THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATION COUNCIL OF TANZANIA

FORM TWO SECONDARY EDUCATION EXAMINATION, 2010

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.

1. (i) Which one of the following planets has the shortest orbit around the Sun?
A. Earth
B. Mercury
C. Pluto
D. Pluto
B
Reason: Mercury, being the closest planet to the Sun, has the shortest orbit, taking approximately 88 days to complete one revolution. Earth takes 365 days, and Pluto (though listed twice, likely a typo, and considered a dwarf planet) takes about 248 years.

(ii) People living in Dar es Salaam see the sun earlier than in Kigoma. What does this fact indicate?
A. People in Kigoma sleep longer
B. The earth rotates from East to West
C. The earth rotates from West to East
D. There are many hills and mountains in Kigoma
C
Reason: Dar es Salaam (39°E) is east of Kigoma (29°E), so it experiences sunrise earlier due to the Earth's rotation from west to east. If the Earth rotated east to west, Kigoma would see the sun first.

(iii) Which one of the following is not an element of weather?
A. Altitude
B. Cloud cover
C. Precipitation
D. Wind
A
Reason: Elements of weather include cloud cover, precipitation, wind, temperature, and humidity. Altitude is a geographical factor that influences weather but is not an element of weather itself.

(iv) The boundary between one drainage basin and the next is known as:
A. basin zone
B. distributaries
C. tributary
D. water divide
D
Reason: A water divide, or watershed, is the boundary separating one drainage basin from another, determining the direction of water flow. Tributaries and distributaries are parts of river systems, and basin zone is not a standard term.

(v) Solar eclipse occurs when:
A. one body passes between the two bodies
B. the earth passes between the moon and sun
C. the earth passes between the sun and moon
D. the moon passes between the earth and sun
D

Reason: A solar eclipse occurs when the moon passes between the Earth and the sun, casting a shadow on Earth and blocking sunlight. Option B describes a lunar eclipse.

(vi) One of the following explains how plants maintain continuous growth in the equatorial climate:
A. evenly distribution of rainfall and constant temperature
B. temperature is always high
C. there is an abundance of water
D. there is no strong wind
A
Reason: Equatorial climates, like those in parts of Tanzania near Lake Victoria, have evenly distributed rainfall (almost daily) and constant high temperatures (around 25–30°C), allowing plants to grow continuously year-round.

(vii) The mantle is the second layer of the earth which consists of:
A. iron and manganese silicates
B. iron and nickel
C. sial and sima
D. uranium and iron
A
Reason: The mantle, the second layer of the Earth beneath the crust, is composed primarily of iron and magnesium silicates (e.g., olivine). Iron and nickel are found in the core, sial and sima refer to crustal layers, and uranium is not a primary component.

(viii) One of the following is the agricultural method used to restore back the fertility of the soil:
A. crop rotation by planting leguminous plants
B. monoculture system of agriculture
C. terracing system
D. the use of tractor during cultivation and harvesting
A
Reason: Crop rotation with leguminous plants (e.g., beans) restores soil fertility by fixing nitrogen in the soil. Monoculture depletes nutrients, terracing prevents erosion, and tractors are tools, not a fertility method.

(ix) As someone ascends in altitude the temperature tends to:
A. decrease and increase at the same time
B. decrease at the rate of 0.6°C for every 100 metres
C. increase at the rate of 0.6°C
D. remain constant
B
Reason: Temperature decreases with altitude at the environmental lapse rate of approximately 0.6°C per 100 meters due to decreasing air pressure and density.

(x) Identify the correct process of rain formation:
A. cooling, evaporation, condensation, and precipitation
B. evaporation, cooling, condensation, and rainfall

C. evaporation, cooling, precipitation, and rainfall
D. evaporation, precipitation, condensation, and cooling
B
Reason: Rain formation follows these steps: evaporation (water turns into vapor), cooling (vapor cools as it rises), condensation (vapor turns into water droplets forming clouds), and rainfall (droplets fall as precipitation). "Rainfall" is a specific form of precipitation, making B the most accurate.

2. Match the items in Column A with those in Column B by writing the letter of the correct answer below its corresponding item number in Column A in the table provided.

