

❖ **India's push for semiconductors**

➤ **CONTEXT:** The Union Government has disbursed around Rs.1,645 crore in performance-linked incentives (PLI) for electronics manufacturers so far, as part of its efforts to bring in more of the electronics supply chain to India.

- The push for semiconductors, or integrated circuits, is far more pressing now, as these chips are found in practically every modern electrical appliance and personal electronics devices.
- More and more nations are trying to turn away from China's dominance in the space, following geopolitical pressures to de-leverage themselves from supply chain vulnerabilities.

➤ **What are Semiconductors?**

- A semiconductor sits between a conductor and an insulator and is commonly used in the development of electronic chips, computing components, and devices.
- It's generally created using silicon, germanium, or other pure elements.
- Semiconductors are created by adding impurities to the element.

➤ **Why are they important?**

- Semiconductors such as memory, processors chips are a backbone and a prerequisite for any endeavours in emerging technologies.
- From Artificial intelligence (AI) reliant smartphones to the adoption of the Internet of Things (IoT), 5G, or the automotive sector- nothing has been left untouched by the semiconductors.
- Semiconductors or the chip is used to power technologies that enrich the lives of consumers and make businesses run smarter, faster, and more efficiently.

- India's own consumption of semiconductors is expected to cross \$80 billion by 2026 and \$110 billion by 2030.

➤ **Why is the government encouraging semiconductor manufacturing?**

- Semiconductor fabrication units, or fabs, turn raw elements such as silicon into integrated circuits that are fit to be a part of practically all electronic hardware in the world. Fabs are highly capital-intensive undertakings, costing billions of dollars for large facilities.

- Semiconductor fabs of today may still be building circuits, but they require highly reliable and high-quality supply of water, electricity, and insulation from the elements, reflecting the high degree of precision, cost and capital needed to make the sophisticated circuits.

- Countries have spotted strategic value in cornering segments of the value chain for fabs, even as the sophistication and capital needed to run them have climbed to historic highs. According to a report by the **Semiconductor Industry Association (SIA)** China pulled ahead of Taiwan in 2022, in terms of share of global sales from fabs.

- It's not just India that is wary of this dominance. The U.S. passed the CHIPS Act in August 2022, providing upwards of \$280 billion in subsidies and investments to manufacturers opening fabs and making semiconductors in the U.S. This has been combined with restrictions and sanctions on the Chinese semiconductor industry.

➤ **Are fabs opening in India?**

- The government's Invest India agency estimates that electronics manufacturing as a whole will be worth \$300 billion by the financial year 2025–26.
- While facilities for assembling finished products have been growing in number steadily, fabs for making chipsets and displays, which are crucial parts of the manufacturing process for many electronics, are rarer. Recently Minister of Electronics and Information Technology Ashwini Vaishnaw said that the first semiconductor manufacturing fab would be announced in the coming weeks.

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➤ **Various chips and their uses**

- **Memory Chips:** From the perspective of functionality, semiconductor memory chips store data and programs on computers and data storage devices. Ex. RAM, ROM
- **Microprocessors:** They contain one or more central processing units (CPUs). Computer servers, personal computers (PCs), tablets, and smartphones may each have multiple CPUs.
- **Graphic Processing Units (GPUs):** It is capable of rendering graphics for display on an electronic device.
- **Integrated circuits (ICs):** An IC is a small chip of a semiconductor material that mounts an entire circuit on itself. It is very small when compared to the standard circuits, which are made of independent circuit components.

**THE GIST**

The push for semiconductors, or integrated circuits, is far more pressing now, as these chips are found in practically every modern electrical appliance and personal electronics devices. More and more nations are trying to turn away from China's dominance in the space, following geopolitical pressures to de-leverage themselves from supply chain vulnerabilities.

