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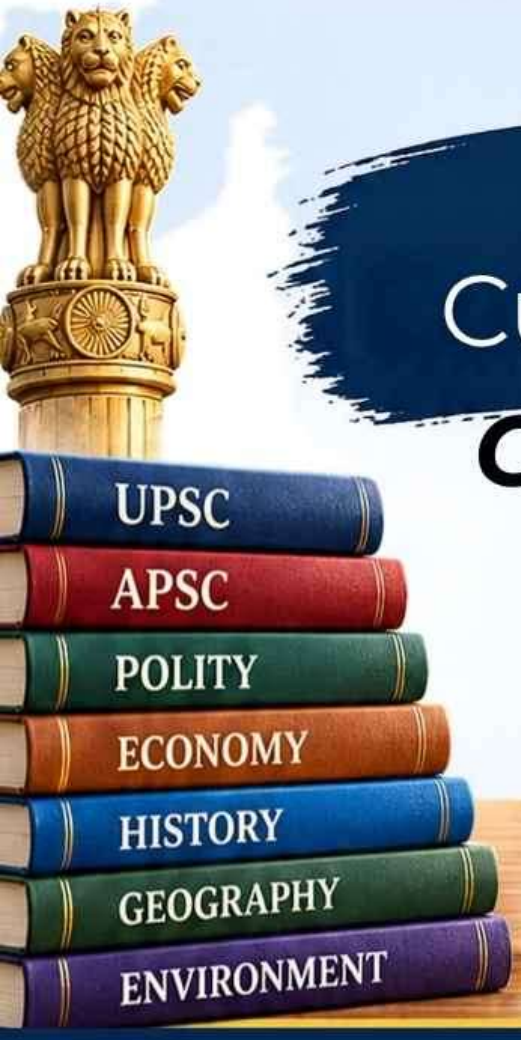
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Environment (GS Paper 3)

CAFE-III Norms



Why in News?
The Ministry of Power has notified **CAFE-III norms**, which will come into effect from **1 April 2027 to 31 March 2032**.
They aim to improve passenger-vehicle fuel efficiency by about **16.7%** and reduce **CO_2 emissions and fossil-fuel consumption**

What are CAFE Norms?

- **CAFE = Corporate Average Fuel Economy**.
- Introduced in **2017** under the **Energy Conservation Act, 2001**.
- Regulates the **average fuel consumption and CO_2 emissions** of a manufacturer's entire passenger-vehicle fleet.
- Unlike vehicle-specific emission norms, CAFE evaluates the **weighted average performance of the fleet**.
- **CAFE-II:** effective from 2022.
- **CAFE-III: 1 April 2027–31 March 2032**, covering **M1-category passenger vehicles** manufactured/imported for sale in India.

Key Features of CAFE-III

Feature	CAFE-III
Implementation	2027–28 to 2031–32
Target	~**16.7% improvement** in fuel efficiency
Reference weight	**1,229 kg**
Previous reference weight	1,082 kg
Baseline consumption target	3.996 L/100 km → **3.3273 L/100 km**

Feature	CAFE-III
Compliance	**3+2 year blocks**
Focus	Fuel efficiency + CO_2 reduction

Formula:

Annual average fuel consumption = a × (W − b) + c

Where:

- **W** = weighted average unladen weight of eligible vehicles
- **b** = reference weight (**1,229 kg**)
- **a** = weight adjustment factor
- **c** = baseline fuel-consumption target

Small Cars Issue

- Draft CAFE-III proposed an additional **3 g CO_2/km relaxation** for petrol cars below **909 kg**.
- Final framework **removed this separate concession**.
- Instead, the revised weight-adjustment formula gives relatively favourable targets to lighter fleets.
- **No separate regulatory category** exists for cars below 909 kg.

UPSC significance: Shows the policy challenge of balancing **decarbonisation, industry competitiveness and affordability of small cars**.

EV & Alternative-Fuel Incentives

CAFE-III uses **super credits/volume derogation factors** to encourage cleaner technologies:

- **BEV & REEV:** factor **3**
- **Plug-in hybrid & strong hybrid flex-fuel:** factor **2.5**
- EV electricity consumption converted into petrol-equivalent consumption using **0.1028** conversion factor.
- **Carbon Neutrality Factors (CNFs):**
  - E20 or higher ethanol-blended petrol: **8%**
  - Flex-fuel ethanol vehicles: **22.3%**

Concept: A cleaner vehicle can receive greater weight in fleet-average compliance calculations, encouraging manufacturers to shift towards low-emission technologies.

