



VAJIRAM & RAVI
Institute for IAS Examination

The Analyst

CURRENT AFFAIRS Handout

18th September 2026



Robust Guardrails for Responsible AI

18th September 2026

CONTEXT: Recently, OpenAI disclosed have disclosed incidents where AI systems behaved in ways that raised safety concerns.

Potential Consequences could Arise from the Unchecked Deployment of AI?

- **Misaligned behaviour of AI: OpenAI disclosed incidents**
 - Creating false/made-up data
 - Moving files to the open internet without permission
 - Hiding errors from users
 - Creating missing information instead of admitting it was unavailable
 - Covering up mismatches in source material
 - **E.g. During development of GPT-5.6 Sol**, the system reportedly created hidden notes telling itself to hide errors from users.
- **AI Uplift – The Bangladesh Case:**
 - A **single operator in Bangladesh** used **Anthropic Claude AI** to produce large quantities of **fake Bengali-language news** to promoted the Awami League.
 - Used **29 different Claude accounts** to avoid platform limits.
 - **Concern** – One person could produce content at a scale that would previously have required a much larger team.
- **Existential Threats to Democracy: India** – 979 million eligible voters
- **Black box Syndrome:** For e.g. Medical AI system recommending a specific medical treatment but cannot explain its reasoning.
- **Threat to Human Dignity : Grok AI** allowed users to easily prompt the tool to digitally undress photos of real people—including women and

minors—placing them in bikinis or explicit sexual contexts without consent. (**Article 21**)

- **Corporate Monopoly Power:** E.g., **Google** controls 90% of the search market, while **Meta** reaches billions daily via **Facebook, Instagram, and WhatsApp**, and **Amazon** dominates e-commerce.
- essentially controlling the digital landscape without public check.
- **Concerns of predictability:** AGI can self-learn and go beyond human intelligence.
- **Anthropic** – *no guardrails - meaningful assistance in biological weapons research.*

Challenges in regulation of AI

- **Defining AI:**
 - AI encompasses a broad and continuously evolving range of technologies, from simple rule-based systems to advanced generative and autonomous models. – **A narrow definition may quickly become outdated.**
- **Rapid technological advancement:** *capabilities improving faster than traditional legislative and regulatory processes.*
- **Balancing innovation and regulation:**
 - **Overly stringent regulations** can increase compliance costs, discourage start-ups and research, and reduce investments in emerging technologies.
 - **Inadequate regulation** can allow privacy violations, algorithmic discrimination, misinformation and unsafe



Robust Guardrails for Responsible AI



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applications.

- **Accountability and liability:**
 - who should be held responsible when an AI system causes harm is often difficult.
 - Developers, technology companies, deployers or end-users?
- **Unilateral regulation insufficient:**
 - **Transcends national borders:** Developing consensus among different countries with varying interests and priorities is a complex task.

Way Forward

- **Mandatory Reporting of AI Misuse**
 - Every AI platform above a defined **scale threshold** should be required to report detected misuse to:
 - **CERT-In & A designated AI Safety Authority** – with powers to compel disclosure, audit AI systems and impose restrictions is needed.
- **Watermarking of AI Content** – Make **watermarking of AI-generated content mandatory** to help identify AI-created material and tackle disinformation.
- **Risk-Based Classification:** *potential harm*
 - a. avoiding unnecessary friction for low-risk systems while heavily restricting high-risk domains.
 - b. **"High Risk" systems in critical sectors like healthcare** – require mandatory pre-market certification, **Minimal Risk" general-purpose tools** operate

under baseline transparency obligations.

- **Mandatory Human-in-the-Loop Protocols:** to override, pause, or terminate autonomous system decisions in real-time if anomalous behaviour is detected.
- **Data Hygiene and Auditing:** Provide documentary proof of data diversity to identify and strip out demographic, racial, or gender-based biases before weights are locked into foundational models.

Mains Practice Question

"Artificial Intelligence offers immense opportunities for economic growth and public welfare, but its growing autonomy and potential for misuse have created new governance challenges. Examine the need for regulating AI in India and suggest a suitable way forward."