LIST A	**LIST B**
(i) A negative effect of agriculture in Tanzania	A. Soil erosion
(ii) The process of extracting minerals from the Earth	B. Mining
(iii) A method of sustainable water use	C. Rainwater harvesting
(iv) Formed when the moon passes between the Earth and sun	D. Solar eclipse
(v) Used to measure rainfall in a weather station	E. Rain gauge
(vi) The closest position of the Earth to the sun	F. Perihelion
(vii) A type of farming in Tanzania	G. Zero grazing
(viii) Lines joining places with the same temperature	H. Isotherms
(ix) A feature of the ocean floor	J. Ocean ridge
(x) A major tourist attraction in Tanzania	M. Ngorongoro Crater

Answers

LIST A	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
LIST B	A	B	C	D	E	F	G	H	J	M

3. The following statements are either correct or not correct. Write TRUE if the statement is correct or FALSE if the statement is not correct.
(i) The Prime Meridian divides the Earth into Northern and Southern Hemispheres.
FALSE (The Prime Meridian divides the Earth into Eastern and Western Hemispheres; the Equator divides it into Northern and Southern Hemispheres.)
(ii) Overfishing can lead to depletion of fish stocks in Lake Victoria.
TRUE (Overfishing in Lake Victoria has reduced fish populations, affecting species like tilapia and Nile perch.)
(iii) The Earth rotates from west to east.
TRUE (The Earth's west-to-east rotation causes the sun to rise in the east and set in the west.)
(iv) A map without a title is not useful.
TRUE (A title indicates what the map represents, making it essential for usability.)
(v) Lake Nyasa is a Rift Valley lake.
TRUE (Lake Nyasa, also known as Lake Malawi, lies in the East African Rift Valley system.)
(vi) Planets give out their own light.
FALSE (Planets reflect light from the sun; only stars like the sun generate their own light.)
(vii) Tanzanite is a major mineral mined in Tanzania.
TRUE (Tanzanite, a rare gemstone, is mined in Tanzania, primarily in the Mererani Hills near Arusha.)
(viii) Ocean ridges are the deepest parts of the ocean floor.
FALSE (Ocean ridges are elevated features; trenches are the deepest parts of the ocean floor.)
(ix) All longitudes are great circles.
TRUE (Longitudes, or meridians, are great circles as they pass through the poles, dividing the Earth into equal halves.)
(x) Use of hydroelectric power reduces environmental pollution.
TRUE (Hydroelectric power is a clean energy source, reducing reliance on fossil fuels and thus lowering pollution.)

4. (a) Explain how would you be able to calculate the area of an irregular shape on a map

To calculate the **area of an irregular shape on a map**, you can use the **grid square method**. First, make sure the map has grid lines or squares with known dimensions, usually given by the map's scale. If each square represents, for example, 1 km² on the ground, this makes your calculation easier.

Next, you carefully **count all the full squares** that are completely covered by the irregular shape. These full squares are counted as one unit each, according to the real-world area they represent.

After that, you count the **partial or half squares** around the edges of the shape. Combine them to estimate how many full squares they make altogether. For example, if you have eight half-squares, they would equal four full squares.

Once you have the total number of full squares and combined half-squares, you **multiply the total by the area value of one square** (based on the map scale). For example, if one square represents 1 km² and you counted 15 squares, the total area would be 15 km².

(i) **Weather**: The short-term condition of the atmosphere at a specific place and time, including temperature, rainfall, and wind.
(ii) **Solar eclipse**: An event where the moon passes between the Earth and the sun, blocking sunlight and casting a shadow on Earth.
(iii) **Agriculture**: The practice of cultivating crops and rearing livestock for food, fiber, and other products.
(iv) **Non-renewable resources**: Resources that cannot be replenished on a human timescale, such as fossil fuels (coal, oil) and minerals (gold).
(v) **Tourism**: The activity of traveling to places for leisure, recreation, or cultural exploration, e.g., visiting Serengeti National Park.
(vi) **Map scale**: The ratio of a distance on a map to the corresponding distance on the ground, e.g., 1:50,000 means 1 cm on the map equals 50,000 cm on the ground.

(c) Identify four factors that influence the climate of a place.
(i) **Latitude**: Areas near the equator, like Tanzania, are warmer due to direct sunlight, while polar regions are colder.
(ii) **Altitude**: Higher altitudes have cooler temperatures, e.g., Kilimanjaro is colder than Dar es Salaam due to elevation.
(iii) **Distance from the sea**: Coastal areas, like Dar es Salaam, have milder climates due to the ocean's moderating effect; inland areas experience extremes.
(iv) **Prevailing winds**: Winds, like the monsoon winds in Tanzania, bring seasonal rainfall, affecting climate patterns.