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- **Can semiconductors and finished products both be made in India?**
  - The SIA, which represents the bulk of semiconductor manufacturers in the U.S. and elsewhere, said in a report with APCO Worldwide in February 2023 that India should lean on its strength in the electronics manufacturing value chain.
  - So-called “foundry companies”, which turn silicon into semiconductors, require investments upwards of 35% of revenues, the SIA warned, and entry costs run into billions of dollars. But companies that specialise in **Outsourced Semiconductor Assembly and Test (OSAT)** are less expensive to set up, and generate better margins. The OSAT set-ups take care of the less capital-intensive parts of chipmaking, such as assembling the precise components that have already been manufactured, and running specialised tests to approve them.
  - A problem with many chip facilities in the traditional sense is that they tend to be captive units of large companies. While Foxconn’s assembly facilities are being touted as creating several jobs and inviting investment into India, some of its most valuable facilities globally are dedicated to building Apple devices, which account for a fraction of handsets sold in India.
- **What other advantage does India have?**
  - A large part of semiconductor manufacturing involves design and intellectual labour. India has an advantage here, as a large portion of semiconductor design engineers globally are either Indian or Indian-origin; chipmaking firms such as Intel and NVIDIA have large facilities in India that are already flush with Indian talent working on design problems.
  - This is an advantage that China is losing control over in the face of sanctions and an ageing population.
  - According to experts from USA without a sustainable pipeline of high calibre talent, China’s goals for the semiconductor sector, especially in terms of further indigenising the industry, will be not achievable.
- **Will India’s semiconductor ambition be limited?**
  - The opening of display and semiconductor fabs is one of the strategic and economic goals of India’s electronics manufacturing incentive programmes, and breaking new ground on ambitious plans connected to popular brands such as Apple is something that the Union government and States are equally eager to accomplish.
  - Overall, the government appears to be developing the parts of the ecosystem that have promise for sustainable growth and fiscal feasibility.
  - Minister of State for Electronics and Information Technology said at the Raisina Dialogue earlier march 2023 that the electronics value chain would have to be an international undertaking among nations with common values to be effective.
  - ✓ That is, if like-minded nations each specialise in different aspects of the semiconductor and electronics manufacturing process, and work together on assembly and distribution, that still solves the geopolitical problem of Chinese dominance without simply monopolising power with a different country. No country should “delude” themselves into thinking that they will be the “king of the hill.”

## HEALTH

- ❖ **World TB Day 2023: How India plans to achieve its target of eliminating tuberculosis by 2025**
- **CONTEXT: With India setting the target of eliminating tuberculosis by 2025, five years ahead of the global target, scientists are rushing to test newer vaccines and shorter courses of treatment, the government is focusing on active case finding, entrepreneurs have helped increase testing capacity, and the community at large has come forward to provide nutritional support to patients.**
  - On World TB Day 2023, Prime Minister Narendra Modi addressed the One World TB Summit.
  - This year’s theme ‘Yes! We can end TB!’.
- **How many TB cases are detected each year in India?**
  - Although India continues to be the largest contributor to global TB cases, there has been a decline in the number of cases in 2021. Reporting of TB cases also improved in 2021 – although it didn’t reach the pre-pandemic levels, it bounced back from the lows seen during the first year of the pandemic, according to the Global TB Report 2022.
  - The incidence of TB (new cases detected through the year ) reduced by 18% in 2021 over the 2015 baseline, dropping to 210 cases per lakh population as compared to 256 cases per lakh population. The incidence of drug-resistant TB also went down by 20% during the period from 1.49 lakh cases in 2015 to 1.19 lakh cases in 2021.
  - India accounts for 28% of all TB cases in the world, according to the Global TB Report 2022. There were 21.3 lakh cases detected in 2021 as compared to 18.05 lakh cases in 2020. The numbers are still lower than the 24.04 lakh cases reported before the pandemic in 2019, according to data from the government’s Ni-kshay portal that can help in real-time reporting of new TB cases.
  - A survey conducted across 20 states pegged the incidence at a higher 312 cases per lakh population.
- **What is India’s TB elimination target?**
  - Although elimination of Tuberculosis is one of the sustainable development targets to be achieved by 2030 by the world, India has set the target of 2025.
  - The national strategic plan 2017-2025 sets the target of India reporting no more than 44 new TB cases or 65 total cases per lakh population by 2025. The estimated TB incidence for the year 2021 stood at 210 per lakh

population. Achieving this target is a big task as the plan had envisaged an incidence of only 77 cases per lakh population by 2023.

