

Question 3: Two Stimuli**7 points****(A) Describe the spatial pattern of the companies and institutions shown in the inset map. 1 point**

Accept one of the following:

- A1. Agglomeration of similar economic activities.
- A2. Cluster or clustering of similar economic activities.
- A3. The concentration of similar activities along transportation routes (e.g., rivers, arterial roads).
- A4. There is a concentration of similar economic activities within a metropolitan area in Massachusetts.

(B) Describe the concept of a growth pole. 1 point

Accept one of the following:

- B1. A location where research, development, and/or innovation (e.g., new product or process) generate new products and/or services.
- B2. An institution (e.g., university, hospital, laboratory) where scientific discoveries, inventions, and/or innovations create new economic opportunities.
- B3. An area where new businesses start up and/or businesses locate to participate in the emerging market and/or attract investment for a new product and/or service.
- B4. An area where new businesses start up and/or businesses locate to access a specifically skilled or educated pool of labor.
- B5. An area designated by a government to facilitate economic activity for a specific purpose.

(C) Explain ONE way education infrastructure affects a region's potential for high-technology development. 1 point

Accept one of the following:

- C1. Graduates of educational institutions, who remain in the region throughout their careers, can promote regional economic development, create innovative products or services, and/or create a source of wealth for investment in the region's high-technology businesses.
- C2. Educational institutions can develop a labor force with specialized capabilities that make an area better suited to attract high-technology businesses and/or investors from outside of the region to open new facilities and/or move existing facilities or headquarters into the region.
- C3. Educational institutions can sponsor research for new high-technology products and/or services that can be put into production or operation, thus creating new value, investment, and/or employment for the region's economy.
- C4. Public investment in technical or specialized worker training, businesses, infrastructure, and/or equipment may divert funds away from investment in other community and social programs that support economic development.
- C5. Lack of educational infrastructure can negatively affect a region's potential for high-technology development because there may not be a highly educated workforce, a specialized labor force, and/or sponsored research for high-technology products or services.

(D) Explain how the pattern shown on the map resembles the galactic city model. 1 point

Accept one of the following:

- D1. The region has multiple development centers (e.g., edge cities, central business districts [CBDs], suburban CBDs), which are based on a specialized product or service.
- D2. The pattern of business development is decentralized or spread across the region in different locations.
- D3. The region has a circumferential, circular belt, or radial highway pattern associated with a galactic city's transportation landscape.
- D4. The region contains several highway intersections that serve as nodes for new business districts, central business districts, or development centers.

(E) Explain ONE way local economic changes may be a result of deindustrialization. 1 point

Accept one of the following:

- E1. Deindustrialization may cause the local economy to shift from a manufacturing or industry-based economy (secondary sector) to a service and/or technology-based economy (tertiary, quaternary, or quinary sector).
- E2. Outsourcing of manufacturing or industrial jobs to other countries can lead to a decline in local employment levels and/or an increase in the percentage of the workforce that is unemployed or receiving unemployment benefits.
- E3. Increased unemployment in the central business district (CBD), declining investment, and/or declining real estate values may result from the loss of manufacturing firms, jobs, and/or services that were once supported by the former industrial economy.
- E4. Increases in the local use of post-Fordist methods of production (e.g., highly specialized firms, just-in-time delivery supply chains, flexible production methods) by manufacturing firms can indicate a response to deindustrialization to make industrial production more efficient.
- E5. Gross national income (GNI) per capita in the area may decrease as local people lose employment in manufacturing and/or are unable to find similar-paying jobs in another economic sector.
- E6. Unemployment rates or underemployment may increase as local people lose employment in manufacturing and/or are unable to find similar-paying jobs in another economic sector.
- E7. Cities and communities may see decreased tax revenues due to higher unemployment and/or a decrease in population as people move away to search for jobs elsewhere (e.g., backwash effects, migration).

