THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATION COUNCIL OF TANZANIA

FORM TWO SECONDARY EDUCATION EXAMINATION, 2012

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) Movement of farmers seasonally with their animals from one grazing ground to another in search for pasture and water:
A. nomadism
B. pastoralism
C. sedentary farming
D. transhumance
D
Reason: Transhumance is the seasonal movement of farmers with their livestock between fixed grazing grounds, typically between mountains and lowlands, to find pasture and water. Nomadism involves constant movement without fixed routes, pastoralism is a broader term for livestock rearing, and sedentary farming involves permanent settlement.

(ii) An angular distance measured in degrees East and West of the Prime Meridian:
A. Equator
B. Latitude
C. Longitude
D. Tropic of Cancer
C
Reason: Longitude is the angular distance measured in degrees east or west of the Prime Meridian (0°). Latitude measures north or south of the Equator, the Equator is a latitude line at 0°, and the Tropic of Cancer is a specific latitude (23.5°N).

(iii) The occurrence of summer, winter, autumn and spring is a result of:
A. Ferrels law
B. revolution of the earth
C. rotation of the earth
D. tilting of the earth on its axis
B
Reason: The revolution of the Earth around the sun, combined with its axial tilt (D), causes the seasons. The tilt affects the angle of sunlight, but revolution is the primary process. Rotation causes day and night, and Ferrel's law relates to wind deflection.

(iv) Summer months in the Northern Hemisphere are:
A. December, January and February
B. June, July and August
C. March, April and May
D. September, October and November
B
Reason: In the Northern Hemisphere, summer occurs when the hemisphere is tilted toward the sun, typically in June, July, and August. December to February are winter months, March to May are spring, and September to November are autumn.

(v) One of the common characteristics between nomadic pastoralism and shifting cultivation is that people have:

A. advanced in technology
B. good standard of living
C. high crop production
D. no permanent settlement
D
Reason: Both nomadic pastoralism (moving with livestock) and shifting cultivation (moving to new plots after soil depletion) involve no permanent settlement, as communities relocate frequently. The other options do not apply to these traditional practices.

(vi) Which among the following statements explains the importance of Geography?
A. Acquire skills of mechanism
B. Develop awareness of living organisms
C. Expand our knowledge of technology
D. Gain skills of observation, measuring and recording
D
Reason: Geography equips students with skills like observation, measuring (e.g., distances on maps), and recording (e.g., weather data), which are core to the subject. The other options are less directly tied to Geography's objectives.

(vii) The wise use and control of water resources is known as water:
A. controlling
B. development
C. management
D. resources
C
Reason: Water management refers to the sustainable use, conservation, and control of water resources to meet human and environmental needs. The other terms are either too vague or incorrect in this context.

(viii) The following features are found in the ocean:
A. basin, ridge, plain and dunes
B. continental shelf, continental slope and trench
C. ridge, basin, plateau and water falls
D. trench, ridge, plain and dune
B
Reason: The ocean floor includes the continental shelf (shallow edge), continental slope (steep descent), and trench (deepest part). Other options include incorrect or unrelated features like waterfalls or dunes.

(ix) The extraction of minerals close to the earth is referred to as:
A. alluvial mining
B. open cast mining
C. placer mining
D. underground mining
B
Reason: Open cast mining (or open-pit mining) involves extracting minerals near the Earth's surface by

removing overlying material. Alluvial mining involves river sediments, placer mining is a type of alluvial mining, and underground mining targets deeper deposits.

(x) Although the earth is in motion all the time, we do not feel its motion. This is due to the reason that we are:
A. in the earth
B. moving against the motion
C. moving with it
D. on the earth
C
Reason: We don't feel the Earth's motion because we are moving with it at the same speed (rotational velocity of about 1670 km/h at the equator). If we were moving against it or not in sync, we would notice the motion.