- The programme also aims to reduce the mortality to 3 deaths per lakh population by 2025. The estimated TB mortality for the year 2020 stood at 37 per lakh population.
- The plan also aims to reduce catastrophic costs for the affected family to zero. However, the report states that 7 to 32 per cent of those with drug-sensitive TB, and 68 per cent with drug-resistant TB experienced catastrophic costs.
- The goals are in line with the World Health Organisation's End TB strategy that calls for 80% reduction in the number of new cases, 90% reduction in mortality, and zero catastrophic cost by 2030.

➤ **What is being done to try to achieve this target?**

- To achieve the TB elimination target of 2025, the government has taken several steps including looking for cases actively among vulnerable and co-morbid populations, screening for it at the health and wellness centres, and calling on the private sector to notify all TB cases.
- An online Ni-kshay portal has been set up to track the notified TB cases.
- The pandemic has led to improved access to the more accurate molecular diagnostic tests like CB-NAAT and TureNat that were also used to test for Covid-19. At present, there are 4,760 molecular diagnostic machines available, covering all districts of the country. In addition, 79 line probe assay laboratories and 96 liquid culture testing laboratories have been set up for the diagnosis of multi and extremely drug resistant TB.
- The government has also implemented a universal drug susceptibility test, meaning that antibiotic susceptibility of the mycobacterium is determined for all newly diagnosed cases. Earlier, the patients were started on first line treatment and were tested for drug resistance only if the therapy did not work. Conducting a drug susceptibility test at the outset ensures that the patients are given antibiotics that will work for them from the get go.
- In 2022, the government also launched the community engagement programme where Ni-kshay mitras can adopt TB patients and provide them monthly nutritional support. So far, 71,460 Ni-kshay Mitras have adopted about 10 lakh TB patients under the programme.

➤ **What are the improvements in treatment protocols?**

- Newer drugs such as Bedaquiline and Delamanid for the treatment of drug-resistant TB have been included in the government's basket of drugs provided free TB patients. These oral drugs can replace the injectable kanamycin that was associated with serious side effects like kidney problems and deafness.
- These new drugs have also been included in the new National List of Essential Medicines that gives the government power to regulate their market price as well.
- Researchers have also been studying shorter three- and four-month courses of anti-tubercular drugs, instead of the existing six-month therapy. Anti-tubercular drugs have to be taken for six months to over two years depending on the susceptibility of the mycobacterium. Long duration of treatment results in people dropping out in between, increasing their likelihood of them developing drug-resistant infections later.

➤ **Are there newer vaccines in the pipeline?**

- Nearly 100 years after the existing BCG vaccine was developed, researchers are on the lookout for newer ways of preventing tuberculosis infection. The BCG vaccine uses a weakened form of the TB bacteria to train the immune system. Although it can protect against severe forms of TB like the ones in the brain, the protection is not very good against the most common form of TB in the lungs.
- It offers limited protection to adults, it doesn't prevent people from getting the infection or re-activation of a latent infection.
- Trials are underway to test the effectiveness of a vaccine called Immuvac (which was initially developed to prevent leprosy) in preventing TB. The vaccine developed using mycobacterium indicus pranii has antigens ( the portions of a pathogen against which antibodies are developed ) similar to those of leprosy and TB bacteria.
- Researchers are also testing the vaccine candidate called VPM1002, which is a recombinant form of the BCG vaccine modified to express the TB antigens better. This results in better training of the immune system and protection against TB.
- Researchers are also studying whether the existing BCG vaccine booster shot should be given to household contacts of a person with active tuberculosis.

**PRELIMS**

1. **Guillotine**

➤ **CONTEXT: Amidst the ongoing stalemate in Parliament, some MPs said the government may guillotine the demands for grants and pass the Finance Bill without any discussion in the Lok Sabha.**

➤ **What is a guillotine?**

- A guillotine is an apparatus designed for efficiently carrying out executions by beheading.
- It consists of a large, weighted blade that is raised to the top of a tall, erect frame and released to fall on the neck of a condemned person secured at the bottom of the frame, executing them in a single, clean pass. The origin of the exact device as well as the term can be found in France.
- The design of the guillotine was intended to make capital punishment more reliable and less painful in accordance with new Enlightenment ideas of human rights. Prior to use of the guillotine, France had inflicted

manual beheading and a variety of methods of execution, many of which were more gruesome and required a high level of precision and skill to carry out successfully.

