THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATION COUNCIL OF TANZANIA

FORM TWO SECONDARY EDUCATION EXAMINATION, 2001

0013 GEOGRAPHY

Time: 2:30 Hours **ANSWERS** .

Instructions

1. This paper consists of sections A and B.
2. Answer **all** questions in section A and two questions from section B.
3. All writings must be in **blue** or **black** ink.
4. Communication devices and any unauthorized materials are **not** allowed in the assessment room.
5. Write your **Assessment Number** at the top right hand corner of every page.

Section A

1. (i) The lines on a map joining places with the same pressure are called:
A. Isotherms
B. Isohyets
C. Isobars
D. Contours
C
Reason: Isobars are lines on a map that connect points with the same atmospheric pressure. Isotherms connect points with the same temperature, isohyets with the same rainfall, and contours with the same elevation.
(ii) The Earth's revolution around the sun causes:
A. Day and night
B. Seasons
C. Tides
D. Winds
B
Reason: The Earth's revolution around the sun, combined with its axial tilt, causes the seasons (spring, summer, autumn, winter) over the course of a year. Day and night result from rotation, tides are influenced by the moon, and winds are driven by pressure differences.
(iii) The grid reference 342156 indicates:
A. 342 Northings and 156 Eastings
B. 342 Eastings and 156 Northings
C. 34.2 Eastings and 15.6 Northings
D. 342 Northings and 156 Westings
B
Reason: In a six-digit grid reference, the first three digits represent Eastings (342) and the last three represent Northings (156), following the convention "along the corridor (Eastings), up the stairs (Northings)."
(iv) The type of farming where animals are kept in sheds and fed is called:
A. Nomadic pastoralism
B. Transhumance
C. Zero grazing
D. Mixed farming
C
Reason: Zero grazing involves keeping animals in sheds and bringing feed to them, common in dairy farming. Nomadic pastoralism and transhumance involve moving livestock, while mixed farming combines crops and livestock.
(v) The temperature at Moshi (500m) is 25°C. What is the temperature at Arusha (1500m)?
A. 19°C
B. 31°C
C. 15°C
D. 28°C
A

Reason: Temperature decreases at a lapse rate of 0.6°C per 100m. Altitude difference = 1500m − 500m = 1000m. Decrease = 1000/100 × 0.6 = 6°C. Temperature at Arusha = 25°C − 6°C = 19°C.

(vi) The largest continent in the world is:

A. Africa

B. Asia

C. Europe

D. Australia

B

Reason: Asia is the largest continent by both area (44.58 million km²) and population. Africa is the second largest, Europe is smaller, and Australia is the smallest continent.

(vii) Which of the following is a negative impact of mining in Tanzania?

A. Job creation

B. Environmental pollution

C. Foreign exchange earnings

D. Infrastructure development

B

Reason: Mining often causes environmental pollution, such as water contamination and land degradation (e.g., from gold mining in Geita). The other options are positive impacts of mining.

(viii) The compass bearing of South-West is:

A. 135°

B. 225°

C. 315°

D. 045°

B

Reason: South-West (SW) is 45° west of South (180°). Bearing = 180 + 45 = 225°.

(ix) The main source of hydroelectric power in Tanzania is:

A. Solar energy

B. Wind energy

C. Water from dams

D. Coal

C

Reason: Hydroelectric power in Tanzania is generated using water stored in dams (e.g., Mtera, Kidatu), which flows through turbines to produce electricity. The other options are not primary sources for hydroelectric power.

(x) The process of breaking down rocks into smaller pieces is called:

A. Erosion

B. Weathering

C. Deposition

D. Sedimentation

B

Reason: Weathering is the process of breaking down rocks into smaller pieces through physical, chemical, or biological means. Erosion involves the transport of material, deposition is the laying down of material, and sedimentation is the settling of particles.

2. Match the items in COLUMN A with the corresponding items in COLUMN B by writing the letter of the correct item in COLUMN B against its corresponding number in COLUMN A.

COLUMN A	**COLUMN B**
(i) Rain gauge	A. Measures rainfall
(ii) Tourism	B. Generates foreign exchange
(iii) Rift Valley	C. Formed by tectonic forces
(iv) Climate	D. Long-term weather patterns
(v) Manufacturing	E. Conversion of raw materials into goods

3. Write TRUE or FALSE against the statement given:

(i) The sun rises in the west and sets in the east.

FALSE (The sun rises in the east and sets in the west due to the Earth's rotation from west to east.)

(ii) Overfishing is a problem in the fishing industry in Tanzania.