(F) Explain how the products and services listed in the table demonstrate that this economy has moved into the quaternary sector. 1 point

Accept one of the following:

- F1. The high-technology nature of the products and services listed demonstrates that the economy has moved into the quaternary sector.
- F2. The products and services rely on the knowledge and/or intellectual capabilities of the firms, institutions, and/or workforce that develop these advanced technologies.
- F3. The products and services are the outcomes of a highly educated, specialized, and/or creative class of employees who develop innovative solutions to consumer needs.
- F4. The products and services are dependent on the use of information technology for firms, institutions, and/or the workforce to be more productive, efficient, and/or cost-effective.

(G) The map focuses on a regional scale. Explain a possible limitation of drawing country scale conclusions from a regional scale map. 1 point

Accept one of the following:

- G1. Attempts to analyze research data from one scale of analysis to make claims about another scale of analysis may be inaccurate due to the change in scale's effect on spatial analysis.
- G2. Making research assumptions from map data at one scale of analysis to make claims about another scale of analysis may result in an incorrect calculation or an ecological fallacy due to the change in scale.
- G3. The region can be specialized in a sector or type of production that is different from the economic sectors or production types found in other regions of the country.
- G4. The region can have a long and continuing tradition of valuable or productive sectors that are very different from the changing mix of economic sectors that characterize the country's economy.

Total for question 3: 7 points

Question 2: One Stimulus**7 points**

- (A)** Using the data categories shown in the table, identify ONE indicator that is used to calculate HDI scores. **1 point**

Accept one of the following:

- A1. Life expectancy is one indicator.
- A2. GNI per capita is one indicator.
- A3. Mean (or average) years of schooling is one indicator.

- (B)** Using a different indicator than the one identified in part A, explain why Brazil's HDI score is higher than that of Afghanistan. **1 point**

Accept one of the following:

- B1. Brazil has a higher ranking than Afghanistan because it has a higher life expectancy (no point if paired with a point for A1).
- B2. Brazil has a higher ranking than Afghanistan because it has a higher GNI per capita, produces higher-value goods and services per person, and/or Brazil has a more productive economy per person (no point if paired with a point for A2).
- B3. Brazil has a higher ranking than Afghanistan because it has a greater mean (or average) number of years of schooling for adults and/or children (no point if paired with a point for A3).

- (C)** The UN and many countries have promoted sustainability principles. Describe ONE specific way that sustainability goals can respond to economic challenges. **1 point**

Accept one of the following:

- C1. Programs and policies to reduce poverty (e.g., improve access to the flow of remittances, microloans, social safety nets) and/or increase jobs. (Sustainable Development Goals [SDG] 1, 8, 16)
- C2. Improvements in the quality of the environment (e.g., environmental protection measures, increasing biodiversity, reducing pollution) may improve the health of the labor force. (SDG 14, 15)
- C3. Investments in environmental technology (e.g., clean water, sanitation, and/or hygiene) and/or infrastructure (transportation, electricity). (SDG 6, 9)
- C4. By shifting from fossil fuels to solar and wind-generated electricity, a country can generate new employment in the secondary and/or tertiary sectors (e.g., construction, manufacturing, engineering). (SDG 7, 13)
- C5. Improvements in nutrition and/or agricultural production and/or reductions in food insecurity can improve the health of the workforce and/or increase economic productivity. (SDG 2)
- C6. Investing in improving health care can result in a healthier and/or more productive workforce and/or lower population growth. (SDG 3)
- C7. Investing in education can improve the overall quality of the workforce. (SDG 4, 5)
- C8. Reducing inequalities such as gender discrimination and/or other forms of discrimination (e.g., discrimination based on race, ethnicity, ability, age). (SDG 5, 10)
- C9. Reducing conflict, war, and violence frees up resources to invest in other areas of a country's economy and/or can lead to increases in the country's trading partners. (SDG 16)
- C10. Programs and policies that create partnerships among governments, and/or the private sector can often lead to more investment in industry. (SDG 17)

Responses do not need to cite the SDG number.