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 tourism in Tanzania	F. Environmental degradation
(ii) A type of farming common in Tanzania	B. Subsistence farming
(iii) A method of sustainable resource use	A. Afforestation
(iv) Formed when air masses heat up and rise	E. Convectional rainfall
(v) Used for generating electricity in Tanzania	G. Hydroelectric power
(vi) The farthest position of the Earth from the sun	C. Aphelion
(vii) An instrument to measure wind direction	N. Wind vane
(viii) Lines joining places with the same height	H. Contours
(ix) A feature of the ocean floor important for fishing	J. Continental shelf
(x) A major tourist destination in Tanzania	M. Serengeti National Park

Answers

LIST A	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
LIST B	F	B	A	E	G	C	N	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) Equinoxes occur when the sun is overhead at the Tropic of Cancer.

FALSE (Equinoxes occur when the sun is overhead at the Equator, around March 21 and September 23.)

(ii) Good transport networks hinder economic development.

FALSE (Good transport networks facilitate economic development by improving access to markets and resources.)

(iii) Mining activities can cause water pollution.

TRUE (Mining can contaminate water with chemicals like mercury, e.g., in gold mining areas like Geita.)

(iv) Underground water cannot be found in desert areas.

FALSE (Underground water, such as aquifers, can be found in deserts, e.g., oases in the Sahara.)

(v) Lake Malawi is a Rift Valley lake.

TRUE (Lake Malawi, also known as Lake Nyasa, lies in the East African Rift Valley system.)

(vi) The moon generates its own light.

FALSE (The moon reflects sunlight; it does not generate its own light.)

(vii) Diamond is a major mineral mined in Tanzania.

TRUE (Tanzania mines diamonds, notably in the Mwadui area at the Williamson Diamond Mine.)

(viii) Ocean trenches are the shallowest parts of the ocean floor.

FALSE (Ocean trenches are the deepest parts; continental shelves are the shallowest.)

(ix) The Equator is a great circle.

TRUE (The Equator is a great circle, dividing the Earth into two equal hemispheres.)

(x) Use of solar energy increases environmental degradation.

FALSE (Solar energy is clean and reduces environmental degradation by minimizing reliance on fossil fuels.)

4. (a) Draw the lunar eclipse then explain how it occurs.

A lunar eclipse occurs when the Earth comes between the Sun and the Moon, causing the Earth's shadow to fall on the Moon. This can only happen during a full moon, when the Moon is on the opposite side of the Earth from the Sun.

When this alignment happens, the sunlight that normally illuminates the Moon is blocked by the Earth. As a result, the Moon either darkens or takes on a reddish color. The red color appears because some sunlight still reaches the Moon after passing through Earth's atmosphere — and during this process, the atmosphere scatters shorter blue wavelengths and allows longer red wavelengths to bend and light up the Moon's surfac

(b) Define the following geographical terms:
(i) **Map**: A scaled representation of the Earth's surface or a part of it on a flat surface, showing features like rivers, roads, and elevations.

(ii) **Transhumance**: The seasonal movement of farmers with their livestock between fixed grazing grounds, typically between highlands and lowlands, to find pasture and water.

(iii) **Climate**: The long-term average of weather conditions (e.g., temperature, rainfall) in a specific area, typically over 30 years.

(iv) **Renewable resources**: Resources that can be replenished naturally over time, such as water, forests, and solar energy.

(v) **Mining**: The process of extracting valuable minerals or other geological materials from the Earth, e.g., gold mining in Tanzania.

(vi) **Weathering**: The physical, chemical, or biological breakdown of rocks into smaller particles without transportation, e.g., through frost action or chemical reactions.

(c) Identify four problems facing the mining industry in Tanzania.
(i) **Environmental pollution**: Mining activities, like gold extraction, release chemicals (e.g., mercury) into water bodies, polluting them.
(ii) **Land degradation**: Open-pit mining destroys landscapes, leading to soil erosion and habitat loss.
(iii) **Poor infrastructure**: Inadequate roads and transport make it difficult to move minerals from remote mining sites.
(iv) **Health risks**: Miners face hazards like respiratory issues from dust and exposure to toxic chemicals.

