

## GS 3 SCIENCE & TECHNOLOGY QUESTIONS

2021

1. How is the S-400 air defence system technically superior to any other system presently available in the world? (Answer in 150 words)
2. What are the research and developmental achievements in applied biotechnology? How will these achievements help to uplift the poorer sections of society? (Answer in 250 words)
3. The Nobel Prize in Physics in 2014 was jointly awarded to Akasaki, Amano, and Nakamura for the invention of Blue LEDs in 1990s. How has this invention impacted the everyday life of human beings? (Answer in 250 words)

2020

1. What do you understand by nanotechnology and how is it helping in the health sector?
2. How is science interwoven deeply with our lives? What are the striking changes in agriculture triggered off by science-based technologies?
3. COVID-19 pandemic has caused unprecedented devastation worldwide. However, technological advancements are being availed readily to win over the crisis. Give an account of how technology was sought to aid the management of the pandemic.

2019

1. What is India's plan to have its own space station and how will it benefit our space programme?
2. How can biotechnology help to improve the living standards of farmers?
3. Give an account of the growth and development of nuclear science and technology in India. What is the advantage of a fast breeder reactor programme in India?
4. How is the Government of India protecting traditional knowledge of medicine from patenting by pharmaceutical companies?

2018

1. Discuss the work of 'Bose-Einstein Statistics' done by Prof. Satyendra Nath Bose and show how it revolutionized the field of Physics.
2. Why is there so much activity in the field of biotechnology in our country? How has this activity benefitted the field of biopharma?
3. With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy.

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?
2. India has achieved remarkable successes in unmanned space missions including the Chandrayaan and Mars Orbiter Mission, but has not ventured into manned space missions, both in terms of technology and logistics? Explain critically

## 2016

1. What is allelopathy? Discuss its role in major cropping systems of irrigated agriculture.
2. Discuss India's achievements in the field of Space Science 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. How can the 'Digital India' programme help farmers to improve farm productivity and income? What steps has the Government taken in this regards?
2. To what factors can the recent dramatic fall in equipment costs and tariff of solar energy be attributed? What implications does the trend have for the thermal power producers and the related industry?
3. What do you understand by 'Standard Positioning Systems' and 'Protection Positioning Systems' in the GPS era? Discuss the advantages India perceives from its ambitious IRNSS programme employing just seven satellites.
4. 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.
5. Discuss the advantage and security implications of cloud hosting of servers vis-a-vis in-house machine-based hosting for government businesses.
6. 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. Can overuse and the availability of antibiotics without doctor's prescription, the 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.
2. Scientific research in Indian universities is declining, because a career in science is not as attractive as our business operations, engineering or administration, and the universities are becoming consumer-oriented. Critically comment.
3. In a globalised world, intellectual property rights assume significance and are a source of litigation. Broadly distinguish between the terms – copyrights, patents and trade secrets.

## 2013

1. Bringing out the circumstances in 2005 which forced an amendment to the section 3(d) in Indian Patent Law, 1970, discuss how it has been utilized by the Supreme Court in its judgement in rejecting Novartis' patent application for 'Glivec'. Discuss briefly the pros and cons of the decision.
2. What do you understand by Fixed-Dose drug Combinations (FDCs)? Discuss their merits and demerits.



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3. What is a digital signature? What does its authentication mean? Give various salient built-in features of a digital signature.
4. How does 3D printing technology work? List out the advantages and disadvantages of the technology.
5. What is an FRP composite material? H