- The guillotine is most widely associated with the French Revolution, when it became popular with the revolutionaries meting out capital punishment to members and supporters of the Ancien Regime, including King Louis XVI and Queen Marie Antoinette. It was a method of execution in France until the country stopped capital punishment in 1981.

➤ **What does 'guillotine' refer to in legislative parlance?**

- In legislative parlance, to "guillotine" means to bunch together and fast-track the passage of financial business. It is a fairly common procedural exercise in Lok Sabha during the Budget Session.
- After the Budget is presented, Parliament goes into recess for about three weeks, during which time the House Standing Committees examine Demands for Grants for various Ministries, and prepare reports. After Parliament reassembles, the Business Advisory Committee (BAC) draws up a schedule for discussions on the Demands for Grants. Given the limitation of time, the House cannot take up the expenditure demands of all Ministries; therefore, the BAC identifies some important Ministries for discussions.
- It usually lists Demands for Grants of the Ministries of Home, Defence, External Affairs, Agriculture, Rural Development and Human Resource Development. Members utilise the opportunity to discuss the policies and working of Ministries.
- Once the House is done with these debates, the Speaker applies the "guillotine", and all outstanding demands for grants are put to vote at once. This usually happens on the last day earmarked for the discussion on the Budget. The intention is to ensure timely passage of the Finance Bill, marking the completion of the legislative exercise with regard to the Budget.

➤ **What is happening in this case?**

- With meetings called by presiding officers of the Lok Sabha and Rajya Sabha failing to end the stalemate between the government and Opposition, there is uncertainty over whether the Budget Session will continue till its scheduled date.
- On 22-3-23, for the seventh day in a row, proceedings in both the Houses were adjourned following chaotic scenes. Some MPs said the government may guillotine the demands for grants and pass the Finance Bill without any discussion in the Lok Sabha.

2. **How an MP's disqualification happens**

➤ **CONTEXT: Congress leader Rahul Gandhi was recently held guilty and sentenced to two years in jail by a Surat court in a 2019 defamation case. The conviction came over his remarks about the "Modi" surname. Significantly, the conviction triggers the process of his disqualification as a lawmaker.**

➤ **What did the Surat Court rule?**

- Chief Judicial Magistrate convicted Gandhi in a 2019 defamation case, for saying 'why do all thieves have the name Modi', and sentenced him to two years in prison. The remarks were made during a rally in Kolar, Karnataka, in the run-up to the 2019 Lok Sabha elections. "Why do all thieves, be it Nirav Modi, Lalit Modi or Narendra Modi, have Modi in their names," Gandhi had said in Hindi.
- Section 500 of the Indian Penal Code (IPC) prescribes for defamation a simple imprisonment for a "term which may extend to two years, or with fine, or with both."
- The court also approved Gandhi's bail on a surety of Rs 15,000 and suspended the sentence for 30 days to allow him to appeal.

➤ **Why does Gandhi face disqualification?**

Disqualification of a lawmaker is prescribed in three situations.

- **First** is through the Articles 102(1) and 191(1) for disqualification of a member of Parliament and a member of the Legislative Assembly respectively. The grounds here include holding an office of profit, being of unsound mind or insolvent or not having valid citizenship.
- **The second** prescription of disqualification is in the Tenth Schedule of the Constitution, which provides for the disqualification of the members on grounds of defection.
- **The third** prescription is under The Representation of The People Act (RPA), 1951. This law provides for disqualification for conviction in criminal cases.

➤ **What does the RPA say?**

There are several provisions that deal with disqualification under the RPA.

