

Question 3: Two Stimuli**7 points**

A (Point 1)	Identify an example of a culture trait. Acceptable identification: A1. Culture traits include such things as food preferences, art, architecture, language, religion, music, clothing, media, technology, and/or land use.	1 point
B (Point 2)	Describe the spatial pattern of cow's milk production in Africa, shown in Map 1. Examples of acceptable responses may include the following: - B1. Medium and/or high amounts of cow's milk production are concentrated or clustered in the north, east, and/or south. - B2. Low amounts of cow's milk production are concentrated or clustered in west, central, and/or southwest Africa.	1 point
C (Point 3)	Based on Map 1 and Map 2, compare the spatial patterns of cow's milk production and pork production in Asia. (Response must include both maps in the comparison.) Examples of acceptable responses may include the following: - C1. Map 1 shows that cow's milk is produced in most Asian countries at high or medium volumes, whereas Map 2 shows that pork is produced at high or medium volumes in East Asia and/or parts of Southeast Asia, or in low volumes in South and/or Southwest Asia. - C2. Cow's milk is produced in most Asian countries, whereas pork is not produced in regions with large Islamic populations, such as the Middle East (Southwest Asia), Central Asia, South Asia, and/or parts of Southeast Asia. - C3. Cow's milk production and pork production are low in insular Southeast Asia (e.g., Indonesia, Malaysia, East Timor, Papua New Guinea).	1 point

D (Point 4)	Describe one environmental effect of agricultural land use such as commercial animal farms. Examples of acceptable responses may include the following: • D1. Environmental effects of agriculture land use include pollution (e.g., air, water, waste), land cover change (e.g., soil erosion), nutrient depletion, desertification, and/or soil salinization. • D2. The reduction of water supplies for agricultural purposes, such as depleting reservoirs, lowering the local water table, and/or draining aquifers. • D3. The reduction of biodiversity from changes in land cover (e.g., deforestation, grassification, feed-crop monoculture). • D4. The spread of disease between domestic and wild animal populations or between animal populations and humans. • D5. Climate change and/or global warming because such farms produce greenhouse gases (e.g., carbon dioxide, methane, water vapor). • D6. Agricultural land use can promote the survival or the growth of environmentally beneficial species (e.g., pollinators, working animals, heirloom varieties).	1 point
E (Point 5)	Explain how the globalization of agriculture may affect local culture traits. Examples of acceptable responses may include the following: • E1. Globalization of agriculture and/or the global system of agriculture may lead to changes in food preferences. • E2. Globalization may lead to people preferring to eat foods imported from other countries that were not previously available to them (e.g., tropical fruits in temperate climates). • E3. Globalization may lead to the availability of less expensive imported foods that are substituted for more expensive local foods (e.g., imported wheat replacing locally grown corn). • E4. Consumers may resist the globalization of the food supply and in response buy domestically produced food, local food, and/or purchase food from community-supported agriculture. • E5. Globalization of agriculture may lead to a reduction in the number of small family farms, which can affect local cultural traits (e.g., settlement patterns by prompting rural-to-urban migration, social roles by having fewer people working in agriculture). • E6. Globalization may lead to changes in agricultural land use or agricultural production methods through the implementation of new technologies, architecture, and/or equipment (e.g., data analytics, drones, vertical farming, autonomous tractors), affecting local culture traits (e.g., crops, farming practices).	1 point

F (Point 6)	Explain why regions of agricultural production may become interdependent. Examples of acceptable responses may include the following: • F1. Some regions and/or countries have become highly dependent on one or more export commodities, which causes different regions to depend on one another for specific agricultural commodities. • F2. Regions of agricultural production are connected through global food distribution networks that are affected by political relationships, infrastructure, and/or patterns of world trade. • F3. Global patterns of food-processing facilities and markets, economies of scale, distribution systems, and government policies all contribute to greater interdependence among agricultural production regions. • F4. Countries may develop comparative advantages, complementarity, specialty crops, and/or consumer markets that establish trade relationships and increase interdependence between two or more countries. • F5. Countries in a region may form trade relationships that result in increased trade in farm products (e.g., EU, ASEAN, MERCOSUR).	1 point
G (Point 7)	Explain how domesticated animals such as pigs spatially diffused to create the spatial pattern shown on Map 2. Examples of acceptable responses may include the following: • G1. Domesticated animals such as pigs diffused from their hearths of domestication through relocation diffusion (e.g., settlers bringing animals to new areas). • G2. Domesticated animals such as pigs diffused from their hearths of domestication through the Columbian Exchange. • G3. International trade, imperialism, and/or colonization introduced domesticated animals such as pigs that were transported to other regions of the world. • G4. Domesticated animals such as pigs spread through migration or expansion diffusion, altering food preferences and/or increasing demand for diverse animal products domestically and/or internationally. • G5. Domesticated animals such as pigs spread to areas where consumption of these animals was culturally acceptable and/or did not spread to areas where consumption of such animals was culturally unacceptable.	1 point