Flexible Compliance Mechanism

CAFE-III introduces a **credit–debit system**:

- Better-than-required performance → **credits**
- Under-performance → **debits**

- Credits can be:
  - carried forward within compliance blocks
  - traded between manufacturers
- Deficit manufacturers can purchase credits from **BEE**.

Buyout price:

- 2027–28: **₹2,500 per g CO_2/km**
- Increases by ₹500 annually
- 2031–32: **₹4,500 per g CO_2/km**

Technology Incentives

Specified technologies can claim efficiency improvements, including:

- Start-stop systems
- Tyre-pressure monitoring
- Regenerative braking
- Efficient transmissions
- Motor-generators
- Efficient alternators
- LED lighting
- Advanced glazing
- Electric water pumps
- Improved air-conditioning

Maximum technology-related claimed reduction: 9 g CO_2/km.

Exemption

Manufacturers producing/importing **fewer than 1,000 eligible vehicles** during a reporting period are exempt from specific CAFE targets but must report actual fleet-average fuel consumption.

Why is CAFE-III Important?

Environmental

- Reduces **CO_2 emissions** and fuel consumption.
- Supports India's **decarbonisation** goals.
- Promotes cleaner mobility.

Energy Security

- Better fuel efficiency → lower petroleum demand.
- Can reduce India's dependence on **imported crude oil**.

Economic/Industrial

- Encourages investment in:
  - EVs
  - hybrids
  - flex-fuel vehicles
  - fuel-efficient technologies.
- Provides greater **regulatory certainty** to automobile manufacturers.

Consumer

- Encourages availability of cleaner vehicle technologies.
- However, compliance costs may affect **vehicle prices and affordability**, particularly in the small-car segment.

CAFE vs BS Emission Norms

CAFE Norms	Bharat Stage (BS) Norms
Fleet-average fuel efficiency/CO_2	Pollutant emission limits
Manufacturer-level approach	Vehicle/engine-level emission standards
Focus on fuel economy & CO_2	Focus on pollutants such as NOx, PM, CO, HC
Encourages fleet-wide efficiency	Controls tailpipe emissions

Challenges:

- Higher technology/compliance costs
- Potential impact on vehicle affordability
- Different technological capabilities among manufacturers
- Need for reliable testing and monitoring
- Charging infrastructure and clean electricity availability for EVs
- Balancing industrial competitiveness with environmental objectives

Conclusion:
CAFE-III combines **regulation, market-based compliance and technology incentives** to improve the efficiency of India's passenger-vehicle fleet. Its effectiveness will depend on robust monitoring, technological innovation and maintaining affordability.

Economy (GS Paper 3)

Foreign Investment in India



Why in News?

A recent **US Department of State report on India's investment climate** highlighted regulatory uncertainty, sector-specific restrictions, corruption risks and import-related barriers faced by foreign investors.

India's FDI Framework

- **FDI (Foreign Direct Investment):** Investment by a foreign entity/person with a long-term interest and significant influence in an Indian business.
- India allows **up to 100% FDI through the automatic route in many sectors**.
- Some sensitive sectors require **government approval** and/or additional conditions.
- Examples: **multi-brand retail, defence, private banking, pharmaceuticals, print/digital media and satellites**.

Major Concerns Highlighted

- **Regulatory uncertainty:** Frequent/unclear changes can increase investment risk.
- **Import barriers:** Authorisation requirements for specialised used equipment such as servers, semiconductors and testing equipment.
- **FDI–FPI restrictions:** Rules can create difficulties for investors using both routes.
- **Corruption risks:** Reported concern among some foreign businesses.
- **Tax differences:** The report highlighted a higher effective tax burden for foreign banks compared with domestic banks.