- Section 9 deals with disqualification for dismissal for corruption or disloyalty, and for entering into government contracts while being a lawmaker.
- Section 10 deals with disqualification for failure to lodge an account of election expenses. A key provision, Section 11, deals with disqualification for corrupt practices.
- Section 8 of the RPA deals with disqualification for conviction of offences. The provision is aimed at "preventing criminalisation of politics" and keeping 'tainted' lawmakers from contesting elections.
- ✓ First, disqualification is triggered for conviction under certain offences listed in Section 8(1) of The Representation of The People Act. This includes specific offences such as promoting enmity between two groups, bribery, and undue influence or personation at an election. Ex- Senior Samajwadi Party leader Azam

Khan lost his Uttar Pradesh Assembly membership in October 2022 after he was convicted in a hate speech case. Defamation does not fall in this list.

- ✓ Section 8(2) also lists offences that deal with hoarding or profiteering, adulteration of food or drugs and for conviction and sentence of at least six months for an offence under any provisions of the Dowry Prohibition Act.
- ✓ Section 8(3) states: “A person convicted of any offence and sentenced to imprisonment for not less than two years shall be disqualified from the date of such conviction and shall continue to be disqualified for a further period of six years since his release.”
- **How does the disqualification operate?**
  - The disqualification can be reversed if a higher court grants a stay on the conviction or decides the appeal in favour of the convicted lawmaker.
  - In a 2018 decision in ‘Lok Prahari v Union of India’, the Supreme Court clarified that the disqualification “will not operate from the date of the stay of conviction by the appellate court.”
    - ✓ Significantly, the stay cannot merely be a suspension of sentence under Section 389 of the Code of Criminal Procedure (CrPC), but a stay of conviction. Under Section 389 of the CrPC, an Appellate Court can suspend the sentence of a convict while the appeal is pending. This is akin to releasing the appellant on bail.
  - This means that Gandhi’s first appeal would be before the Surat Sessions Court and then before the Gujarat High Court.
- **How has this law changed?**
  - Under the RPA, Section 8(4) stated that the disqualification takes effect only “after three months have elapsed” from the date of conviction. Within that period, lawmakers could file an appeal against the sentence before the High Court.
  - However, in the landmark 2013 ruling in ‘Lily Thomas v Union of India’, the Supreme Court struck down Section 8(4) of the RPA as unconstitutional.

**ANSWER WRITING**

**Q. Throw light on the main ideals and thoughts of Bhagat Singh and their significance for Indian Society in the contemporary times.**

Bhagat Singh is a unique personality of Indian history, and his life is what legends are made of. He has left behind an intellectual legacy that sets him apart from others. He did not merely wish to free India from colonial bondage, but dreamed of an independent India, which would be egalitarian and secular. His vision of social and political justice continues to be relevant for Indian society in the present times.

Significance of Bhagat Singh’s ideals and thoughts for Indian society in contemporary times:

- Organising Indian society on equality and fraternity: Bhagat Singh had diagnosed that inequality in society can never bring real freedom. He also wrote about the universal brotherhood. In recent times, inequality and concentration of wealth have reached unprecedented proportions. For e.g.- The top 10% of the Indian population holds 77% of the total national wealth.
- Incompatibility of capitalism vis-à-vis sustainability: He was one of the pre-eminent socialist thinkers of his times and criticised the capitalist economy. Today, the crisis of financial capital is visible in the form of bank failures, for e.g.- Credit Suisse. Further, the climate crisis must be understood as one of the many elements of the deep crisis of capitalism.
- Rationalism and critical thinking: Bhagat Singh’s dedication to rationalism and critical thinking is still relevant today. He said that “Mere faith and blind faith is dangerous: It dulls the brain and makes a man reactionary”. His nationalism was based on the concept of progress, which allows for criticism, disbelief, and the ability to question established beliefs.
- Separation between politics and religion: Bhagat Singh had great faith in secularism. He strongly advocated that there should be a clear separation between state politics and religion. He considered communalism as big an enemy as colonialism. Therefore, identity politics and narrow sectarian interests in contemporary times need his secular ethos.
- Lessons for the youth: The post-independence political organisations started appropriating the freedom fighters for their personal benefit. This has led to the imposition of distorted ideologies on the youth. The lessons of courage, sacrifice and critical thinking from Bhagat Singh’s life are relevant for today’s youth.

