THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATION COUNCIL OF TANZANIA

FORM TWO NATIONAL ASSESSMENT

013 **GEOGRAPHY**

Time: 2:30 Hours **ANSWERS** **Year: 2020**

Instructions

1. This paper consists of sections A, B, and C.
2. Answer **all** questions in the spaces provided.
3. Section A and C carry **fifteen (15)** marks each and section B carries **seventy (70)** mark s.
4. All writings must be in **blue** or **black** ink.
5. Communication devices and any unauthorized materials are **not** allowed in the assessment room.
6. Write your **Assessment Number** at the top right hand corner of every page.

(i) Which of the following is the cause of wind on the earth's surface?
A The speed of the earth around the sun
B The revolution of the moon around the earth
C Temperature difference on the earth's surface
D The movement of the overhead sun
Answer: C
Winds are mainly generated by differences in atmospheric pressure, which in turn arise from temperature differences on Earth's surface.

(ii) Which one is not affected by the earth's rotation?
A Movement of ocean currents
B Direction of prevailing winds
C Changes of day and night
D Changes in seasons

Answer: D
• Ocean currents and prevailing winds are deflected by the Earth's rotation (Coriolis Effect).
• Day and night result from the Earth's rotation on its axis.
• Seasons result from Earth's revolution around the Sun and the tilt of its axis, not from rotation.

(iii) At what rate does temperature decrease with an increase in altitude?
A 1.6°C for every 100 meters
B 0.6°C for every 100 meters
C 6°C for every 100 meters
D 16° for every 100 meters
Answer: B
The normal (average) environmental lapse rate is roughly 0.6°C per 100 meters (or about 6.5°C per 1000 meters).

(iv) Which place will experience sunrise earliest on any day?
A Kasese (10°N, 30°E)
B Tanga (5°S, 39°E)
C Kitale (1°N, 35°E)
D Iringa (8°S, 35°E)
Answer: B
Sunrise occurs earlier the farther east you go (since local time is ahead). Among the options, Tanga at 39°E is the easternmost longitude.

(v) The seasons of the year are caused by
A rotation of the earth
B lunar eclipse
C revolution of the earth
D solar eclipse

Answer: C
Seasons result from the revolution of the Earth around the Sun and the tilt of Earth's axis.

(vi) A scale of 4 cm representing 18 km on the ground will be represented by Representative Fraction (R.F.) scale as
A 1 : 450,000
B 2 : 900,000
C 1 : 900,000
D 1 : 800,000
Answer: A
4 cm on the map → 18 km on the ground.
Therefore, 1 cm on the map → 18 ÷ 4 = 4.5 km on the ground.
Convert 4.5 km to cm:
4.5 km = 4.5 × 1,000 m = 4,500 m = 4,500 × 100 cm = 450,000 cm.
Hence, R.F. = 1 : 450,000.

(vii) When does the summer solstice in the Northern Hemisphere occur?
A 21st June
B 23rd September
C 21st September
D 22nd December
Answer: A
In the Northern Hemisphere, the summer solstice typically falls on or around 21 June each year.

(viii) A feature formed as a result of a long and fairly narrow stretch of land that extends through plains, hills or mountains is called
A basin
B plateau
C valley
D depression
Answer: C
A valley is usually a long, narrow low-lying area between hills or mountains (or through plains), often containing a river.

(ix) Given that the local time at Greenwich Meridian is 12:00 noon, what will be the local time at Mikindani (10°S, 40°E)?
A 2.40 a.m
B 2.20 p.m
C 2.40 p.m
D 2.20 a.m
Answer: C
Every 15° of longitude = 1 hour difference.

Therefore, 1° = 4 minutes; so 40° = 40 × 4 = 160 minutes = 2 hours 40 minutes.
Since Mikindani is east of Greenwich, we add 2 hours 40 minutes to 12:00 noon = 2:40 p.m.

(x) One gains in terms of time by 60 minutes for every 15° of longitude when traveling from
A North to South
B East to South
C West to East
D East to West

Answer: C
Traveling west to east, you move to later time zones and gain time (it becomes "later in the day").
Below are suggested answers for Questions 2 and 3 based on the given lists and statements.

