THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

113/1 **GEOGRAPHY 1**

(For Both School and Private Candidates)

Time: 3 Hours **ANSWERS** **Year: 2023**

Instructions

1. This paper consists of section A, and B with total of seven questions.
2. Answer a total of five questions; two in section A, and three in questions in section B. Question number 1 is compulsory.

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1. Study carefully the map extract of Uvinza (sheet 113/2) provided and answer the questions that follow.

(a) Locate by latitudes and longitudes the place found at grid reference 135376.

The place at grid reference 135376 is located at approximately latitude 5°06' S and longitude 30°24' E.

(b) From grid reference 090340 towards the eastern part of the map, the river reflects a certain stage of development.

(i) With an evidence, comment on the stage of the river development.

i. The river at this section is meandering, indicating it is in the mature or old stage of development.
ii. It has developed bends and oxbow lakes, showing lateral erosion.
iii. The presence of deposition areas along the riverbanks suggests reduced vertical erosion.
iv. The river valley appears broad with floodplains, confirming its late-stage characteristics.

(ii) Identify three features formed by the river in the stage identified in (b) (i).

i. Meanders: The river shows curves and loops due to lateral erosion.
ii. Oxbow lakes: There are areas where former river bends have been cut off from the main channel.
iii. Floodplains: The surrounding land is flat and wide, indicating sediment deposition over time.

(c) With evidence, point out three modes of transport common to people at Uvinza.

i. Road transport, as evidenced by the presence of both major and minor roads in the area.
ii. Railway transport, confirmed by the railway line running through Uvinza.
iii. Water transport, suggested by the presence of the river and swamp areas where boats or canoes are likely used.

(d) Determine the length of River Ruchugi to its main river junction in km.

The length of River Ruchugi from its source to the main river junction is approximately 11 km. This was determined by measuring the river's course using the scale of 1:50000, where 1 cm represents 0.5 km.

(e) Suggest two environmental problems which might be facing the people at Uvinza.

i. Deforestation due to clearing land for settlements and farming, leading to soil erosion.
ii. Water pollution from mining activities and waste disposal, affecting water quality.

(f) Identify two main sources of surface water for the people residing in the area.

i. Rivers, such as River Ruchugi and other smaller streams.
ii. Swamps and wetlands, which store water and provide a source for domestic use.

(g) Besides the contour method, identify the second method applied by the cartographer to show relief features.

Spot heights are used to indicate the exact elevation of specific points on the map.

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(h) Suggest four challenges to the mobility of people in the northwestern side.

i. Poor road infrastructure, making transportation difficult.
ii. Presence of swamps and rivers, requiring alternative crossing methods.
iii. Rugged terrain with hills and valleys, making movement slower.
iv. Sparse settlements, forcing people to travel long distances to access services.

2. (a) A farmer went to a photographer and asked her to take a photograph showing all plants in his 50-acre farm. What type of photograph do you think the photographer would take? Support your answer by giving four reasons.

i. The photographer would take an aerial photograph because it captures a wide view from above, allowing all the plants in the farm to be included in a single image. This type of photograph provides a bird's-eye view, making it easier to assess the entire field at once.
ii. An aerial photograph helps in monitoring plant health and growth patterns. It allows the farmer to observe differences in vegetation color and density, which can indicate healthy or diseased plants.
iii. This type of photograph is useful for planning irrigation and drainage systems. By viewing the entire farm from above, the farmer can identify areas that may require more or less water based on natural slopes and water collection points.
iv. The aerial photograph is also beneficial for estimating crop yield and farm management. It provides a clear understanding of the farm layout, helping the farmer make informed decisions about harvesting and future planting.

(b) Suppose you have been asked to interpret a photograph of a certain area, how would you use pattern, shape, tone, and texture to make your task successful?

i. Pattern: Observing repeated arrangements of features can help in identifying land uses. For example, regularly spaced plots indicate farmland, while scattered structures may suggest a rural settlement.
ii. Shape: The geometric form of objects provides clues about what they are. For instance, rectangular shapes in an image may represent buildings, while meandering lines could indicate rivers or roads.
iii. Tone: The lightness or darkness of an area in a photograph helps distinguish features. Dark areas might indicate forests or water bodies, while lighter areas may represent bare land or sandy regions.
iv. Texture: The roughness or smoothness of surfaces in an image helps identify different features. A smooth texture might indicate a water body or paved roads, while a rough texture may represent forests or rocky terrain.