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

Month: J F M A M J J A S O N D
Temperature (°C): 25 25 24 23 22 21 21 22 23 24 24 25
Rainfall (mm): 180 160 140 90 40 20 10 15 30 70 110 150

(i) Calculate the mean annual temperature.
Answer: (25 + 25 + 24 + 23 + 22 + 21 + 21 + 22 + 23 + 24 + 24 + 25) / 12 = 279 / 12 = 23.25°C
Answer: 23.25°C

(ii) Calculate the annual total rainfall.
Answer: 180 + 160 + 140 + 90 + 40 + 20 + 10 + 15 + 30 + 70 + 110 + 150 = 1015 mm
Answer: 1015 mm

(iii) State the annual range of temperature.
Answer: Max = 25°C (January, February, December), Min = 21°C (June, July). Range = 25 − 21 = 4°C
Answer: 4°C

(iv) Suggest the type of climate for the station.
Tropical savanna climate
Reason: High temperatures (21–25°C) year-round with a distinct wet season (e.g., January: 180 mm) and dry season (e.g., July: 10 mm) are characteristic of a tropical savanna climate.

(v) The economic activities taking place in the station are **subsistence farming** and **pastoralism**.
Reason: The climate supports rain-fed agriculture (e.g., maize, millet) during the wet season and livestock rearing during the dry season, typical in savanna regions.

(b) Explain the following terms as used in Geography:
(i) **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.

(ii) **Nomadic pastoralism**: A form of livestock rearing where herders move constantly with their animals in search of pasture and water, with no fixed routes, e.g., the Maasai in East Africa.

(iii) **Hydroelectric power**: Electricity generated by using the energy of moving water, typically from dams, to turn turbines, e.g., Mtera Dam in Tanzania.

(iv) **Desertification**: The process by which fertile land degrades into desert-like conditions due to factors like deforestation, overgrazing, and climate change.

(v) **Commercial farming**: Farming aimed at producing crops or livestock for sale in the market, often on a large scale, e.g., tea plantations in Mufindi.

(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 methods of soil conservation in Tanzania.
(i) **Contour plowing**: Plowing along the contour lines of a slope to reduce runoff and erosion.
(ii) **Afforestation**: Planting trees to stabilize soil with roots and reduce wind erosion.
(iii) **Terracing**: Creating steps on slopes to slow water flow and prevent soil loss.
(iv) **Crop rotation**: Alternating crops to maintain soil fertility and reduce erosion.
(v) **Mulching**: Covering soil with organic material to protect it from erosion and retain moisture.

6. Describe the Advantages of Using Solar Energy in Tanzania

One advantage of using solar energy in Tanzania is that it is a renewable and inexhaustible source of energy. Since the country receives abundant sunshine throughout the year, solar energy can be continuously harnessed without the risk of depletion, unlike fossil fuels.

Secondly, solar energy is environmentally friendly because it does not produce harmful emissions or pollutants. This helps to reduce environmental degradation and fight against climate change, which is a growing concern in Tanzania and worldwide.

Another benefit is that solar power systems are suitable for remote and rural areas. Many parts of Tanzania are not connected to the national grid, and solar panels can provide an independent and reliable source of power for homes, schools, and health centers in these areas.

Solar energy also promotes job creation and local investment. The installation, maintenance, and management of solar systems create employment opportunities, especially for young technicians and small-scale entrepreneurs in Tanzania.

Lastly, using solar energy reduces dependence on imported fuels. This helps Tanzania to save foreign currency used to import diesel and petrol for generators, strengthening the country's economy by promoting the use of locally available energy sources.