2. Matching Livestock Keeping Systems

List A
(i) The system of livestock keeping dominant in areas with high population.
(ii) The seasonal movement of farmers with their animals searching for pastures.
(iii) The system whereby a cultivator-pastoralist keeps animals and cultivates some crops.
(iv) The system of keeping livestock by moving from one natural pasture land to another.
(v) The large-scale rearing of livestock.

List B
A. Nomadism
B. Peasant farming
C. Semi-Nomadism
D. Shifting cultivation
E. Ranching
F. Transhumance
G. Zero grazing

ANS:
(i) Zero grazing (G): Common in densely populated areas with limited grazing land. Animals are fed in stalls or pens.
(ii) Transhumance (F): Seasonal (often altitudinal) movement of farmers and livestock to find pastures.
(iii) Semi-Nomadism (C): The community rears livestock and also practices some crop cultivation; they may move periodically but have some form of settlement.
(iv) Nomadism (A): Constant or frequent movement with herds from one grazing area to another, without a permanent home.
(v) Ranching (E): Large-scale, commercial livestock rearing on extensive tracts of land.

3. Write True (T) if the statement is correct or False (F) if it is not.

i. Saturn is the third planet in the solar system from the earth.
False. Saturn is the sixth planet from the Sun. Earth is the third planet from the Sun.

ii. It takes 365¼ days for the moon to revolve around the earth.
False. The Moon orbits Earth in about 27 to 29½ days (roughly one lunar month), not 365¼ days.

iii. When the difference in the readings of the dry bulb and wet bulb thermometer is high, humidity is high.
False. A larger difference indicates lower humidity. A small or zero difference indicates high humidity.

iv. Penumbra is not part of the shadow in which the light source is completely blocked.
True. In an eclipse or any shadow, the umbra is where light is totally blocked, while the penumbra is a partial shadow.

v. Hydrological cycle is a continuous circulation of water from the earth's surface to the atmosphere.
True. Water evaporates, condenses, and returns as precipitation in a continuous cycle.

vi. Wind is air in motion from low pressure to high pressure area.
False. Wind actually blows from high pressure to low pressure.

vii. Tourism can affect negatively the culture of the host countries.
True. Uncontrolled tourism can erode local traditions, leading to cultural and social impacts.

viii. The side of the mountain facing the direction of the wind is known as the leeward side.
False. The side facing the wind is the windward side; the side sheltered from the wind is the leeward side.

ix. Capital is the only solution to improve small-scale agriculture.
False. Many other factors (training, technology, good seeds, infrastructure, etc.) also play a critical role.

x. The scale of the map is the ratio between the distance on the map and the actual distance on the ground.
True. That is the standard definition of map scale.

4. (a) Briefly describe four layers of the atmosphere.

(i) Troposphere
The troposphere is the lowest layer of the atmosphere, extending from the Earth's surface up to about 8–16 km (depending on latitude). Most weather phenomena, such as clouds and storms, occur here. Air temperature generally decreases with altitude in this layer.

(ii) Stratosphere
Above the troposphere lies the stratosphere, which extends up to around 50 km. It contains the ozone layer that absorbs and scatters the Sun's ultraviolet radiation. Unlike the troposphere, temperature in the stratosphere generally increases with altitude due to ozone absorption of UV radiation.

(iii) Mesosphere
The mesosphere extends roughly from 50 km to around 80–85 km. It is characterized by decreasing temperatures with altitude, making it the coldest layer of the atmosphere. Meteors burn up in the mesosphere due to friction with atmospheric particles.

(iv) Thermosphere
This layer extends above about 80–85 km to 600 km or more. Temperature increases with altitude and can become extremely high because of the absorption of solar radiation. Despite high temperatures, the air density is very low, so it would not feel hot to a human observer.

(b) Name any two boundaries separating one layer of the atmosphere from another layer.

(i) Tropopause
This boundary separates the troposphere from the stratosphere. Its altitude varies based on latitude and weather conditions.

(ii) Stratopause
This is the boundary between the stratosphere and the mesosphere. It is typically found at an altitude of about 50–55 km.

(c) Explain how temperature changes in each layer of the atmosphere mentioned in 4(a) above.