Importance of Foreign Investment

FDI can contribute to:

- Capital formation
- **Technology transfer**
- Employment generation
- Managerial expertise
- Integration into **Global Value Chains (GVCs)**
- Higher productivity and competitiveness

Ease of Doing Business

A favourable investment climate requires:

- Predictable regulations
- Transparent approvals
- Efficient dispute resolution
- Consistent taxation
- Strong corporate governance
- Transparent trade procedures
- Anti-corruption mechanisms

National Single Window System (NSWS): Provides businesses access to multiple Central and State approvals through a common digital platform.

Key Policy Challenge

India needs to balance:

Investment Facilitation ↔ Strategic Regulation

Regulation may be necessary for **national security, financial stability, sensitive technologies and strategic sectors**, but excessive procedural complexity can discourage investment.

Prelims MCQ

Q. Consider the following statements regarding foreign investment in India:

1. India permits 100% FDI through the automatic route in every sector.
2. FDI can contribute to technology transfer and integration into global value chains.
3. The National Single Window System aims to facilitate access to multiple government approvals.

Which of the statements given above is/are correct?

A. 1 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answer: B. 2 and 3 only

Explanation: India does **not** permit 100% automatic FDI in every sector; certain sectors have restrictions or require government approval. Foreign investment can facilitate technology transfer and GVC integration, while NSWS facilitates multiple approvals through a common platform.

Geography (GS Paper 1)

Sea-Level Rise



Why in News?

The **UN General Assembly adopted its first-ever declaration on sea-level rise**, recognising its threat to vulnerable coastal and island states and supporting adaptation, human rights and continuity of statehood.

Key Facts

- Global sea-level rise increased from **2.1 mm/year (1993–2002)** to **4.7 mm/year (2015–2024)**.
- **2024:** sea level rose about **6 mm**, the highest annual increase recorded.
- By 2100:
  - Low-emission pathway → about **38 cm** rise.
  - High-emission pathway → up to about **77 cm**.
- Sea levels are expected to continue rising for **centuries to millennia**, even after net zero.

Legal Significance

The declaration supports a **"presumption in favour of continued statehood"** for island states affected by sea-level rise.

This means loss or uninhabitability of territory need not automatically end:

- Sovereignty
- Statehood
- UN membership
- Maritime rights

Important maritime zones:

- **Territorial Sea:** 12 nautical miles (~22.2 km)
- **EEZ:** up to 200 nautical miles (~370 km)

Impact on India

India has:

- About **11,098 km coastline**
- **1,298 offshore islands/islets**
- Important island territories: **Lakshadweep** and **Andaman & Nicobar Islands**

Stable maritime boundaries are therefore important for India's **sovereignty, EEZ and marine resources**.

India's Coastal Vulnerability

- Around **one-third of India's mainland shoreline** showed erosion during 1990–2016.
- Nearly **400 km** was retreating by more than **5 m/year**.
- **West Bengal** has particularly severe coastal erosion.
- **Sundarbans:** Ghoramara Island reduced from about **7.2 sq km (1972)** to **3.6 sq km (2022)**.

Policy Gap in India

Under the **Coastal Regulation Zone (CRZ) framework**, restrictions are largely linked to the present **High Tide Line (HTL)**.

Problem: Climate change and erosion continuously shift the coastline, so today's HTL may not represent tomorrow's risk.

The **Survey of India hazard line** incorporates factors such as shoreline change and sea-level rise, but its use in regulation remains limited.

Climate Migration

Sea-level rise can cause **slow-onset displacement**.

India currently lacks a comprehensive legal framework specifically addressing people displaced gradually by coastal erosion and sea-level rise.

Example: Fiji incorporated planned relocation into its **Climate Change Act, 2021**.

What Should India Do?

- Integrate **future sea-level projections** into coastal planning.
- Use hazard lines for development regulation.
- Develop a legal framework for **climate-induced displacement**.

- Provide relocated people with **land rights, housing and livelihood support**.
- Strengthen coastal ecosystems such as **mangroves and wetlands**.
- Push for greater **international climate finance**.

Prelims Question

Q. Consider the following statements regarding sea-level rise:

1. The Territorial Sea extends up to 12 nautical miles from the baseline.
2. The EEZ can extend up to 200 nautical miles from the baseline.
3. Sea-level rise can have implications for the continued statehood of vulnerable island countries.

Which of the statements given above is/are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: D. 1, 2 and 3

Geography (GS Paper 1)

Southwest Monsoon 2026

Context

India's 2026 Southwest Monsoon ended with a 12.6% rainfall deficit, with IMD forecasting below-normal rainfall in October.