Question 2: One Stimulus**7 points**

A (Point 1)	Using the data in the charts, identify the largest food export category between the two countries. Acceptable identification: • A1. Grains, fruits, vegetables.	1 point
B (Point 2)	Using the data in the charts, describe the difference between the two countries in the meat, dairy, and seafood category. Examples of acceptable responses may include the following: • B1. The amount of exports or trade from Country X is larger. • B2. The amount of exports or trade from Country Y is smaller. • B3. Exports or trade from Country X is \$5.1 billion, while exports or trade from Country Y is \$2.3 billion. • B4. The amount of exports or trade from Country X is approximately twice as much as exports or trade from Country Y.	1 point
C (Point 3)	Define the concept of comparative advantage. Examples of acceptable responses may include the following: • C1. Comparative advantage describes a situation in which an individual, business, or country can produce a good or service more efficiently and/or at a lower opportunity cost than another producer. • C2. Comparative advantage occurs when countries choose to specialize in producing goods or services that they can produce more efficiently, effectively, and/or that have a lower opportunity cost.	1 point
D (Point 4)	Describe one effect of Green Revolution technologies on food supplies in developing countries. Examples of acceptable responses may include the following: • D1. Green Revolution technologies (e.g., high-yield seeds, increased use of chemicals, mechanized farming) increased food supplies. • D2. Green Revolution technologies increased the amount of farm production and/or the agricultural yield of food crops and/or animals. • D3. Pesticide use led to pesticide resistance in some species, decreasing food production. • D4. Irrigation and/or the use of mechanized equipment led to soil erosion and/or loss of soil fertility, decreasing food production. • D5. Monocropping, mechanization, and/or the decrease in smaller farms changed the types of food produced and/or affected food supplies.	1 point

E (Point 5)	Explain how advances in agricultural technology may increase the carrying capacity of land. Examples of acceptable responses may include the following: • E1. Advances in agricultural chemicals (e.g., fertilizers, pesticides) may allow an area of land to produce more resources and support a larger population. • E2. Carrying capacity may increase through mechanization (e.g., tractors, vehicles, irrigation, processing equipment), which may allow an area of land to produce more resources and support a larger population. • E3. Carrying capacity may increase through the use of high-yield seeds, which may allow an area of land to produce more resources and support a larger population. • E4. Carrying capacity may increase if agricultural technology is used to bring areas with low population density into agricultural production leading to higher population density. • E5. Carrying capacity may increase through the use of agricultural technology (e.g., precision agriculture, GPS) that improves growing conditions or optimizes agricultural practices, leading to the production of more food and the ability to support a larger population.	1 point
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F (Point 6)	Explain the degree to which the economies of Country X and Country Y are interdependent. (Response must indicate the degree [low, moderate, high] and provide an explanation.) Examples of acceptable responses may include the following: Statement of a moderate or high degree AND - F1. Country X and Country Y are highly interdependent due to the billions of dollars of agricultural trade occurring between the two. - F2. Both countries are dependent upon one or more export commodities traded with each other (exports, imports) and/or agriculture is used as an economic strategy for both countries. - F3. Trade in agricultural goods between Country X and Country Y is part of the global supply chain and/or part of the global food distribution network that links producers and consumers. OR Statement of a moderate or low degree AND - F4. The amount of trade between the two countries for agriculture may be small in comparison to the trade in other sectors (e.g., manufacturing, services). - F5. The agricultural trade data in the charts do not provide enough information to demonstrate interdependence because agriculture is only a portion of the total amount of trade (of all goods and services).	1 point
G (Point 7)	Explain how the charts provide limited information about economic development. Examples of acceptable responses may include the following: - G1. The charts provide data for only one sector of the economy and/or do not include other measures of social and/or economic development (e.g., GDP, GNP, GNI per capita, sectoral structure, population data). - G2. Export data indicate the production of goods for international trade but not the production of goods for the domestic economy. - G3. Export data do not include non-food products (e.g., cotton) which contribute to economic development. - G4. The charts do not have a temporal or spatial dimension (e.g., a year, timeframe, variation by different areas) which is essential for understanding trends or making comparisons (e.g., uneven development). - G5. The charts show that Country Y has higher agricultural exports than Country X, but the charts do not show that Country X has a more developed economy.	1 point

Question 3: Two Stimuli**7 points****(A) Describe ONE reason for the migration patterns shown on the map.****1 point**

Accept one of the following:

- A1. Seasonal migration (transhumance) to move herds to grazing lands and/or water sources.
- A2. Migration to areas with more rainfall during the dry season.
- A3. Migration because the region's climate (arid or semi-arid) is too dry to support grazing year-round and/or to reduce stress on land that has been grazed.
- A4. Movement southward during the dry season and/or northward during the wet season.
- A5. Migration patterns based on cultural or agricultural practices.

(B) Describe ONE cause of desertification in the Sahel region.**1 point**

Accept one of the following:

- B1. Overgrazing has removed the grass cover and/or damaged the soil.
- B2. Human population growth and the use of arid land for growing food and/or demand for water have placed the land under added stress.
- B3. Runoff, wind, and/or erosion has removed fertile topsoil.
- B4. Soil erosion caused by climate change, natural drought, increasingly dry climate and/or human activities.
- B5. The use of wood for fuel and building materials has removed natural scrub or shrub landscapes.

