WRITTEN TEST

- JUNIORS –

ANSWERS

SECTION 1 - RELIEF FORMS, LANDS AND LAND USE			
1.1		• Traction or creep occurs when sediments are blown along the floor in deserts. • Saltation refers to the bouncing movement of sediments, usually in stronger winds and involving smaller particles than those which are associated with creep. • Suspended particles are the smallest and, in the strongest wind these particles remain airborne. Dust storms are an example of the manifestation of suspended particles in strong winds. • Transport of sediments by wind or aeolian processes are responsible for major erosion in deserts.	**2**
1.2	(i)	Hot desert climate. The annual amount of precipitation up to 200 mm. These regions experience low relative humidity because of the extremely dry conditions.The drier period is from June to November, and the wetter period is from November to January. Rainfall is rare but torrential which leads to seasonal floods.The region experiences high temperatures throughout the year that can even reach 45 °C . The days are very hot while the nights are very cold.	**2**
	(ii)	Saudi Arabia is crossed by Tropic of cancer, which means that its territory is located in a zone of permanent descending air currents and elevated air pressure caused by the accumulation of air masses.	**1**
	(iii)	The southwestern part of the country is located along the coast of the Red Sea and receives a certain amount of precipitation all year round, which enables the growth of vegetation.	**1**
1.3		Responses should note that these are barchans. The major factors in the development are these dunes are: • A ready supply of available sediments ie fine and coarse sand in this case; • A prevailing regular and consistent wind direction, in this case from northwest to southeast; • A smooth flat surface over which the wind can blow the sand, but also some subtle changes in the shape of the land so that sediments collect.	**2**
1.4		There is an absence of surface water, which will increase in the salt content of the soil. Ground vegetation is sparse with large patches of dry, loose soil showing, which will increase soil erosion as bare soil is exposed to wind. Vegetation is becoming degraded - brown and dry, indicating the soil is becoming less fertile, increasing the presence of dry, loose sand.	**2**

SECTION 2 - CLIMATE CHANGE		
2.1	Drought	**0.5**
2.2	• Changes in Precipitation Patterns: Climate change alters precipitation patterns, leading to changes in the timing, intensity, and distribution of rainfall. This can result in prolonged dry periods and reduced overall precipitation in some regions, contributing to drought conditions. • Increased Evapotranspiration: Higher temperatures associated with climate change increase evaporation rates from soils and transpiration from plants. This intensifies the drying of soil and vegetation, exacerbating drought conditions. • Rising Temperatures: Elevated global temperatures can enhance the rate of moisture loss from soil and increase water demand by accelerating plant growth and evaporation. This can lead to quicker onset and more severe droughts. • Melting of Snowpack and Glaciers: In regions where water supply is heavily dependent on melting snowpack or glaciers (such as mountainous areas), climate change-induced warming can alter the timing and amount of meltwater, affecting water availability and potentially leading to droughts. • Shifts in Atmospheric Circulation Patterns: Climate change can alter atmospheric circulation patterns, such as the jet stream and monsoon patterns, which play a crucial role in determining regional precipitation. Changes in these patterns can lead to shifts in rainfall distribution, increasing the likelihood of drought in some areas. • Ocean Temperature Changes: Warmer ocean temperatures influence global weather patterns, including phenomena such as El Niño and La Niña, which can affect precipitation patterns and contribute to drought conditions in different parts of the world.	**2**
2.3	The countries most vulnerable to drought are typically those located in arid or semi-arid regions, or those subject to extreme climate conditions. Here are some of the most vulnerable countries: Somalia, Sudan, Ethiopia, Niger, India, Pakistan.	**1.5**
2.4	**Water Management**: • Efficient Irrigation: Implementing efficient irrigation systems can significantly reduce water use in agriculture. • Water Storage Capacity: Building or improving water reservoirs helps preserve water during rainy periods for use during dry spells. • Water Recycling and Reuse: Promoting water recycling practices in industry, agriculture, and urban settings reduces overall water consumption. **Agricultural Practices**: • Sustainable Land Management: Adopting sustainable agricultural techniques like crop rotation, organic materials use, and erosion control improves soil moisture retention. • Crop Selection: Promoting drought-resistant crops reduces the risk of crop loss during dry periods.	**3**