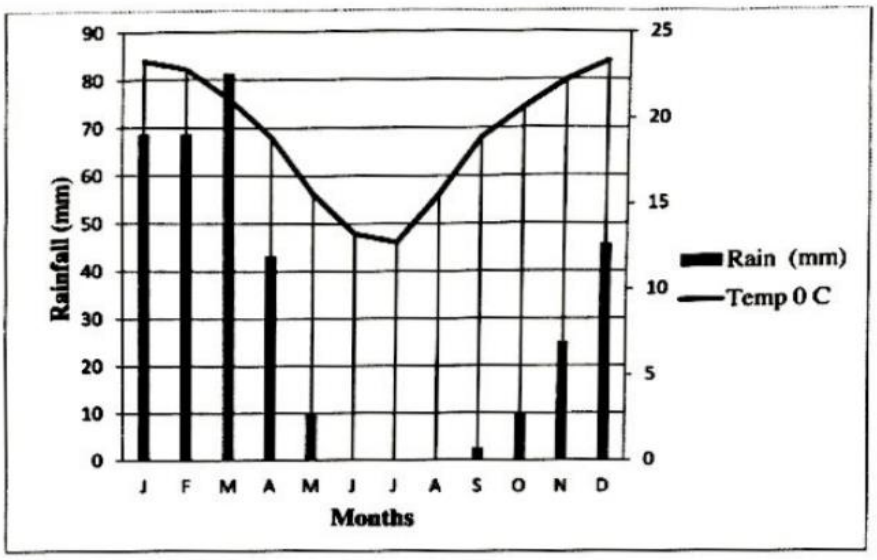
(i) In the troposphere, temperature generally decreases with altitude. This is due to the increasing distance from the Earth's surface (the main heat source in this layer).

(ii) In the stratosphere, temperature increases with altitude, mainly because of the concentration of ozone, which absorbs ultraviolet radiation from the Sun and warms the surrounding air.

(iii) In the mesosphere, temperature decreases with altitude. Air density is very low, and there is little ozone to absorb solar radiation.

(iv) In the thermosphere, temperature increases rapidly with altitude because of direct absorption of intense solar radiation by the small amount of gas molecules present.

5. Study the following climograph and then answer the questions that follow:

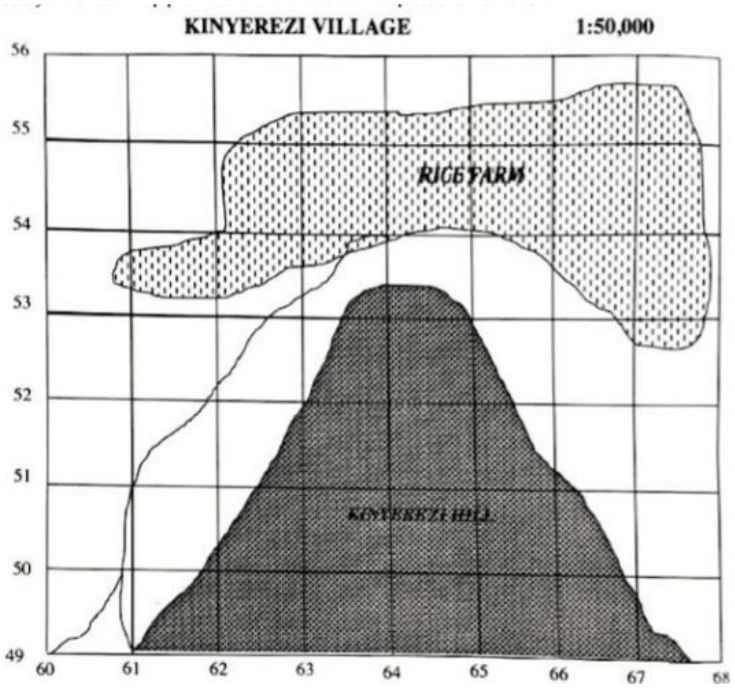


(a) What type of climate is this?
This is a Mediterranean type of climate.

(b) Give three reasons to support the choice of the climate mentioned in 5(a) above.
(i) Rainfall is concentrated in the cooler (winter) months, with totals dropping significantly in the summer months.
(ii) Temperatures are moderate to warm in winter and become higher (though not extreme) in summer.
(iii) There is a distinct dry season (generally mid-year) when rainfall is minimal.
(c) In which part of Africa is this climate found?
It is found in the countries of North Africa along the Mediterranean coast (for example, Morocco, Algeria, Tunisia) and in the southwestern part of South Africa (the Cape region).