(C) Explain how pastoral nomadism may affect the cultural landscape of the Sahel region.**1 point**

Accept one of the following:

- C1. Pastoral nomadism affects land use patterns in the region, with much land used for grazing, leaving an imprint of agricultural patterns (e.g., migration routes, traditional sites for seasonal settlements, watering sites, market locations, corrals, animal pens) on the cultural landscape.
- C2. Pastoral nomadism contributes to specific cultural identities and/or shared practices in groups with migrant lifestyles, leaving an imprint on the landscape (e.g., types of temporary settlements, meeting places, market locations) and/or infrastructure that supports communication (e.g., signs, cell phone towers).
- C3. Pastoral nomadism affects the built environment, with many nomadic herders constructing portable and/or seasonal (temporary) dwellings.
- C4. Pastoral nomads follow long-established seasonal migration routes or seasonal temporary settlements, thus maintaining local traditions and/or agricultural practices (e.g., animal husbandry, dairying, celebrations) that leave an imprint on the cultural landscape.

(D) Explain ONE way mixed-crop farming could be affected by climatic conditions. 1 point

Accept one of the following:

- D1. The availability of annual or seasonal rainfall (e.g., drought) results in crop or animal losses.
- D2. Variables and/or extremes in annual and/or seasonal temperatures may prevent or enable the cultivation of certain plant crops or animals.
- D3. Farming is affected by floods in areas where there are seasonal monsoons, hurricanes, and/or intense storms.
- D4. Farming is affected by changes in temperature or rainfall which may cause farmers to substitute one crop for another, and/or change farming techniques.
- D5. Changes in temperature, precipitation, frequency, and/or the intensity of storms may limit plant crops or impact the overall health of animals.

(E) Using the map and table, explain why expanding protected natural areas may affect the migration routes of nomadic herders in the Sahel region. 1 point

Accept one of the following:

- E1. Nomadic herders may have to make detours to avoid crossing protected natural areas, or use corridors established by governments, thus altering their traditional migration routes.
 - E2. Newly expanded protected natural areas may disrupt established migration routes traditionally used by nomadic herders.
 - E3. Protected natural areas may bring nomadic herders into conflict with conservation organizations or forestry services as they may differ on the use of protected areas for grazing, and/or concern about the impact of herding on natural habitats.
 - E4. Nomadic herders who travel through or graze animals in protected areas may risk legal consequences (e.g., fines) and begin to avoid those routes.
 - E5. Protected areas may preserve grassland habitat and/or prevent the loss of potential grazing lands, allowing nomadic herders to continue their traditional migration routes.
 - E6. Protected areas may conserve traditional migration routes for herders under agreements with governments or conservation organizations.
 - E7. Nomadic herders who cross international borders may encounter tensions with government officials who enforce migration policies and/or inspect for contraband items.
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(F) Using the information in the table, explain why farmers' increased use of irrigation may increase conflicts with nomadic herders. 1 point

Accept one of the following:

- F1. Increased use of irrigation may increase the amount of land that can be cultivated for crops, cutting off migration routes and/or limiting the use of such lands for transporting or grazing herds during seasonal migrations.
 - F2. Increased use of irrigation may increase the amount of land that can be cultivated for crops and eliminate areas where nomadic herders could set up temporary settlements and/or corrals or pens.
 - F3. Increased use of irrigation may deplete water supplies used by nomadic herders and/or cause competition between herders and farmers to water livestock and/or crops during pasturing or seasonal migrations.
 - F4. Overuse of irrigation in dryland (arid) environments may lead to soil salinization that could reduce the amount of food for animals (forage) or land for grazing that is available for migrating herds.
 - F5. Irrigation may lead to runoff carrying chemical fertilizer or pesticides into bodies of water where herders drink and/or water their livestock, increasing tensions between nomadic herders and farmers.
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(G) Explain the degree to which increased access to communication technologies may create cultural convergence among nomadic herders. 1 point

Statement of a moderate to high degree

AND

Accept one of the following:

- G1. Increased use of mobile phones, television, and/or the internet may expose herders to cultural influences from outside of their community and make herder culture less unique and/or expose nomadic herders to the cultural or social norms of external communities.
- G2. Increased use of global communication systems may cause herders to use more widely spoken languages and make indigenous language use less common.
- G3. Increased consumption of external music, literature, art, and/or holidays may diminish the cultural interest of herders to practice or maintain indigenous traditions within herder communities.

OR

Statement of a moderate to low degree

AND

Accept one of the following:

- G4. Increased exposure to outside cultural influences (e.g., music, languages, information) may mobilize nomadic herders to unite to protect their culture, resulting in a stronger cultural identity among nomadic herders.
- G5. Limited access to communication technologies due to cost or connectivity may hinder cultural convergence.
- G6. Nomadic herder communities may reject increased access to communication technologies to resist the forces of globalization and/or maintain traditional lifestyles.

Total for question 3: 7 points