TRUE (Overfishing depletes fish stocks, especially in areas like Lake Victoria and the Indian Ocean coast.)

(iii) All maps must have a title.

TRUE (A title is essential to indicate what the map represents, making it a key component of a good map.)

(iv) The Earth rotates from east to west.

FALSE (The Earth rotates from west to east, which is why the sun appears to move from east to west.)

(v) A thermometer measures air pressure.

FALSE (A thermometer measures temperature; air pressure is measured by a barometer.)

(vi) Volcanic mountains are formed by faulting.

FALSE (Volcanic mountains are formed by the eruption of magma, while faulting forms block mountains.)

(vii) Forests can help prevent soil erosion.

TRUE (Tree roots stabilize soil, reducing erosion by wind and water.)

(viii) The Tropic of Cancer passes through Tanzania.

FALSE (The Tropic of Cancer is at 23.5°N; Tanzania lies between 1°S and 12°S, closer to the Equator and Tropic of Capricorn.)

(ix) Small-scale agriculture is mainly for commercial purposes.

FALSE (Small-scale agriculture in Tanzania is primarily for subsistence, producing food for family use.)

(x) A river is a natural source of water.

TRUE (Rivers, like the Rufiji and Pangani, are natural sources of water in Tanzania.)

4. (a) Study the map provided then answer the questions that follow:

Scale: 1:100,000

A simple map with points R and S, where R is at grid reference 150120 and S is at 170140. The distance between two schools is assumed to be a straight line on the map.

(i) Calculate the distance between two schools on the map.
Answer: Assume the schools are at points R (150120) and S (170140). Eastings difference = 170 − 150 = 20 units. Northings difference = 140 − 120 = 20 units. Using the Pythagorean theorem: Distance = $\sqrt{(20^2 + 20^2)} = \sqrt{(400 + 400)} = \sqrt{800} \approx 28.28$ units. Scale 1:100,000 means 1 unit = 100,000 cm = 1 km. Distance ≈ 28.28 km.
Answer: Approximately 28.3 km

(ii) Find the bearing of point R from point S.
Answer: R (150120), S (170140). Eastings difference = 150 − 170 = -20 (west). Northings difference = 120 − 140 = -20 (south). Direction is southwest. Bearing = 180 + 45 = 225°.
Answer: 225°

(iii) Give the direction of point S from point R.
Answer: If R to S is 225° (southwest), S to R is the opposite: 225 − 180 = 045° (northeast).
Answer: Northeast

(iv) State the grid reference of point R and point S.
Answer: Based on assumption: R = 150120, S = 170140.
Answer: R: 150120, S: 170140

(b) Climatic Data Analysis for Station T

(i) Mean Annual Temperature
To calculate the mean annual temperature, sum all the monthly temperatures and divide by 12:
12 + 13 + 15 + 16 + 19 + 22 + 25 + 26 + 24 + 20 + 17 + 15 = 224°C
Mean annual temperature = 224°C ÷ 12 = 18.67°C

(ii) Total Annual Rainfall
Add all the monthly rainfall amounts:
150 + 87 + 87 + 60 + 30 + 12 + 0 + 0 + 25 + 75 + 110 + 140 = 776 mm
Total annual rainfall = 776 mm

(iii) Annual Range of Temperature
Annual temperature range = Maximum temperature - Minimum temperature
Maximum temperature = 26°C (August)

Minimum temperature = 12°C (January)
Annual range = 26°C - 12°C = 14°C

(iv) Type of Climate at Station T
Based on the temperature and rainfall patterns, Station T likely experiences a Mediterranean climate. This climate is characterized by hot, dry summers and mild, wet winters, aligning with the data provided.

(v) Effects of Dry Seasons in the Area
Dry seasons can lead to water scarcity, affecting agriculture and daily water needs. Additionally, prolonged dry periods increase the risk of wildfires, which can have devastating effects on the environment and local communities.

(c) Uses of Solar Energy in Tanzania
Solar energy is utilized in Tanzania for various purposes. It provides electricity to rural areas, powering homes and schools. Solar power also supports healthcare facilities by powering essential equipment. Moreover, it enables the operation of water pumps for irrigation and clean drinking water supply.

(d) Types of Rainfall
There are three primary types of rainfall:

- Convectional Rainfall: Occurs when the sun heats the Earth's surface, causing warm air to rise, cool, and condense into rain.
- Orographic Rainfall: Happens when moist air is forced to ascend over a mountain range, cooling and precipitating on the windward side.
- Cyclonic (Frontal) Rainfall: Results from the meeting of warm and cold air masses, leading to the formation of rain along the front.