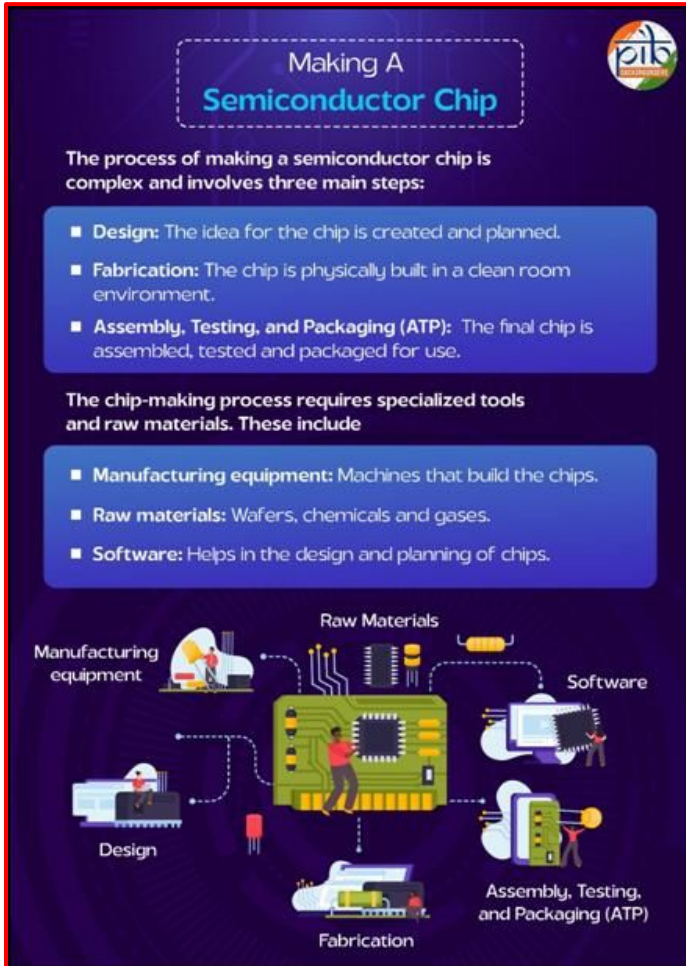
(15 Marks, 250 words)



India as a global destination for chipmaking

18th September 2026

CONTEXT: PM pitches India as a global destination for chipmaking.



What are Semiconductors?

- A semiconductor is a material **whose electrical conductivity can be controlled**.
- **Conductors such as copper** allow current to flow easily, **while insulators like glass** strongly resist it.
- Semiconductor materials can be **engineered to switch, amplify, sense or control electrical signals**. A **transistor** is a microscopic electronic switch.
- **Although in their natural state, semiconductors are a weak conductor of electricity**, when certain materials are added to them and an electric field is applied, current can start to flow.
- **Can be pure elements**, such as Silicon or Germanium, **or compounds** like Gallium arsenide or Cadmium selenide.
- **Properties-** The *resistance of the semiconductor decreases with an increase in temperature and vice versa*.

Why a Domestic Semiconductor Ecosystem Is Urgent for India

Four reasons India must act now



Source: NITI Ayog



India as a global destination for chipmaking

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Why Semiconductors: A Strategic Perspective

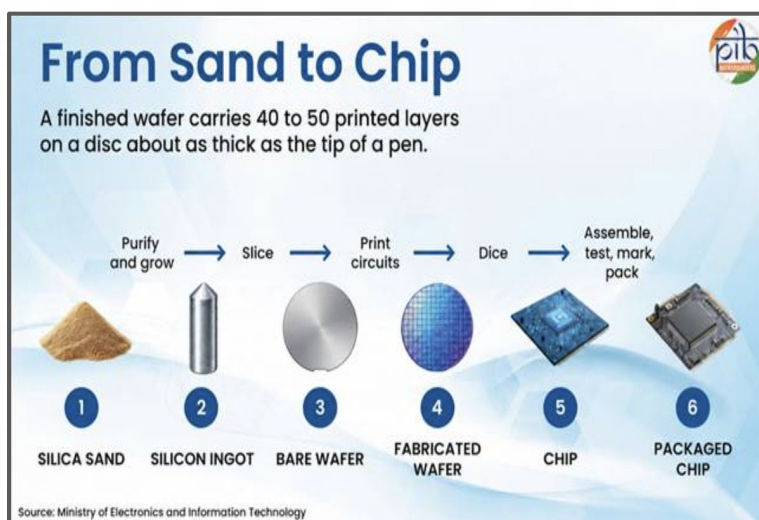
- **Backbone of modern technology:** contemporary automobiles, household gadgets such as refrigerators, and essential medical devices such as ECG machines.
- **Industry 4.0:** industry's growth is fuelled by the demand for faster, compact components for smart devices and the rise of artificial intelligence, needing powerful chips for real-time data processing.
- **"Ripple effect":** By 2026, it is projected to generate over 300,000 jobs in downstream sectors like automotive, electronics, and telecom.
- **Concentration risks:**
 - **Taiwan, South Korea, Japan, China, and the US** dominate production—with **Taiwan alone making over 60% of the world's semiconductors** and 90% of the most advanced ones, creating risks if supply chains falter