	Forest and Natural Protection: • Forest Conservation: Preserving forests helps maintain water cycles, reduce soil erosion, and stabilize ecosystems. • Ecosystem Restoration: Activities like afforestation and wetland revitalization enhance water retention and mitigate drought risks. **Urban Planning**: • Efficient Urban Water Management: Promoting efficient water management in urban areas, including water recycling, reducing water losses, and implementing xeriscaping for landscaping. • Green Infrastructure: Integrating green spaces like urban parks, green roofs, and gardens improves water retention and reduces urban heat island effects. **Monitoring and Early Warning Systems**: • Enhanced Monitoring: Developing and implementing drought monitoring and prediction systems allows for quick response and appropriate measures in vulnerable areas. • Education and Awareness: Educating local populations about drought impacts and promoting awareness of sustainable water resources increases preparedness and **community resilience.**	
2.5	Reduction of inhabitants, high migration rates, lack of food and water, conflicts with other species, indirect threat to human life…	**2**
2.6	An ecological connection or several ecological connections that enable the movement of populations of living organisms from one locality to another and form part of an ecological network.	**1**
SECTION 3 - POPULATION		
3.1	2,8% / 27.9‰	**2**
3.2	<table><tr><td colspan="3">Population</td><td colspan="3">Land use (km²)</td><td colspan="2">Population density (pop/km²)</td></tr><tr><td>Total</td><td>Urban</td><td>Rural (agricultural)</td><td>Settlement zone</td><td>Agricultural land</td><td>Desert</td><td>Arithmetic</td><td>Agricultural</td></tr><tr><td></td><td>~1 313 515</td><td>~3 757 970</td><td></td><td>~1 755</td><td></td><td></td><td>~2 141</td></tr></table>	**4**
	1. Land degradation – Excessive land use (intensive agricultural activities can lead to soil depletion, reduced fertility, and soil degradation), erosion (frequent soil tillage and lack of protective measures can intensify soil erosion). 2. Pollution – Chemical pollution (increased use of pesticides, herbicides, and synthetic fertilizers can contaminate soil and water resources), water pollution (pollution of the Nile River and groundwater due to discharge of wastewater and chemicals from agricultural production).	

3.3	3. Access to resources – Water scarcity (increased agricultural density can increase water consumption for irrigation, which can lead to water scarcity for other needs, including drinking water), overexploitation (intensive use of natural resources can lead to their depletion and reduced availability for future generations). 4. Social issues – Poverty (increasing population numbers can worsen economic conditions, especially if agricultural productivity cannot keep pace with population growth), health (high population density can worsen living conditions, including access to healthcare services and sanitation facilities). 5. Economic challenges – Inefficient agriculture (small farms may be less efficient and productive, which can lead to economic problems for farmers), migration (lack of opportunities in rural areas can stimulate migration to urban centers, creating additional pressure on infrastructure and services in cities). 6. Ecological problem – Ecosystem destruction (intensive agricultural activities can lead to the destruction of natural ecosystems and loss of biodiversity). 7. Infrastructure – Access and transportation (increasing population density can strain existing infrastructure, including roads, schools, healthcare facilities, and other public services).	**3**
3.4	Copts	**1**
SECTION 4– TOURISM		
4.1	Subtropical (mediterranean) climate	**2**
4.2	December, january, february	**2**
4.3	Economic growth and development: - Tourism revenue (increased influx of tourists brings higher revenues to local businesses, hotels, restaurants, and attractions). - Employment (new job openings in hospitality, transportation, retail, food, and entertainment industries). - Infrastructure development (improvement in infrastructure, including roads, airports, ports, and public transport). Cultural exchange: - Promotion of local culture (tourists show interest in local customs, traditions, art, and cuisine, potentially revitalizing cultural heritage). - International connectivity (cities gain international recognition, leading to additional benefits through global networks and contacts). Enhancement of public services: - Improved public services (increased tourism revenue is reinvested in enhancing healthcare, education, and other public services).	**3**

4.4	Environmental impacts: - Environmental degradation (a large number of tourists can lead to destruction of natural habitats, air, water, and soil pollution) - Increased resource consumption (higher consumption of water, energy, and other resources can lead to their depletion). Social impacts: - Creation of large crowds (a large number of tourists, especially during peak seasons, leads to overcrowding, which reduces the quality of life for local residents). - Changes in the community (the arrival of a large number of foreigners can alter the social structure and lead to conflicts between tourists and local residents). Economic and social costs: - Increase in prices (property prices and cost of living in popular tourist destinations rise due to high demand, which can make life more expensive for local residents). - Seasonal employment (in large tourist centers, jobs in tourism are often seasonal and unstable, which creates a sense of insecurity among employees). Cultural impacts: - Commercialization of culture (in large tourist centers, local culture is often commercialized and adapted to the tastes of tourists, which can lead to a loss of authenticity). - Negative gentrification, when transformation of cities displaces local residents and small businesses in favor of tourist establishments.	**3**
TOTAL POINTS		**40**