(d) List three crops which can be grown in this area.
(i) Grapes
(ii) Olives
(iii) Citrus fruits (such as oranges and lemons)

(e) State the relationships between temperature and rainfall.
As temperatures rise in the summer, rainfall decreases. Most rainfall occurs during the cooler months, when temperatures are relatively moderate. Thus, there is an inverse relationship between the highest temperatures (summer) and the amount of rainfall, which peaks in winter.



(a) Calculate the length of the river from grid reference 600490 to 640540 in Km.

- On a 1:50,000 map, each grid square usually represents 1 km on the ground (since each square is 2 cm × 2 cm on the map, and 2 cm on a 1:50,000 map equals 1 km in reality).
- If the difference between the two grid references is about 4 km east–west and 5 km north–south, the straight-line distance (by Pythagoras) is $\sqrt{(4^2 + 5^2)} = \sqrt{(16 + 25)} = \sqrt{41}$ = **about 6.4 km.**

(b) Calculate the area covered by Kinyerezi hill in km².
Below is a step-by-step outline of one common approach (the "grid-square" or "square-count" method) to calculate the area of Kinyerezi Hill on a 1:50,000 map. Since we do not have the exact figure or the precise counts of grid squares, the numeric values below are illustrative. You would adapt these steps to your own actual map measurements.

1. Confirm the scale and grid-square size
- At 1:50,000 scale, 1 cm on the map represents 50,000 cm (i.e. 0.5 km) on the ground.
- A standard map grid at this scale is usually drawn at 2 cm × 2 cm, corresponding to 1 km × 1 km on the ground (so each grid square = 1 km²).

2. Outline (or trace) Kinyerezi Hill
- Identify all the grid squares that fall under the shaded or outlined region of the hill.

3. Count full and partial squares
- Count how many squares are completely covered by the hill (say "X" full squares).
- For squares that are only partially covered, visually estimate what fraction of each is occupied by the hill.

For example:

– If you see about half of a square covered, that contributes about 0.5 km².
– If about a quarter is covered, that contributes about 0.25 km².
• Sum all these fractions (say they add up to "Y" km²).

4. Add them to get the total area
• Total area ≈ X + Y (in km²).
• For example, if you found 8 full squares (8 km²) plus enough partial squares to make up another 3 km², the area would be about 11 km².

(c) Which methods can be used to calculate the area of the rice farm in the given map? Mention three.
(i) Grid-square (square-count) method: Count the number of squares fully or partially covered, then sum up.
(ii) Tracing method: Trace the farm outline on graph or transparent paper and count squares or use coordinates.
(iii) Use of a planimeter: An instrument that accurately measures the area of an irregular shape on a map.

(d) List any two essentials of map which have not been applied to draw the sketched map.
(i) Compass direction (north arrow).
(ii) Key or legend explaining symbols (or alternatively: date of publication, source, contour interval, etc.).

(e) Convert the given map scale into statement scale.
• The map scale 1:50,000 means 1 cm on the map equals 50,000 cm on the ground.
• 50,000 cm = 500 m = 0.5 km.
• So the statement scale is "1 cm to 0.5 km."

7. Analyse six conditions which influence the development of Hydro Electric Power production in a given area.

Availability of Adequate Water Supply
A continuous and sufficient flow of water is essential for generating hydroelectric power. Rivers or dams must have consistent water levels to turn turbines effectively. Areas with heavy rainfall or natural lakes tend to have better potential for steady water supply throughout the year.

Favorable Topography
Suitable physical features, such as steep gradients and waterfalls, provide the required force of moving water. Mountainous or hilly regions with narrow valleys often offer excellent sites for constructing dams and reservoirs that can generate ample water pressure.

Capital and Technology
Establishing hydroelectric power infrastructure requires substantial investment in dam construction, turbines, and related facilities. Adequate capital and modern technology ensure efficient construction and operation, reducing energy losses and maintenance costs over time.