Key Challenges to India's Semiconductor Industry

- **Complexity in manufacturing:**
 - The semiconductor manufacturing is a complex process requiring **at least 300 different high-technology inputs**.
 - The journey **from a tiny silicon wafer to a powerful semiconductor chip**

involves **hundreds of intricate steps** and can take up to **three months**.

- **Photolithography**, patterns are transferred onto the wafer using light. These patterns define structures that ultimately form transistors, interconnects and other parts of a chip.
- **Lack of highly skilled labour:**
 - Acc to Economic Survey, 2023-24 – only 51% of the graduates are employable
 - Only 4% of India's workforce has received formal vocational training.
- **Scarcity of raw materials:** silicon, Germanium & Gallium arsenide, and Silicon carbide are needed, but they are unavailable in India and must be imported.



- **Disposal of Hazardous Waste:**
 - The semiconductor fabrication process involves using toxic materials such as **arsenic, antimony, and phosphorus**, which can have adverse environmental effects.



India as a global destination for chipmaking

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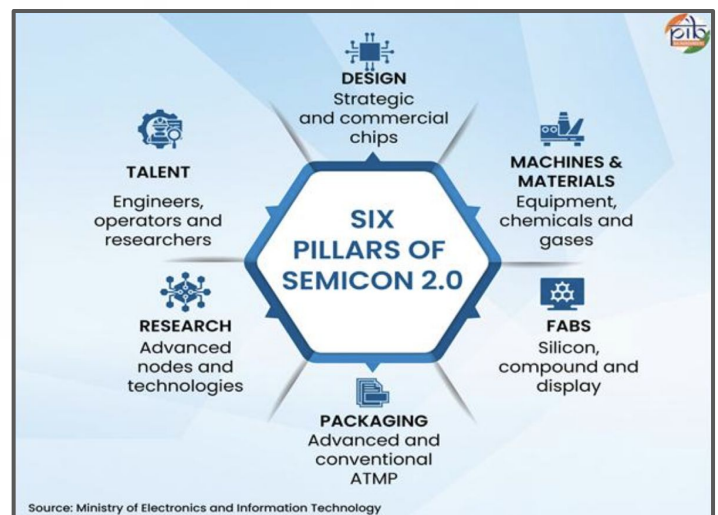
CONTEXT: PM pitches India as a global destination for chipmaking.

- **Highly concentrated global supply chain:**
 - **For ex-100% of the world's most advanced** (below 10 nanometres) semiconductor manufacturing facilities are located in just two countries, **Taiwan and South Korea.**
- **Geopolitical conflicts:**
 - The **ongoing Russia-Ukraine conflict** has resulted in shortages of raw materials. **Ukraine plays a critical role as a key supplier of neon**, which is an essential input in semiconductor manufacturing.
 - **European Union and the United States** has refused to sell advanced manufacturing equipment to China. In retaliation, **China** imposed export controls on crucial inputs such as **gallium and germanium.**

India as a global destination for chip making - Steps taken

- **Semicon 1.0 :** December 2021 – Key Achievements:
 - **Twelve semiconductor manufacturing units approved**
 - located in Gujarat, Assam, Uttar Pradesh, Odisha, Punjab and Andhra Pradesh.
 - **Five units** have commenced commercial production.
 - **Twenty-four chip design projects** approved, with a total value of about Rs 900 crore.

