Mains Practice Question

Q. Discuss the development of science and technology in post-independence India. (150 Words)

25 Sep, 2023   GS Paper 1 History

Approach

- Start your answer with a brief description of science development after 1947.
- Discuss major achievements in science and technology.
- Conclude accordingly.

Introduction

Since gaining independence from British colonial rule in 1947, India has undergone a transformative journey in science and technology, evolving into a self-reliant and technologically advanced society.

Body

Here are key points and examples highlighting this evolution:

- **Institutional Foundations:** India established prestigious scientific institutions like the Indian Institutes of Technology (IITs), Indian Institutes of Science Education and Research (IISERs), and Council of Scientific and Industrial Research (CSIR) to promote research and education.
- **Space Exploration:** India's space agency, ISRO (Indian Space Research Organisation), achieved significant milestones, including the launch of Chandrayaan-1 (India's first lunar probe) and Mangalyaan (India's Mars Orbiter Mission).
  - Example: Mangalyaan's successful mission to Mars in 2013 made India the fourth space agency in the world to reach the red planet.
- **Nuclear Capability:** India developed nuclear capabilities, conducting successful nuclear tests in 1974 (Smiling Buddha) and 1998 (Pokhran-II).
- **Information Technology (IT) and Software Industry:** India emerged as a global IT and software hub, with companies like Infosys, TCS, and Wipro becoming global giants.
  - Example: The Y2K bug crisis in the late 1990s showcased India's IT prowess as Indian IT professionals played a crucial role in addressing the issue worldwide.
- **Pharmaceuticals and Biotechnology:** India's pharmaceutical industry became a major player in the global market, producing affordable generic medicines.
  - Example: Indian pharmaceutical companies like Dr. Reddy's and Cipla played a vital role in making healthcare more accessible globally.
- **Green Revolution:** India achieved a significant increase in agricultural productivity through the Green Revolution, with the introduction of high-yielding crop varieties and modern agricultural techniques.
- **Renewable Energy:** India has been investing in renewable energy sources like solar and wind power to reduce its carbon footprint.
  - Example: The Jawaharlal Nehru National Solar Mission aims to promote solar energy and make India a global leader in solar power production.
- **Science and Research Institutes:** India boasts premier research institutes like the Tata Institute of Fundamental Research (TIFR), Bhabha Atomic Research Centre (BARC), and Indian Statistical

Institute (ISI) that contribute to scientific advancements.

Conclusion

The development of science and technology in post-independence India has been marked by significant achievements and progress. India has transformed itself from a nation struggling for basic technological infrastructure at the time of independence to a global player in various fields of science and technology today.

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