



## Sambhav-2024

**Day 27 :** Discuss the evolution of science and technology in India through different historical periods. (150 words)

20 Dec 2023 | GS Paper 1 | Indian Heritage & Culture

### Approach / Explanation / Answer

- Start the answer with a discussion that sets a context for the question.
- Discuss India's scientific and technological achievements during different historical periods.
- Conclude Suitably.

### Introduction

Science and technology have been an integral part of India's culture and civilization since ancient times. India has made remarkable contributions to various fields of knowledge, such as mathematics, astronomy, medicine, metallurgy, and architecture.

### Body

Evolution of science and technology in India through different historical periods:

- **Ancient Period (up to 600 BCE):**
  - The ancient Indian civilization made significant strides in various fields, including mathematics, astronomy, and medicine.
  - The Vedas, dating back to around 1500 BCE, contain mathematical and astronomical knowledge.
- **Classical Period (600 BCE - 1200 CE):**
  - The classical period saw the establishment of renowned centres of learning, such as Takshashila and Nalanda.
  - Aryabhata, in the 5<sup>th</sup> century, made contributions to mathematics and astronomy, including the concept of sine and trigonometry.
  - The concept of zero and decimal systems, essential for mathematics and astronomy, originated in ancient India.
  - Charaka and Sushruta contributed to the fields of medicine and surgery.
- **Medieval Period (1200 - 1700 CE):**
  - The mediaeval period witnessed advancements in various fields despite foreign invasions.
  - The Kerala School of Mathematics, in the 14<sup>th</sup> to 16<sup>th</sup> centuries, made significant contributions to calculus and infinite series.
  - The Mughal emperor Akbar established the "Gunpowder Administration" to promote

military technology.

▪ **Colonial Period (1700 - 1947):**

- **Sir Jagadish Chandra Bose and C.V. Raman** made groundbreaking contributions to physics in the early 20<sup>th</sup> century.
- **Five observatories** were built by Maharaja Jai Singh II of Jaipur at Delhi, Mathura (in his Agra province), Benares, Ujjain (capital of his Malwa province), and Jaipur.
  - He drew up a set of tables, **entitled Zij-i-Muhammadshahi, to enable people to make astronomical observations.**
- The establishment of institutions like the Indian Institute of Science (IISc) in 1909 marked a milestone.

▪ **Post-Independence Period (1947 onwards):**

- The establishment of **Indian Space Research Organisation (ISRO) in 1969** propelled advancements.
- India conducted its **first nuclear test in 1974**, showcasing its capability in nuclear technology.

▪ **Contemporary Period (1990s - present):**

- Economic liberalization in the 1990s facilitated the growth of the IT sector, leading to the rise of India as a global IT hub.
- ISRO's successful space missions, including the Mars Orbiter Mission, **chandrayan 3 and Aditya L1 gained international recognition.**
- India continues to invest in research and development, with a focus on emerging technologies like artificial intelligence and biotechnology.

## Conclusion

The evolution of science and technology in India reflects a continuous commitment to knowledge and innovation, from ancient times to the present day. The country has embraced a multidisciplinary approach, blending traditional wisdom with modern scientific methods to address contemporary challenges and contribute to global advancements.

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