3. (b) Explain strengths and weaknesses of the percentage cumulative bar graph. Provide two points for each aspect.

strengths
i. It simplifies comparisons by showing the relative proportions of different categories over time. For example, a school can compare how different subject combinations have changed in enrollment over four years.
ii. It visualizes trends effectively by presenting cumulative values, making it easy to see overall increases or decreases in student enrollment for different combinations.

weaknesses
i. Difficult to interpret precise values since the categories are stacked on top of each other. This makes it hard to determine the exact number of students in a single category without referring to the data table.

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ii. Overlapping colors can create confusion, especially when categories are too close in percentage. A viewer might struggle to differentiate between similar portions of the graph.

(c) Comment on the trend of enrolment of students for egm classes.

i. The enrollment for egm (economics, geography, and mathematics) has shown a significant increase over the four years. It started with only 100 students in 2017 and grew to 307 students in 2020.
ii. The highest increase occurred between 2019 and 2020, where the number of students jumped from 180 to 307, indicating a growing preference for the egm combination.
iii. This trend suggests that more students are choosing mathematics-related fields, possibly due to the rising demand for careers in finance, engineering, and data analysis.

4. Analyze six factors that influence the ocean water movement.

i. Wind: Wind is the primary driver of ocean waves and surface currents. For example, the trade winds push warm water from Africa toward the Americas, creating ocean currents such as the gulf stream.
ii. Temperature differences: Warmer water expands and rises, while cooler water contracts and sinks. This movement, known as thermohaline circulation, helps in redistributing heat across the ocean.
iii. Salinity variations: Areas with higher salinity have denser water, which sinks and pushes less salty water to the surface. This process occurs in places like the mediterranean sea, where high evaporation increases salinity.
iv. Earth's rotation coriolis effect: The earth's spin causes ocean currents to curve, moving clockwise in the northern hemisphere and counterclockwise in the southern hemisphere. This effect influences major currents like the kuroshio current in japan.
v. Tides: The gravitational pull of the moon and the sun causes the rise and fall of ocean water, leading to tidal movements seen on coastal shores.
vi. Underwater topography: Features such as continental shelves, ridges, and trenches direct ocean currents. For example, the mid-atlantic ridge influences deep-water flow between europe and the americas.

5. Globally, climate conditions are changing due to natural and man-made factors. In eight points, justify the statement.

i. Greenhouse gas emissions from industries and vehicles trap heat in the atmosphere, causing global warming and rising temperatures.
ii. Deforestation reduces the number of trees available to absorb carbon dioxide, increasing its concentration in the air and intensifying climate change.
iii. Melting glaciers and polar ice caps due to rising temperatures cause sea levels to rise, leading to coastal flooding in low-lying areas.
iv. Burning fossil fuels such as coal and oil releases pollutants that contribute to smog, acid rain, and global temperature increase.
v. Volcanic eruptions release large amounts of ash and gases like sulfur dioxide, which can temporarily cool the earth's surface by blocking sunlight.
vi. Changes in ocean temperatures lead to stronger storms and altered rainfall patterns, affecting agriculture and water supply.
vii. Desertification caused by poor land use and prolonged drought reduces the availability of fertile land for farming.
viii. Urbanization increases heat retention, forming heat islands where temperatures are higher compared to surrounding rural areas.

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6. Form five students from school x were heard saying that the end of the sky is the end of the atmosphere. Address such a misconception by properly classifying the structure of the atmosphere.

i. Troposphere: The lowest layer, where weather events occur and where people live. It extends up to 12 km from the earth's surface.
ii. Stratosphere: The second layer, where the ozone layer absorbs harmful uv radiation. It extends from 12 km to 50 km above earth.
iii. Mesosphere: The middle layer, where meteors burn upon entry. It extends from 50 km to 85 km.
iv. Thermosphere: A layer with very high temperatures, where satellites orbit the earth. It extends from 85 km to 600 km.
v. Exosphere: The outermost layer, where the atmosphere transitions into space, extending beyond 600 km.

7. Every soil has pore spaces holding water, but the amount of water varies from one place to another. Substantiate this statement by using six points.

i. Soil texture affects water retention. Clay soils hold more water than sandy soils because they have smaller pores that trap moisture.
ii. Organic matter improves water retention. Soils rich in decomposed plant material can store more water for plant roots.
iii. Compacted soils have reduced pore spaces, making it difficult for water to penetrate. Highly compacted urban soils allow less infiltration, causing runoff.
iv. Slope gradient influences how much water stays in the soil. Steep slopes lose water quickly, while flat lands retain more moisture.
v. Climate variations determine soil moisture. Dry regions, like deserts, lose water rapidly due to high evaporation, while wet regions retain more water.
vi. Vegetation cover reduces evaporation and increases infiltration. Forested areas keep soil moist for longer periods, compared to bare land that dries quickly.

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