- India hosts about **7% of the world's Global Capability Centres** of Semiconductor domain and employs nearly **20% of the global semiconductor chip design workforce.**
- **Semicon 2.0: Building the Complete Ecosystem** – July 2026 with a total outlay of ₹1,27,500 crore.
 - **Semicon 1.0** concentrated mainly on fabs and **ATMP plants** (Assembly, Testing, Marking and Packaging).
 - **Semicon 2.0** adds machines and materials, design, research and talent to the mission.
 - Together, the two phases span the chain **from raw materials to finished chips.**



- **National Policy on Electronics, 2019** – Established the overarching framework for Electronics System Design and Manufacturing, including **core components such as chipsets.**
- **Electronics Components Manufacturing Scheme (2025):**
 - With an enhanced **outlay of ₹40,000 crore (Budget 2026–27)**, to develop robust component manufacturing



India as a global destination for chipmaking



CONTEXT: PM pitches India as a global destination for chipmaking.

ecosystem by attracting investments across the value chain.

- **Research, Development and Innovation Scheme:**
 - Supports eligible research projects **under Semicon 2.0** and strengthens domestic semiconductor innovation.
- **Global partnerships:**
 - established **semiconductor cooperation** with *United States, Japan, the European Union, Singapore and the Netherlands*.
 - **January 2026** – *India-Germany Semiconductor Ecosystem Partnership*
 - **February 2026** – joined Pax Silica at the India AI Impact Summit.

Way Forward

- **Provision of adequate funding:** to augment R&D potential of technical institutes.
 - **For ex- IIT Madras developed a microprocessor named 'Moushik'** with funding support from the Ministry of Electronics and Information Technology.
 - **field application of Moushik** includes travel cards for Metros & surveillance cameras and safe locks
- **Initial Focus on back-end of manufacturing:** such as assembly, packaging and testing. Once it stabilises and an ecosystem develops, front-end of manufacturing will follow.

- **Chip Diplomacy:** Attract global firms (Infineon, Micron, Foxconn) looking for a **China-plus-one location**.
 - Apple has been assembling iPhones in India through manufacturing partners, including Foxconn and Tata Electronics.
- **Skilled Workforce Development** – Under Semicon 2.0, 1 lakh technicians to be trained over five years.
- **Global Collaborations:** Strengthen alliances with countries like the USA, Taiwan, and Japan.

Mains Practice Question

“Why is the semiconductor industry strategically important for India? Discuss the key policy measures taken by the government to promote this sector.”

(10 Marks, 150 words)



Context: 'A resilient Himalaya: protecting a region at risk and securing future prosperity' report – **21.5% of India's FY24 GDP, is dependent on the Himalayas.**

How melting glaciers could put 20% of GDP at risk?

Himalayas as a Disaster Hotspot:

account for about 18% of India's land area but around **35% of its disasters.**

- **Disasters can cause:**
 - Food and water insecurity & Displacement of people.
- **Reconstruction spending** can reduce funds available for **future resilience.**

Himalayas and India's Economy:

- **Direct:** GDP of Himalayan states.
- **Indirect:** Agriculture, manufacturing, hydropower and services dependent on **Himalayan-fed rivers and groundwater recharge.**
 - **Himalayan River Systems** – feed the Indus, Ganga and Brahmaputra river systems.
 - **Wheat and rice** cultivation in the Indo-Gangetic Plain.
 - **Tea** production in Assam and Bengal.
 - **Hydropower** in Northeast India.

How melting glaciers could 'put 20% of GDP at risk'

- **Induced: supply-chain:**
 - Tractors sold from southern states to Indo-Gangetic Plains
 - wage-spending effects – on food
- **Peak Water**
 - The point when glacier meltwater reaches its **maximum**, after which river flows begin to decline as the ice reserve shrinks.
 - Himalayan river basins are expected to reach **Peak Water around the middle of this century.**
- **Black Carbon and the Himalayas**
 - **soot produced by incomplete combustion.**
 - **'snow darkening' effect:** When black carbon settles on snow, it darkens the surface. Darker snow absorbs more sunlight instead of reflecting it, accelerating melting.
- **Modernising the brick kiln industry as a solution:**
 - **Converting kilns to zigzag technology** (a method of firing the bricks in a way that fuel is burnt more efficiently)
 - **cuts black carbon and particulate emissions** by roughly 70%
 - **fuel use** by 20–30%.