5. (a) Study carefully the climatic data given for station X, then answer the questions that follow:

Month: J F M A M J J A S O N D
Temperature (°C): 12 13 15 16 19 22 25 26 24 20 17 15
Rainfall (mm): 150 87 87 60 30 12 0 0 25 75 110 140

(i) Calculate the mean annual temperature.
Answer: (12 + 13 + 15 + 16 + 19 + 22 + 25 + 26 + 24 + 20 + 17 + 15) / 12 = 184 / 12 ≈ 18.33°C
Answer: 18.33°C

(ii) Calculate the annual total rainfall.
Answer: 150 + 87 + 87 + 60 + 30 + 12 + 0 + 0 + 25 + 75 + 110 + 140 = 776 mm
Answer: 776 mm

(iii) State the annual range of temperature.
Answer: Max = 26°C (August), Min = 12°C (January). Range = 26 − 12 = 14°C
Answer: 14°C

(iv) Suggest the type of climate for the station.
Mediterranean climate
Reason: The station has mild, wet winters (e.g., January: 150 mm, 12°C) and hot, dry summers (e.g.,

August: 0 mm, 26°C), typical of a Mediterranean climate, though this is not common in Tanzania (possibly a hypothetical station).

(v) The economic activities taking place in the station are **agriculture** and **tourism**.
Reason: The wet winters support agriculture (e.g., wheat, grapes), while the warm, dry summers attract tourists for activities like sightseeing and festivals, common in Mediterranean climates.

(b) Explain the following terms as used in Geography:
(i) **Sustainable development**: Development that meets the needs of the present without compromising future generations' ability to meet their needs, e.g., using renewable energy to preserve resources.
(ii) **Mixed farming**: The practice of growing crops and rearing livestock on the same farm, e.g., growing maize while keeping dairy cows, to diversify income and improve food security.
(iii) **Orographic rainfall**: Rainfall caused by moist air rising over a mountain, cooling, and condensing, resulting in precipitation on the windward side, e.g., rainfall on the slopes of Kilimanjaro.
(iv) **Soil conservation**: Practices to protect soil from erosion and degradation, such as contour plowing, terracing, or afforestation, to maintain its fertility.
(v) **Eco-tourism**: Tourism focused on sustainable travel to natural areas, promoting conservation and benefiting local communities, e.g., visiting national parks while supporting wildlife preservation.

(c) A map may not be useful if it lacks the following:
(i) **Scale** (to measure distances accurately)
(ii) **Key/Legend** (to understand symbols and features)
(iii) **Title** (to know what the map represents)
(iv) **North direction** (for orientation)
(v) **Grid system** (to locate specific points)

(d) Write down five negative effects of mining in Tanzania.
(i) **Water pollution**: Chemicals like mercury from gold mining contaminate rivers, affecting aquatic life and communities.
(ii) **Land degradation**: Open-pit mining destroys landscapes, leading to soil erosion and habitat loss.
(iii) **Deforestation**: Forests are cleared for mining sites, reducing biodiversity, e.g., in the Geita region.
(iv) **Health risks**: Miners face respiratory issues from dust and exposure to toxic substances.
(v) **Displacement of communities**: Mining operations often force local communities to relocate, disrupting their livelihoods.

6. Describe the Advantages of Tourism in Tanzania

One of the main advantages of tourism in Tanzania is that it earns foreign exchange. Tourists who visit national parks, beaches, historical sites, and mountains like Kilimanjaro spend money on accommodation, transport, food, and souvenirs, boosting the country's income in foreign currencies.

Tourism also helps to create employment opportunities for local people. Many Tanzanians find jobs as tour guides, hotel workers, drivers, chefs, and curio sellers, which helps reduce unemployment and improve living standards in tourism-centered communities.

Additionally, tourism leads to the development of infrastructure. In areas with tourist attractions, the government and private investors build better roads, airports, communication networks, and health services, benefiting both tourists and local residents.

The industry also encourages the preservation of wildlife and natural resources. National parks and game reserves are protected and well-maintained to attract tourists, which helps in conserving endangered species and ecosystems.