- (D) Explain ONE reason why increasing women's access to education is likely to affect a country's total fertility rate. 1 point

Accept one of the following:

- D1. Women with increased access to education spend more time in school and/or have more job opportunities (e.g., higher-paying jobs), which tends to result in delayed age of marriage and/or smaller family sizes.
- D2. Women with increased access to education tend to have more information regarding health care and family planning, and/or the ability to afford family planning, resulting in smaller family sizes.
- D3. Women with higher levels of education tend to migrate to urban areas where residents may have less time, space, and/or need for children as a source of familial labor (as compared to rural areas).
- D4. Women with higher levels of education tend to have higher levels of political empowerment and may choose to have fewer children due to their position or role in society (e.g., equality with men, holding political office, business ownership), and/or nondomestic role in the household.

- (E) SDG 8 is to "promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all." Explain ONE way a country's development of ecotourism might affect economic growth. 1 point

Accept one of the following:

- E1. A country that has moved to ecotourism would see an increase in jobs or expansion in the service sector of the economy.
- E2. Ecotourism often results in better-paying, salaried jobs.
- E3. Ecotourism may result in an increase in tourism revenue, foreign currency, and/or tax revenues.
- E4. Ecotourism may result in new job opportunities and/or higher-paying jobs in rural areas that lack such opportunities (e.g., communities in or adjacent to national parks or conservation areas).
- E5. A country whose government may spend money on ecotourism infrastructure projects may negatively affect the overall economy because it diverts resources from other types of infrastructure investments (e.g., education, health care).
- E6. Ecotourism can result in low-paying jobs and/or informal economy sector jobs that do not contribute positively to the overall economy of a country.
- E7. Transnational corporations may invest in ecotourism in a country, while sending the profits back to their headquarters, depriving the country of that income.

- (F) Using data from the table, explain how access to clean-burning fuels for people's homes relates to the life expectancy of a country's population. 1 point

Accept one of the following:

- F1. The high air pollution mortality rate shown in Afghanistan (211 per 100,000 people) is connected to the low percentage of the population's access to clean-burning fuels (only 32%) contributing to a lower life expectancy (61).
- F2. Exposure to air pollution may cause diseases and/or health issues among people with weakened immune systems and deaths (fatalities) from these diseases, which may result in high mortality rates and/or shorter life expectancies as seen in the data for Afghanistan.
- F3. The life expectancy in Brazil (69) is slightly higher than Afghanistan (61) and/or lower than Finland (81) and may be related to the high number of the country that has access to clean burning fuels (Brazil with 96%).
- F4. The low air pollution mortality rate and/or longer life expectancy (81) shown in Finland is connected to the fact that all (100%) of the population has access to clean-burning fuels.

Responses must indicate a country or a specific statistic from the table.

- (G) Explain how ONE of the countries in the table would be classified according to Rostow's stages of economic growth. 1 point

Accept one of the following:

- G1. Afghanistan is in Stage 1 (traditional society) or 2 (transitional stage/preconditions for take-off), or lower stages, because it has one or more of the following characteristics: high percentage of labor force in agriculture, low GNI per capita, low HDI ranking, and/or its economy is mainly focused on farming and natural resource extraction.
- G2. Brazil is in Stage 3 (take-off) or 4 (drive to maturity), or middle stages, because it has one or more of the following characteristics: low agricultural employment, high income disparity, a weak social welfare system, a diversified economy that increasingly focuses on services, and/or an industrial economy that exports natural resources, processed agricultural goods, vehicles, and other manufactured products.
- G3. Finland is in Stage 4 (drive to maturity) or 5 (high mass consumption), or higher stages, because it has one or more of the following characteristics: a high GNI per capita, a high HDI ranking and/or a strong social welfare system, a postindustrial economy, and/or Finland's economy is focused on services and technology.

Total for question 2: 7 points