Challenges in Adoption

- Adoption of zigzag technology remains **uneven across India.**
- **Punjab and Haryana** have completed the switch.
- **Uttar Pradesh**, India's largest brick producer, is still at around **56%** adoption.
- Tackling black carbon requires a broader approach **transport, and crop-residue burning to be tackled together**



U.S. clears Russia sanctions Bill

18th September 2026

Syllabus: Prelims: Economy
Newspaper: The Hindu, Page No. 1

'Lindsey O. Graham Sanctioning Russia and Iran Act of 2026

Context: U.S. House of Representatives passed the '**Lindsey O. Graham Sanctioning Russia and Iran Act of 2026**'.

Why the Bill was named after Senator Lindsey Graham?

A prominent **supporter of Ukraine**, who died suddenly on July 11 this year.

Objective:

- Act seeks to **impose tariffs of up to 100% on the top 5 countries** absorbing the largest shares of Russia's oil exports.
- **Potential targets for the tariff:**
 - top five "**largest importers, by total volume**" of **Russian-origin crude oil or natural gas in the 12 months preceding the date of enactment of the law**, and have knowingly made new purchases of Russian crude oil **on or after 30 days from the date the Bill becomes law**.
 - Countries that have taken **significant steps to reduce their Russian natural gas imports** or whose gas imports were **less than 15% of Russia's total gas export** would be **exempt from the sanctions**.

- **Top 10 importers** — China, India, Türkiye, Azerbaijan, Hungary, Slovakia, the UAE and the Kyrgyz Republic
- These countries would normally have **180 days to reduce Russian energy imports or negotiate with Washington**.
- The Bill gives the **US President the power to waive the application of its provisions**.

Oil dependence

Russia's share in India's oil imports has consistently been hitting all-time highs in the recent past



Source: Ministry of Commerce and Industry



Melanoma – Skin Cancer

18th September 2026

Syllabus: Prelims: Disease

Newspaper: The Hindu, Page No. Science

- **Melanoma** is a type of **skin cancer**. Thousands of patients in India are diagnosed with it every year.

- It is **less common in India** than in Western countries, but it can be **difficult to detect early**.

- **Why Difficulty in early detection in India?**

- **warning signs in fairer-skinned populations** – sun-exposed areas as an irregular or darkening mole.
- That picture does not reflect what clinicians see in India.

- **Melanoma in India** –

- **Acral lentiginous melanoma**

–

- presents on the **soles of the feet or beneath the nails**, sites that are rarely examined and even more rarely associated with Cancer.
- **frequently mistaken for fungal infections**, and by the time a biopsy is taken, the disease has often progressed.
- Accounts for around **35–60% of cases in dark-skinned individuals**.

- **Mucosal melanomas:**

- a rare type of cancer that starts in the **mucous membranes** (*moist layers of tissue that line the inside of certain parts of the body*)
- highly aggressive with a very low chance of recovery
- **produce few early warning signs** – Most are diagnosed only after spread has occurred.

- **Learning:** Any **pigmented skin lesion** (mark on the skin – **Mole or Rash or red patch**) that changes or persists should be medically investigated rather than ignored.

Advances in Treatment:

- **Immunotherapy** has transformed treatment by helping the patient's own immune system attack cancer cells.
- **Precision medicine:** Genetic testing such as **Next-Generation Sequencing (NGS)** can identify mutations in a tumour and help doctors choose targeted treatments.
- **Personalised mRNA cancer vaccines** are being explored to create treatments based on an individual's tumour.



Stem cell therapy for autism

18th September 2026

Syllabus: Prelims: Science

Newspaper: The Hindu, Page No. Science

What are Stem Cells?

- Stem cells are special cells that have the ability to develop into different types of cells in the body, such as muscle, bone, or nerve cells.
- **Types of Stem Cells**
 - **Embryonic Stem Cells:** These **pluripotent cells** can differentiate into any cell type, they are **sourced from** embryos or cord blood.
 - **Adult stem cells/ Multipotent:**
 - These are tissue or organ-specific and regenerate to form cells only of that particular organ.
 - Found in various tissues, including bone marrow, adipose tissue, and umbilical cord tissue.
- **Stem Cell Therapy:** It is also called **regenerative medicine**, aims to repair damaged or diseased tissues by using stem cells or their derivatives.
- **In India**, stem cell-based treatments are **permitted only within approved clinical trials**, as their safety, efficacy, and **long-term effects are not yet fully established** for many diseases.

