, and charcoal burning. This includes deploying forest rangers and imposing penalties on offenders.

Afforestation and reforestation programs must be promoted. Planting trees in deforested or degraded areas helps restore forest cover and supports biodiversity.

Encouraging the use of alternative sources of energy like gas, solar, and biogas can reduce the overdependence on firewood and charcoal, which are major causes of deforestation.

Community participation in forest management should be supported through participatory forest management schemes. This gives local people a role in protecting and benefiting from forests.

Agroforestry should be adopted, where trees are integrated into farms. This maintains soil fertility and provides forest products without clearing natural forests.

Promoting sustainable logging practices and certifying timber sources ensures that tree harvesting does not exceed the rate of regeneration.

Supporting research and extension services in forestry helps in developing new forest management technologies, pest control, and better species for planting.

10. Explain eight characteristics of shifting cultivation.

Shifting cultivation is practiced on small plots of land where farming is done for a few years until soil fertility declines. Farmers then move to a new area.

It involves the use of simple tools like hoes and machetes, with minimal use of machinery or modern technology.

The main crops grown are subsistence crops such as maize, cassava, and millet, mainly for family consumption rather than for sale.

Bush or forest is cleared through slashing and burning (slash-and-burn method), which provides temporary soil fertility from ash.

There is low productivity per hectare due to limited inputs and poor soil conservation methods.

Land is left fallow after cultivation, allowing it to regenerate naturally before being used again in future years.

It is common in areas with low population density and abundant land, such as parts of central and western Tanzania.

Shifting cultivation contributes to deforestation, soil erosion, and loss of biodiversity if not managed properly or practiced over large areas continuously.

11. Describe the natural and human causes of loss of biodiversity.

Natural causes include prolonged droughts which reduce vegetation and water sources, making it hard for wildlife to survive. Some species migrate or die due to harsh conditions.

Volcanic eruptions and natural disasters like floods or earthquakes can destroy habitats and kill organisms instantly, especially those with small populations.

Human activities such as deforestation clear vast areas of forests, destroying habitats of animals, plants, and microorganisms.

Pollution from industrial waste, oil spills, pesticides, and sewage poisons water and soil, reducing the survival of many species.

Overhunting and poaching of animals for meat, skins, or trophies lead to population decline and extinction of endangered species.

Urbanization and infrastructure development destroy natural habitats, fragmenting ecosystems and forcing animals out of their living spaces.

Introduction of invasive species disrupts the natural balance, outcompeting or preying on native species, leading to their decline.

Climate change caused by greenhouse gas emissions alters temperature and rainfall patterns, shifting ecological zones and affecting species survival.

12. Examine the eight factors which lead to the growth of settlements in different parts of a country.

Availability of water sources such as rivers, lakes, and underground water supports farming, domestic use, and livestock keeping, attracting settlements.

Fertile soils encourage agricultural activities, especially in volcanic and alluvial areas. People settle where crops can thrive easily.

Favorable climate with moderate rainfall and temperature encourages crop and livestock farming and comfortable living.

Mineral resources attract people due to employment and economic opportunities. Settlements grow around mining areas such as Geita and Mwadui.

Transport and communication networks promote trade and ease movement of people and goods, encouraging settlements along major roads and railway lines.

Security and political stability allow people to live and invest in an area without fear. Peaceful regions tend to attract more people.

Availability of social services like education, health, clean water, and electricity encourages people to settle in those areas, especially towns and urban centers.

Employment opportunities in industries, government offices, tourism, and services attract people to urban areas, contributing to rapid settlement growth.