

GENERAL STUDIES – III
SCIENCE & TECHNOLOGY
MAINS PREVIOUS YEAR QUESTIONS

1. **Science and Technology** - developments and their applications and effects in everyday life.
2. **Achievements of Indians** in science & technology: **indigenization** of technology and developing new technology.
3. Awareness in the fields of **IT, Space, Computers, Robotics, Nano-technology, Bio-technology** and issues relating to **intellectual property rights**.

PREVIOUS YEAR QUESTIONS (MAINS)

2019

1. What is India's plan to have its own space station and how will it benefit our space programme? (150 words) 10
2. How can biotechnology help to improve the living standards of farmers? (250 words) 15

2018

1. Discuss the work of 'Bose-Einstein Statistics' done by Prof. Satyendra Nath Bose and show how it revolutionized the field of Physics. (150 words) 10
2. Why is there so much activity in the field of biotechnology in our country? How has this activity benefitted the field of biopharma? (250 words) 15
3. Why is Indian Regional Navigational Satellite System (IRNSS) needed? How does it help in navigation? (GS-1) (150 words) 10

2017

1. Stem cell therapy is gaining popularity in India to treat a wide variety of medical conditions including leukaemia, Thalassemia, damaged cornea and several burns. Describe briefly what stem cell therapy is and what advantages it has over other treatments? (150 words, 10 marks)
2. India has achieved remarkable successes in unmanned space missions including the Chandrayaan and Mars Orbiter Mission, but has not ventured into manned space mission, both in terms of technology and logistics? Explain critically (150 words, 10 marks)

3. Give an account of the growth and development of nuclear science and technology in India. What is the advantage of fast breeder reactor programme in India? (250 words, 15 marks)

2016

1. Give an account of the current status and the targets to be achieved pertaining to renewable energy sources in the country. Discuss in brief the importance of National Programme on Light Emitting Diodes (LEDs).
2. Discuss India's achievements in the field of Space Sciences and Technology. How the application of this technology has helped India in its socio- economic development?
3. Why is nanotechnology one of the key technologies of the 21st century? Describe the salient features of Indian Government's Mission on Nanoscience and Technology and the scope of its application in the development process of the country.

2015

1. What do you understand by 'Standard Positioning Systems' and 'Precision Positioning Systems' in the GPS era? Discuss the advantages India perceives from its ambitious IRNSS programme employing just seven satellites.
2. What are the areas of prohibitive labour that can be sustainably managed by robots? Discuss the initiatives that can propel research in premier research institutes for substantive and gainful innovation.
3. Discuss the advantages and security implications of cloud hosting of servers vis- a-vis in-house machine-based hosting for government businesses.
4. India's Traditional Knowledge Digital Library (TKDL), which has a database containing formatted information on more than 2 million medicinal formulations is proving a powerful weapon in the country's fight against erroneous patents. Discuss the pros and cons of making this database publicly available under open-source licensing.

2014

1. Scientific research in Indian universities is declining because a career in science is not as attractive as are business professions, engineering or administration, and the universities are becoming consumer oriented. Critically comment.
2. Can overuse and free availability of antibiotics without Doctor's prescription, be contributors to the emergence of drug-resistant diseases in India? What are the available mechanisms for monitoring and control? Critically discuss the various issues involved.

3. In a globalized world, intellectual property rights assume significance and are a source of litigation. Broadly distinguish between the terms copyrights, patent and trade secrets.

2013

1. What do you understand by Fixed Dose Drug Combinations (FDCs)? Discuss their merits and demerits. (200 words) **10**
2. What do you understand by Umpire Decision Review System in Cricket? Discuss its various components. Explain how silicon tape on the edge of a bat may fool the system? (200 words) **10**
3. (a) What is a digital signature? What does its authentication mean? Give various salient built-in features of a digital signature. (100 words) **5**
(b) How does the 3D printing technology work? List out the advantages and disadvantages of the technology. (100 words) **5**
4. (a) What is an FRP composite material? How are they manufactured? Discuss their applications in aviation and automobile industries. **5**
(b) What do you understand by Run-of-river hydroelectricity project? How is it different from any other hydroelectricity project? (100 words) **5**
5. Bringing out the circumstances in 2005 which forced amendment to the section 3(d) in Indian Patent Law, 1970, discuss how it has been utilized by the Supreme Court in its judgment in rejecting Novartis' patent application for 'Glivec'. Discuss briefly the pros and cons of the decision. (200 words) **10**