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7. Explain the Factors Affecting Agriculture in Tanzania

One major factor affecting agriculture in Tanzania is climate and weather patterns. Unpredictable rainfall, droughts, and floods negatively impact crop yields and livestock, making farming difficult for small-scale farmers who rely on natural weather conditions.

Secondly, poor soil fertility in many regions reduces agricultural productivity. Continuous cultivation without proper soil management practices leads to soil exhaustion and erosion, limiting the types of crops that can be grown successfully.

Another factor is the limited use of modern farming technology. Many farmers in Tanzania still depend on traditional tools and methods, which are less efficient and produce lower yields compared to mechanized and scientifically supported farming techniques.

Inadequate capital and access to credit also hinder agricultural growth. Most small-scale farmers cannot afford quality seeds, fertilizers, pesticides, or irrigation systems due to financial constraints, reducing their productivity and profits.

Lastly, poor infrastructure, including rural roads, storage facilities, and market access, affects the transportation of agricultural products. Farmers struggle to get their produce to markets on time, leading to losses and low prices for their goods.

8. Forests are Important for Sustainable Development. Do You Agree? Why?

I strongly agree that forests are important for sustainable development because they act as natural carbon sinks. Forests absorb carbon dioxide from the atmosphere, helping to regulate the climate and reduce the effects of global warming, which benefits both people and nature.

Secondly, forests provide essential resources for human survival. They supply timber for construction, fuelwood for cooking, and medicinal plants used in traditional and modern healthcare, especially in rural areas of Tanzania.

Forests are also important because they support biodiversity. Many animal and plant species depend on forest ecosystems for shelter, food, and breeding grounds, contributing to the balance of natural habitats and ecological health.

Another reason is that forests play a critical role in protecting water sources and soil. Trees prevent soil erosion by holding the soil in place with their roots and contribute to the formation of rainfall through water vapor released by leaves during transpiration.

Lastly, forests offer income-generating opportunities through activities such as beekeeping, ecotourism, and the sustainable harvesting of forest products. These activities provide livelihoods for local communities while encouraging the conservation of natural resources.

9. Suggest Ways to Improve the Fishing Industry in East Africa

One effective way to improve the fishing industry in East Africa is by promoting modern fishing equipment and techniques. This would help fishermen increase their catch and reduce post-harvest losses caused by spoilage.

Secondly, governments and stakeholders should invest in cold storage and processing facilities near major fishing areas. This would enable fish to be preserved for longer periods, improve market value, and increase exports.

Another solution is to control illegal and overfishing practices through strict laws and regular inspections. This would protect fish breeding grounds and ensure that fish populations are sustained for future generations.

Developing transport and marketing infrastructure is also important. Good roads, reliable ferry services, and modern market centers would help fishermen transport their products quickly and efficiently to consumers both locally and internationally.

Lastly, offering training programs for fishermen on sustainable fishing practices, business skills, and cooperative management would empower them to improve their livelihoods and manage fishing resources responsibly.

10. What Are the Problems Facing Small-Scale Agriculture in Tanzania?

One of the major problems facing small-scale agriculture in Tanzania is dependence on unreliable rainfall. Many farmers lack irrigation systems and rely solely on seasonal rains, which are often unpredictable, leading to poor harvests and food insecurity.

Secondly, small-scale farmers often use outdated farming tools and techniques, such as hand hoes and traditional seed varieties. These methods are labor-intensive and produce lower yields compared to modern, mechanized farming practices.

Limited access to financial services and agricultural loans is another challenge. Most small-scale farmers lack collateral and financial literacy, making it difficult for them to access credit needed to buy quality inputs like fertilizers and pesticides.

Additionally, pests and diseases frequently attack crops and livestock, causing significant losses. Farmers often lack the knowledge or resources to manage these problems effectively, leading to reduced productivity and income.

Lastly, poor rural infrastructure, including roads, storage facilities, and access to markets, affects small-scale agriculture. Farmers struggle to sell their produce in good condition and often receive low prices due to a lack of bargaining power and organized markets.