Lastly, tourism promotes cultural exchange and national pride. It gives Tanzanians a chance to showcase their traditions, history, and hospitality to visitors, while learning about other cultures. It also increases global awareness about Tanzania's beauty and heritage.

7. Explain the Factors Affecting Water Supply in Tanzania

One major factor affecting water supply in Tanzania is climatic conditions. Areas that receive low rainfall or experience prolonged droughts often face water shortages for both domestic and agricultural use, especially in central and northern parts of the country.

Another factor is population growth. As the population increases, the demand for water rises, putting pressure on existing water sources like rivers, wells, and lakes. In many urban and rural areas, water resources are not enough to meet the needs of the growing population.

Pollution of water sources also reduces the availability of clean and safe water. Industrial waste, agricultural chemicals, and domestic sewage pollute rivers, lakes, and underground water, making it unsafe for consumption without treatment.

Poor infrastructure and water management systems contribute to water supply problems. In some regions, there are limited or poorly maintained pipelines and water storage facilities, which leads to frequent shortages, leakages, and wastage.

Lastly, deforestation and environmental degradation affect water catchment areas. When forests are cleared, the land loses its ability to retain water, causing rivers and springs to dry up, which reduces the amount of water available for people and agriculture.

8. Forests Are Important for Climate Regulation. Do You Agree? Why?

Yes, I agree that forests are important for climate regulation because they absorb carbon dioxide from the atmosphere. Trees take in carbon dioxide during photosynthesis, helping to reduce the amount of greenhouse gases that cause global warming and climate change.

Forests also play a key role in controlling rainfall patterns. Through a process called transpiration, trees release moisture into the atmosphere, which contributes to the formation of clouds and rainfall. This makes forests crucial for maintaining a balanced climate.

Moreover, forests help to regulate temperatures by providing shade and cooling the surrounding environment. Areas with dense forests tend to have cooler and more stable temperatures compared to open, deforested lands that experience extreme heat.

Another reason is that forests help to prevent soil erosion and maintain water sources. By holding the soil together and protecting water catchment areas, forests ensure steady river flows and reduce the risk of floods and droughts, contributing to climate stability.

Finally, forests support biodiversity, which contributes to healthy ecosystems that regulate the environment. Animals, insects, and plants in forests play interconnected roles that help in nutrient cycling, water purification, and air quality improvement.

9. Suggest Ways to Improve Small-Scale Farming in Tanzania

One way to improve small-scale farming in Tanzania is by providing farmers with modern farming tools and equipment. Using tools like hand tractors, planters, and irrigation systems can help increase farm productivity and reduce labor costs.

Another solution is offering agricultural education and training to farmers. Teaching them about modern farming techniques, crop rotation, pest control, and soil management will improve yields and promote sustainable farming practices.

Improving access to markets and fair pricing is also important. By building roads and market centers and protecting farmers from middlemen exploitation, small-scale farmers can sell their produce at better prices, improving their income and livelihoods.

The government and financial institutions should provide affordable loans and grants to farmers. Many small-scale farmers lack capital to buy seeds, fertilizers, and equipment, so financial support can help them invest in their farms and expand production.

Lastly, the government should invest in rural infrastructure and irrigation schemes. Reliable water supply, electricity, and storage facilities enable farmers to produce more food throughout the year, regardless of seasonal rainfall patterns.

10. What Are the Problems Facing the Fishing Industry in Tanzania?

One major problem facing the fishing industry in Tanzania is overfishing. In many lakes, rivers, and coastal areas, excessive fishing has reduced fish populations, threatening the sustainability of the industry and livelihoods of fishing communities.

Use of illegal and destructive fishing methods, such as poison, explosives, and small-mesh nets, is another challenge. These practices not only harm fish stocks but also destroy aquatic habitats and ecosystems, affecting long-term productivity.

The industry also struggles with poor storage and preservation facilities. Lack of cold storage units and modern fish processing plants leads to high post-harvest losses, especially in remote areas where fish spoils before reaching markets.

Limited access to modern fishing equipment and boats affects productivity. Many small-scale fishermen use traditional canoes and gear that restrict them to shallow waters and small catches, limiting income and food security.

Lastly, climate change and environmental pollution negatively impact fish habitats. Rising water temperatures, droughts, and pollution from industries and farms reduce fish breeding grounds, causing a decline in fish populations and diversity.