Bhagat Singh gave his life to uphold the cherished ideals of socialism, equality, prosperity, and peace. He believed that if humanity is to survive; the system based on greed and divisions has to be replaced by a system based on cooperation and harmony. Therefore, in order to uphold the legacy of Bhagat Singh, India needs to fight and defeat the evils of inequality, caste system, communalism, and patriarchy.

**MCQs**

1. With reference to the semiconductors, consider the following statements:
  1. They are the materials which have conductivity between conductors and insulators.
  2. They are the basic building blocks of all modern electronics.
  3. Light-emitting diodes (LEDs) are semiconductor devices that emits infrared or visible light when charged with an electric current.

- Which of the statements given above is/are correct?  
a) 1 and 2 only      b) 2 and 3 only      c) 1 and 3 only      **d) 1,2 and 3**
2. With reference to Tuberculosis (TB), consider the following statements:  
1. It is caused by Mycobacterium tuberculosis.  
2. It is a communicable disease.  
3. Government of India has launched the Nikshay Portal to real-time reporting of new TB cases.  
Which of the above statement/s is/are correct?  
a) 1 and 2 only      b) 2 and 3 only      c) 1 and 3 only      **d) 1,2 and 3**
3. With reference to the vaccine called Immuvac consider the following  
1. The vaccine was developed to prevent leprosy  
2. It is one of the under trial vaccine for tuberculosis (TB) in India Indian launched by Council of Medical Research (ICMR).  
Which of the above statement/s is/are correct?  
a) 1 only      b) 2 only      **c) Both 1 and 2**      d) Neither 1 nor 2
4. A judicial case frequently seen in news in which the Supreme Court has ruled that any Member of Parliament, Legislator or Legislative Council who is found guilty of an offense and has been sentenced to imprisonment for a minimum period of two years, shall lose the membership of the House with immediate effect. In which of the following is case the above judgment has been given by Supreme Court?  
a) Sarla Mudgal Vs Government of India  
b) Om Prakash Vs Dil Bahar  
**c) Lily Thomas Vs Government of India**  
d) Indra Sawhney Vs Government of India
5. In context of Indian economy the term “Greenshoe option” often mentioned in news, with reference to this term consider the following statements:  
1. A greenshoe option is an under-allotment option in the context of initial public offering.  
2. It provides price stability and liquidity.  
Which of the statements given above is/are correct?  
a) 1 only      **b) 2 only**      c) Both 1 and 2      d) Neither 1 nor 2
6. With reference to GST Appellate Tribunal consider the following  
1. Like GST council GST Appellate Tribunal is a constitutional body  
2. The Tribunal has the power to impose penalties, revoke or cancel registrations, and take such other measures as may be necessary to ensure compliance with the GST laws.  
Which of the above statement/s is/are not incorrect?  
a) 1 only      **b) 2 only**      c) Both 1 and 2      d) Neither 1 nor 2
7. With reference to Sarus Crane consider the following  
1. It is the tallest flying bird in the world.  
2. It is classified as “Vulnerable” on the IUCN Red List  
3. It receives legal protection in India.  
Which of the above statement/s is/are correct?  
a) 1 and 2 only      b) 2 and 3 only      c) 1 and 3 only      **d) 1,2 and 3**
8. Samaspur Bird Sanctuary recently seen in news is located in which of the following state?  
**a) Uttar Pradesh**  
b) Meghalaya  
c) Tamil Nadu  
d) Kerala
9. In context of India’s defence system the name “Arudhra” is given to which of the following?  
**a) Medium Power Radar (MPR)**  
b) Intercontinental Ballistic Missile  
c) Anti Tank Guided Missile  
d) Anti Personnel Mines
10. Consider the following statements:  
1. According to the Indian Patents Act, a biological process to create a seed can be patented in India.  
2. In India, there is no Intellectual property Appellate Board.  
3. Plant varieties are not eligible to be patented in India.  
Which of the statements given above is/are correct?  
a) 1 and 3 only  
b) 2 and 3 only  
**c) 3 only**  
d) 1, 2 and 3