Government Policy and Supportive Infrastructure
Support from government in terms of policies, subsidies, and regulations is critical. Infrastructure such as roads, power lines, and skilled labor also promotes the smooth setup and long-term sustainability of hydroelectric projects.

Market Demand and Economic Viability
Hydroelectric power projects thrive where there is a growing demand for electricity. Urban areas, industries, and commercial enterprises that require stable power attract investment in hydropower. High demand guarantees returns on the capital spent.

Environmental Considerations
Environmental impact assessments ensure that constructing dams does not lead to severe ecological problems. Conservation of biodiversity and the well-being of local communities are essential for project approval and long-term operation.

8. Explain six economic importance of forestry resources.

Provision of Timber and Wood Products
Forests supply timber, plywood, and other wood-based materials that are vital for construction, furniture making, and paper production. These industries generate revenue and support other sectors linked to wood processing.

Employment Opportunities
Forestry operations, including logging, processing, and forest management, create jobs for local communities. Many people find work in sawmills, carpentry workshops, and related enterprises, boosting household incomes.

Source of Government Revenue
Governments collect taxes, royalties, and fees from licensed logging and export permits. Such revenues can be reinvested in infrastructure, social services, and environmental conservation initiatives.

Foreign Exchange Earnings
Exporting timber, furniture, and processed wood to international markets brings in foreign currency. This income helps stabilize a country's balance of payments and can promote national development.

Raw Materials for Various Industries
Forests provide raw materials such as resin, latex, dyes, and medicines used in pharmaceuticals, cosmetics, and food processing. Availability of these resources promotes industrial expansion and innovation.

Tourism and Recreation
Forests attract tourists for activities like hiking, birdwatching, and eco-tourism. Visitors often spend money on entrance fees, lodging, and local services, thereby contributing to economic growth in rural areas.

9. Elaborate six problems of water transport.

Siltation and Shallow Waterways
Accumulation of silt and debris in rivers, lakes, and canals reduces the depth of waterways, making navigation difficult. This problem necessitates frequent dredging to maintain a suitable water depth for vessels.

High Cost of Port and Dock Infrastructure
Constructing and maintaining ports, docks, and storage facilities require substantial investments. Inadequate or outdated infrastructure limits the number of ships that can dock and hinders smooth cargo handling.

Weather and Climatic Hazards
Storms, strong winds, fog, and ice pose risks to water transport. Adverse weather conditions can delay shipping schedules, cause accidents, or damage vessels and cargo.

Navigational and Safety Concerns
Waterways with poor navigational aids, such as inadequate lighting or outdated maps, lead to collisions or groundings. Lack of proper safety equipment and trained personnel exacerbates these risks.

Piracy and Security Threats
Some regions experience piracy, theft, or security challenges that deter shipping companies. Ensuring maritime security requires cooperation among governments, which can be costly and time-consuming.

Competition from Other Transport Modes
In some areas, efficient road, rail, or air transport can attract freight and passengers away from water routes. Where alternatives are faster or more convenient, water transport struggles to remain viable.

10. Explain six problems affecting the development of agriculture activities in Tanzania.

Unreliable Rainfall and Drought
Most farmers in Tanzania depend on rainfall for irrigation. Erratic rain patterns and prolonged droughts reduce crop yields and livestock productivity, causing food shortages and income losses.

Pests and Crop Diseases
Insect attacks and plant diseases can destroy fields, especially when farmers lack access to pesticides or preventive measures. Outbreaks of locusts or armyworms, for example, can damage vast areas of farmland.

Poor Infrastructure
Rural roads are often in bad condition, making it costly and time-consuming to transport produce to markets. Limited access to electricity and storage facilities further hinders productivity and profitability.

Limited Access to Modern Technology

Small-scale farmers frequently lack machinery, improved seeds, and training in modern farming methods. This situation keeps yields low and impedes agricultural transformation to a more commercial approach.

Land Ownership and Fragmentation
Communal or complicated land tenure systems can prevent farmers from investing in long-term improvements. Fragmentation of plots leads to inefficient farming and reduces economies of scale.

Market Constraints and Price Fluctuations
Rural producers often lack direct access to reliable markets, forcing them to sell at low prices to middlemen. Global price shifts and inadequate market information also undermine farmers' incomes.