

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)	Describe the concept of an early hearth of domestication. Accept one of the following: - A1. A location where new practices develop and/or from which new practices spread. - A2. A location where a particular type of plant or animal was first domesticated. - A3. Locations where early civilizations domesticated plants or animals (e.g., Fertile Crescent, Indus River Valley, Southeast Asia, China, Andean Highlands, Amazonia, and/or Central America). - A4. An ancient civilization whose farmers converted wild plants or animals into farmable and/or domesticated varieties over time. - A5. A region (e.g., river valley) where a common wild plant or animal was cultivated into a farmable variant through selective breeding.	1 point
(B)	Identify the crop listed in the table that has diffused the least from its hearth of domestication to the countries listed in the table. Accept the following: B1. Yams diffused the least.	1 point
(C)	Explain how food preferences can be a culture trait. Accept one of the following: - C1. Many foods have distinct characteristics (e.g., ingredients, preparations) that are indicative of a specific culture group. - C2. Many culture groups identify with one or more national dishes that represent the typical food culture of a society. - C3. Many foods contain an ingredient or crop that is local to the region inhabited by a culture group. - C4. Many foods are part of a way of life, and/or are forbidden for a group of people, as represented in the belief systems, religion, tools, material goods (artifacts), calendars, and/or holidays of a culture.	1 point

(D) Explain how the Columbian Exchange contributed to a crop's diffusion beyond its hearth of domestication. 1 point

Accept one of the following:

- D1. The Columbian Exchange led to the relocation or movement of crops from one part of the world to another part of the world through conquest, ecological imperialism, colonization processes, and/or along trade routes.
- D2. The Columbian Exchange was a process by which crops moved from one part of the world to another part of the world because of changing food preferences, cultural assimilation, and/or changing agricultural practices.
- D3. The Columbian Exchange may have accidentally or unintentionally introduced a new crop beyond its hearth of domestication (e.g., seeds or plants that may have been "stow-aways" in containers).

(E) Explain how the data in the table support the concept of a crop's consumption pattern being the result of globalization. 1 point

Accept one of the following:

- E1. The high per capita production of corn, potatoes, rice, and/or cassava in locations far from the hearth (e.g., Brazil produces 1,056 pounds of corn per capita) supports the idea of this crop being a globalized crop.
- E2. The high consumption of corn, potatoes, rice, and/or cassava in locations far from the hearth (e.g., rice consumed outside of China) supports the idea of this crop being a globalized crop.
- E3. Globalized food culture, popularized food culture, global media coverage of food, and/or globalized consumer food preferences can be represented in the data where a crop is commonly produced away from its hearth of domestication.
- E4. Globalized populations, multicultural societies, global migration patterns, and/or cultural syncretism can be represented in the data where a crop is commonly produced away from its hearth of domestication.
- E5. Globalized trade and transportation facilitated by free-trade policies, neoliberal policies, complementarity, comparative advantage, competitive advantage, containerization, and/or bulk rail and ship transport can be represented in the data where a crop is commonly produced away from its hearth of domestication.
- E6. A globalized economy, increases in economic development, and/or the growth of a global middle class of consumers can be represented in the data where a crop is commonly produced away from its hearth of domestication.

(F) Explain why a crop may be farmed intensively in a less developed country and be farmed extensively in a more developed country. 1 point

Accept one of the following:

- F1. Subsistence or intensive farming of a staple crop in less developed countries may be done on small farm plots used to feed a household, whereas extensive or commercial farming in more developed countries would be practiced on large farms for a company's consumers.
- F2. Some farming of staple crops in less developed countries is based on intensive manual labor (e.g., using hand tools, animal power), whereas most farming in more developed countries is mechanized and/or uses limited human or animal labor inputs and is extensive.
- F3. Farmers in less developed countries may not be able to afford or have access to the investment capital, labor-saving equipment, seed supplies, and/or agricultural chemicals needed for extensive farm production, and thus use intensive human labor, whereas farmers in more developed countries tend to have financial resources for investments in extensive farming inputs.
- F4. Many farms in less developed countries use available local resources to feed families or local communities, whereas farms in more developed countries take advantage of economies of scale to produce for large populations.

(G) Explain ONE way the global supply chain links crops such as those listed in the table to consumers in other countries. 1 point

Accept one of the following:

- G1. Crops are transported internationally to consumers, with one of the following steps: storing, processing, packaging, wholesaling, and/or retailing.
- G2. Crop use in the global restaurant and fast-food industries, crops are cultivated and/or processed in one country and are then distributed through supply chains to local restaurants and/or chain restaurants for cooking in another country.
- G3. Due to the increased global consumption of frozen foods, dried foods, canned foods, and/or dehydrated foods, crops can be cultivated and processed into different preserved forms and then distributed to other countries for long-term storage by wholesalers, grocery stores, household consumers, and/or in restaurants until needed for cooking.
- G4. Crops are sent to facilities that process them into other forms (e.g., corn for ethanol, animal feed) which are shipped to wholesalers, retailers, and/or sold to consumers in other countries.

Total for question 2: 7 points

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.

- (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.

- (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