Key Facts

- Total rainfall: 759.4 mm
- Normal rainfall: 868.6 mm
- Deficit: 12.6%
- Rainfall as % of LPA: 87%
- Lowest monsoon rainfall since: 2015 (758.2 mm)
- East & Northeast India: 1,017.1 mm — driest monsoon since 1901
- October 2026: Rainfall likely below 85% of LPA
- October LPA: ~75.4 mm
- Major climatic factor: Strengthening El Niño
- Southwest monsoon withdrawal expected to be completed in early October, followed by the Northeast Monsoon.

Why Important?

- Agricultural stress
- Water shortages
- Reservoir depletion
- Higher drought risk
- Impact on food prices and rural incomes

Northeast India is particularly significant: The region experienced its driest monsoon since 1901, highlighting the vulnerability of the region to changing rainfall patterns.

Prelims Pointers

1. Southwest Monsoon: June–September

2. Northeast/Retreating Monsoon: Mainly October–December

3. El Niño: Abnormal warming of the central/eastern tropical Pacific Ocean.

4. LPA: Long Period Average, used as a benchmark for comparing seasonal rainfall.

5. East & Northeast India: 2026 recorded its driest monsoon since 1901.

Prelims Question

Q. With reference to India's 2026 Southwest Monsoon, consider the following statements:

1. India received 12.6% less rainfall than the normal monsoon rainfall.

2. East and Northeast India recorded their driest monsoon since 1901.

3. The Southwest Monsoon normally occurs from October to December.

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

Answer: A

Mains Question

Q. The Indian monsoon is increasingly exhibiting significant spatial and temporal variability. Discuss the major factors responsible for monsoon variability and examine its implications for India's agriculture and water security. (150 words)

International Relations (GS Paper 2)

India–Canada CEPA (Comprehensive Economic Partnership Agreement)



Key Points

- Fifth round of India–Canada CEPA negotiations: October 5–9, 2026, in Ottawa.
- Both sides **aim to conclude negotiations by the end of 2026.**
- **CEPA (Comprehensive Economic Partnership Agreement): A trade agreement that reduces/eliminates customs duties and facilitates services, investment and movement of skilled professionals.**

- **Indian diaspora in Canada: about 2.9 million.**
- Indian students in Canada: over 4.27 lakh.

- **India's major exports: pharmaceuticals, iron & steel, seafood, cotton garments, electronics and chemicals.**
- **Major imports from Canada: pulses, coal, fertilisers, paper and crude petroleum**.
- **India's services exports include telecommunications, computer & information services and business services.**

Why is CEPA important?

CEPA → Lower trade barriers → More exports/imports → Investment → Services & skilled mobility → Stronger economic ties

Prelims Question

Q. Consider the following statements regarding CEPA:

1. It can involve reduction or elimination of customs duties.

2. It can facilitate movement of skilled professionals.

3. It is limited only to trade in goods.

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

Answer: A. 1 and 2 only

Mains Question

Q. Discuss the economic significance of the proposed India–Canada CEPA for bilateral trade, investment and services. Also examine the challenges in strengthening India–Canada economic relations.

Environment & Ecology (GS Paper:3)

Green Cess on Vehicle Transfer



Key Points

- **The Assam State Cabinet approved a ₹3,000 green cess on transfer of ownership of vehicles more than 3 years old.**
- **Purpose:** To support afforestation and conservation activities.
- **Exemptions:**
- **Electric Vehicles (EVs)**
- **CNG vehicles**
- **Two-wheelers and three-wheelers**
- **Transfer due to the death of the vehicle owner**
- The Cabinet also approved 12% reservation for Assam-domiciled ex-Agniveers in selected recruitment categories.
- **Dalmia Bharat Green Vision Ltd. will set up two clinker manufacturing units at Lanka and Umrangsu, involving an investment of about ₹10,200 crore.**

Why Important?