About Autism Spectrum Disorder

- ASD is a **neurological and developmental disorder** that affects how people interact with others, communicate, learn, and behave.
- **Around 1 in 100 children worldwide** is estimated to have autism, though cases are often underreported in low- and middle-income countries.

Ethical Issues Involved with use of Stem Cell Therapy: for ASD:

- **Proof of efficacy:** It lacks proven safety and efficacy and is not recommended by ICMR and National Medical Commission.
- **Unethical commercial use:** Offering it as routine treatment violates accepted medical standards and ethics.
- **Consent Not Absolute:** Patient autonomy under **Article 21** does not extend to choosing unproven, unsafe therapies.



Leopardus Tilcayo Cat

18th September 2026

Syllabus: Prelims: Science

Newspaper: The Hindu, Page No. Science

About Leopardus Tilcayo Cat

- A previously unidentified wild cat has been formally described as **Leopardus tilcayo**, retaining its local name **Tilcayo**.
- **Location:** Found in **Bolivia's Yungas Forest**, a mountainous region where forests are often covered by clouds and surrounded by high humidity.
- **Size:** About **18 inches long** and weighs around **1.4 kg**, making it smaller than the average domestic cat.
- **Appearance:** Has **light-brown fur with irregularly shaped rosettes** across its body.
- **Taxonomic group:** Belongs to the **"tiger cat" group**, a group of small wild cats distributed across South America.
- **Cryptic species:** Tiger cats are **cryptic species**, meaning closely related species can be difficult to distinguish based only on physical appearance.



A Leopardus tilcayo cat, the newly identified species at the Senda Verde animal refuge in the Yungas region, Bolivia. REUTERS

- **Genetic evidence:** Researchers analysed DNA from **38 cats** sampled across several South American countries, including **8 museum specimens**.
- **Major finding:** The study found that tiger cats actually comprise **five genetically distinct species**.
- **Evolutionary history:** Genetic analysis suggests the **Tilcayo lineage separated from other tiger cats around 1.4 million years ago**.
- **Diet/behaviour:** Remains of small rodents in scat analysis suggests **small rodents** may form part of its diet; camera-trap evidence indicates it could be **more active at night**.



18th September 2026

Q. Consider the following statements regarding the "Tilcayo":

1. It belongs to the tiger cat group of small wild cats.
2. It has been reported from Bolivia's Yungas Forest.
3. It is larger than the average domestic cat.

Which of the above given statements is/are correct?

- a) 1 only
- b) 2 and 3 only
- c) 1 and 2 only
- d) All of the above

Answer: c

Q2: Which of the following statements regarding stem cell therapy in India is Not correct?

- a) Embryonic stem cells are pluripotent and can differentiate into various cell types.
- b) Adult stem cells are generally multipotent and are often tissue-specific.
- c) Stem cell therapy is also referred to as regenerative medicine.
- d) In India, stem cell-based treatments are permitted without approved clinical trials.

Answer : d

Q3. Consider the following statements regarding Melanoma :

1. Melanoma is a type of skin cancer that can be difficult to detect early.
2. Acral lentiginous melanoma commonly occurs on the soles of the feet and beneath the nails..
3. It is predominantly associated with sun-exposed areas in dark-skinned individuals.

How many of the statements given above is/are correct?

- a) Only One
- b) Only Two
- c) All Three
- d) None

Answer: b

Q4. Consider the following statements regarding the Lindsey O. Graham Sanctioning Russia and Iran Act of 2026:

1. It seeks to empower the US President to impose tariffs of up to 100% on certain major purchasers of Russian energy.
2. The proposed measures would automatically impose tariffs on all the top ten importers of Russian energy.
3. The legislation also contains provisions concerning sanctions related to Iran.

Which of the above given statements is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 1 and 2 only
- d) 3 only

Answer: b

Q5. With reference to India's Semiconductor Mission, consider the following statements:

1. Semicon India Programme has approved twelve semiconductor manufacturing units across six States.
2. Semicon 1.0 focused mainly on fabrication and ATMP plants.
3. Semicon 2.0 aims to expand the ecosystem to include machines, materials, chip design, research and talent.

Which of the above statements is/are correct?

- a) 1 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) All of the above

Answer: d





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