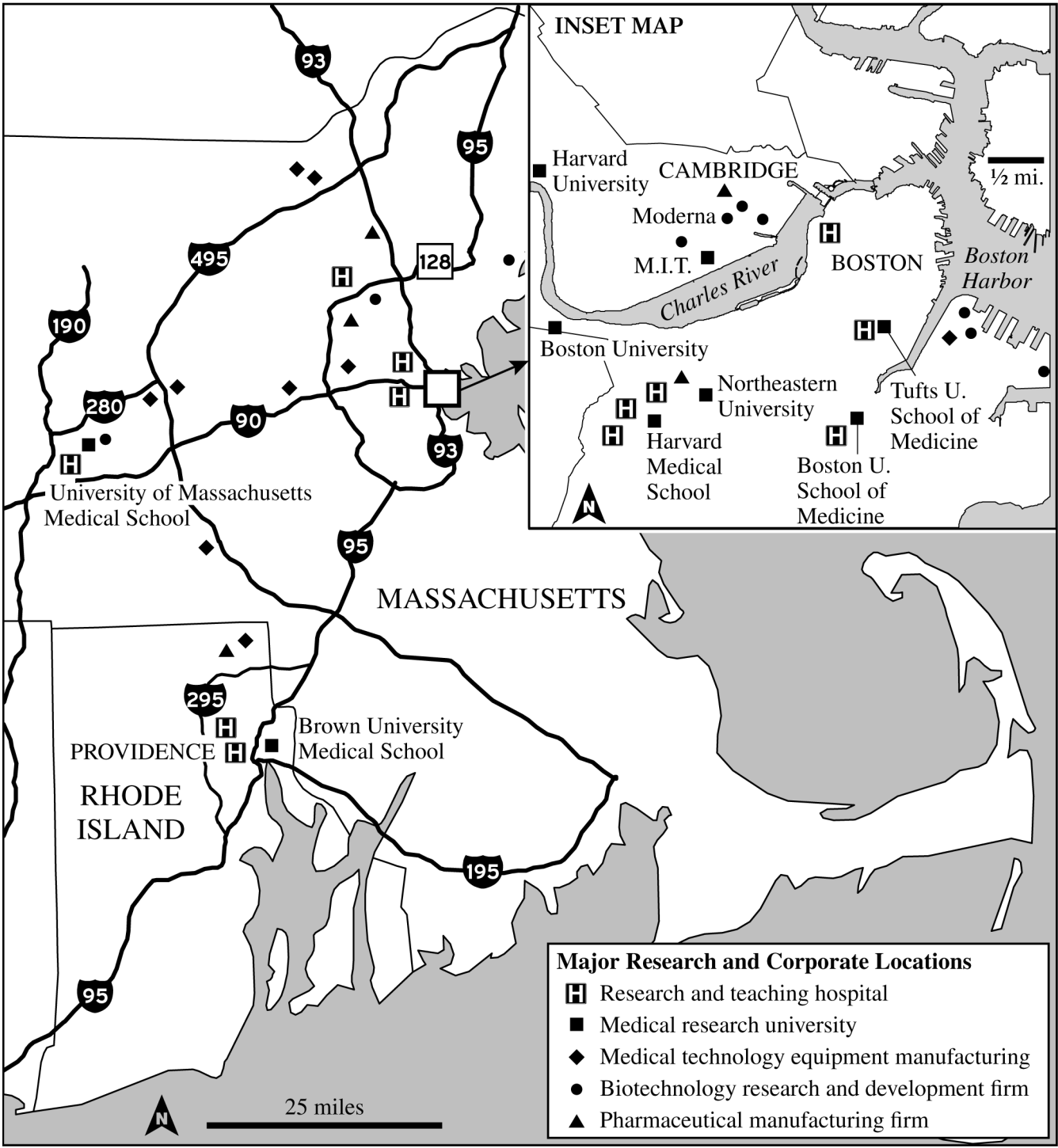


Question 3

MAJOR MEDICAL AND BIOTECHNOLOGY COMPANIES AND INSTITUTIONS IN THE BOSTON AND PROVIDENCE REGION



Source: National Institutes of Health  
The inset map shows the downtown areas of Boston and Cambridge, Massachusetts.

© 2023 College Board.  
Visit College Board on the web: collegeboard.org.

GO ON TO THE NEXT PAGE.

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.

GO ON TO THE NEXT PAGE.