(e) Problems Facing the Mining Industry in Tanzania
The mining industry in Tanzania faces several challenges. Environmental degradation, including deforestation and water pollution, is a significant concern. Additionally, inadequate infrastructure hampers efficient mining operations. Regulatory and policy inconsistencies also pose challenges for investors and operators in the sector.

(f) Methods of Soil Conservation
Soil conservation methods include:

- Contour Plowing: Plowing along the contours of the land to reduce soil erosion.
- Terracing: Creating stepped levels on slopes to slow water runoff and prevent erosion.
- Crop Rotation: Alternating crops to maintain soil fertility and reduce pest and disease cycles.

(g) Cash Crops Grown in Tanzania
Tanzania cultivates several cash crops, including coffee, cotton, and tobacco. These crops are significant contributors to the country's economy through exports.

5. Effects of Weather on Human Activities

Agricultural Productivity: Weather conditions directly impact agriculture. For instance, prolonged droughts can lead to crop failures, while excessive rainfall may cause flooding, damaging crops and reducing yields.

Health Risks: Extreme weather events, such as heatwaves, can exacerbate health issues, leading to heatstroke or dehydration. Conversely, cold spells may increase the incidence of hypothermia and respiratory illnesses.

Transportation Disruptions: Adverse weather conditions like heavy rain, snow, or fog can hinder transportation by reducing visibility and making roads slippery, leading to accidents and delays.

Energy Consumption: Weather influences energy demand; cold weather increases heating needs, while hot weather raises cooling demands, affecting energy consumption patterns and infrastructure.

Tourism Industry: Weather patterns affect tourism activities. Favorable weather attracts tourists, while extreme conditions like storms or heatwaves can deter visitors, impacting local economies.

6. Problems Facing Tourism in Tanzania

Inadequate Infrastructure: Many tourist destinations in Tanzania suffer from poor infrastructure, including roads and communication networks, making access difficult and deterring potential visitors.

Limited Marketing: There's insufficient promotion of Tanzania's tourist attractions on international platforms, leading to a lack of awareness among potential tourists about what the country offers.

Security Concerns: Instances of petty crime and occasional political instability can raise safety concerns among tourists, affecting the country's reputation as a safe destination.

Environmental Degradation: Over-tourism in certain areas can lead to environmental issues like habitat destruction and pollution, diminishing the natural beauty that attracts tourists.

High Operational Costs: The tourism sector faces high operational costs due to taxes and levies, which can discourage investment and make services more expensive for tourists.

7. Ways to Conserve Water Resources

Rainwater Harvesting: Collecting and storing rainwater for domestic or agricultural use reduces reliance on traditional water sources and helps in managing water scarcity.

Efficient Irrigation: Implementing irrigation methods like drip or sprinkler systems ensures water is used efficiently in agriculture, minimizing wastage.

Public Awareness Campaigns: Educating communities about water conservation practices encourages responsible usage and reduces unnecessary consumption.

Leak Detection and Repair: Regularly checking for and fixing leaks in water systems prevents significant water loss over time.

Use of Water-Efficient Fixtures: Installing low-flow toilets, faucets, and showerheads in homes and businesses reduces water usage without compromising functionality.

8. Differences Between a Map and a Plan

Scale: Maps are drawn to a smaller scale, representing large areas like countries or continents, while plans are drawn to a larger scale, detailing smaller areas such as buildings or rooms.

Detail Level: Plans provide detailed information about specific features, including dimensions and layouts, whereas maps offer a broader overview with less detail.

Purpose: Maps are used for navigation and understanding geographical relationships, while plans are utilized for construction, design, and planning purposes.

Orientation: Maps typically include compass directions to indicate orientation, whereas plans may not always include directional indicators.

Representation: Maps represent natural and man-made features like rivers, roads, and cities, while plans focus on specific structures or layouts, such as floor plans of buildings.

9. Factors Affecting Agriculture in Tanzania

Climate Variability: Unpredictable weather patterns, including droughts and floods, significantly impact agricultural productivity by affecting crop growth and yields.

Soil Fertility: Degraded soils due to erosion or nutrient depletion reduce the land's ability to support healthy crop growth, necessitating soil conservation measures.

Access to Inputs: Limited availability and high costs of quality seeds, fertilizers, and farming equipment hinder farmers' ability to enhance productivity.

Market Access: Poor infrastructure and lack of market information restrict farmers' ability to sell their produce at fair prices, affecting income and investment in agriculture.

Land Tenure Issues: Unclear land ownership rights can discourage investment in land improvements and sustainable farming practices, impacting long-term agricultural development.