

1. The European Union (EU) and Association of Southeast Asian Nations (ASEAN) are supranational organizations composed of independent member states.

Respond to parts A, B, C, D, E, F, and G.

- A. Define the concept of an independent state.
- B. Describe one purpose of supranational organizations.
- C. Describe one global outcome of an increase in international trade.
- D. Explain how deindustrialization has affected the economy of core countries.
- E. Explain why international boundaries on land or at sea may lead to disputes over resources.
- F. Explain how supranational organizations such as the EU or ASEAN may challenge the sovereignty of member states.
- G. Explain how advances in communication technologies may affect state sovereignty.

**SELECTED TECHNOLOGY RESEARCH AND DEVELOPMENT AREAS  
IN THE MEDICAL FIELD**

| Category               | Product or Service                                                                                                                                                                                                   |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Biotechnology:</b>  | <ul style="list-style-type: none"> <li>• Genetic engineering research</li> <li>• Biochemistry research</li> <li>• Diagnostic and testing science</li> </ul>                                                          |
| <b>Gene therapies:</b> | <ul style="list-style-type: none"> <li>• Cancer treatments</li> <li>• Neurological treatments</li> <li>• Rare and genetic disease treatments</li> <li>• Antiviral treatments and vaccines (e.g., Moderna)</li> </ul> |

3. Since the 1980s, the northeastern United States has developed into a major global center of high-technology industry that specializes in the medical field.
- A. Describe the spatial pattern of the companies and institutions shown in the inset map.
  - B. Describe the concept of a growth pole.
  - C. Explain ONE way education infrastructure affects a region’s potential for high-technology development.
  - D. Explain how the pattern shown on the map resembles the galactic city model.
  - E. Explain ONE way local economic changes may be a result of deindustrialization.
  - F. Explain how the products and services listed in the table demonstrate that this economy has moved into the quaternary sector.
  - G. The map focuses on a regional scale. Explain a possible limitation of drawing country scale conclusions from a regional scale map.

**Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.**

**STOP**

**END OF EXAM**

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