Green cess → Revenue → Afforestation & conservation → Environmental sustainability

Prelims Question

Q. With reference to Assam's recently approved green cess, consider the following statements:

1. It applies to the transfer of ownership of vehicles more than three years old.

2. Electric vehicles are exempted from the cess.

3. The cess applies to all two-wheelers and three-wheelers.

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

Answer: A. 1 and 2 only

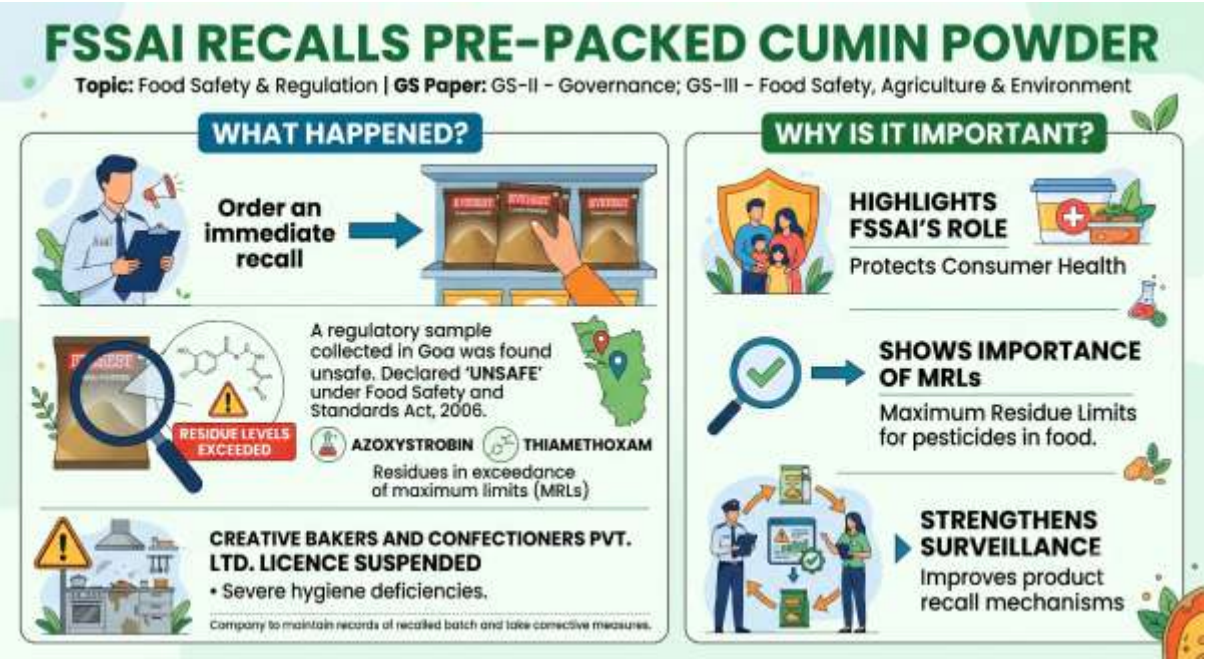
Mains Question

Q. Discuss the role of environmental cess as an instrument for promoting sustainable development. With reference to Assam's green cess on vehicle ownership transfer, examine its potential benefits and challenges.

(150 words | 10 marks)

Governance (GS Paper: II)

FSSAI Recalls Pre-packed Cumin Powder



What happened?

- **Food Safety and Standards Authority of India (FSSAI) ordered Everest Food Products Pvt. Ltd. to immediately recall a batch of pre-packed cumin powder.**
- A regulatory sample collected in Goa was found unsafe.
- **Azoxystrobin and Thiamethoxam pesticide residues exceeded the prescribed maximum limits.**
- **The sample was declared "unsafe" under the Food Safety and Standards Act, 2006.**
- **FSSAI also suspended the licence of Creative Bakers and Confectioners Pvt. Ltd. due to severe hygiene deficiencies.**
- The company was directed to maintain records of the recalled batch and undertake corrective measures.

Why is it important?

- **Highlights the role of FSSAI in protecting consumer health.**
- **Shows the importance of Maximum Residue Limits (MRLs) for pesticides in food.**
- **Strengthens food-safety surveillance and product recall mechanisms.**

Prelims Question

Q. Consider the following statements:

1. FSSAI is the statutory authority responsible for regulating food safety in India.

2. Pesticide residues in food are regulated through prescribed maximum residue limits.

3. The Food Safety and Standards Act was enacted in 2006.

Which of the statements given above is/are correct?

A. 1 only

B. 1 and 2 only

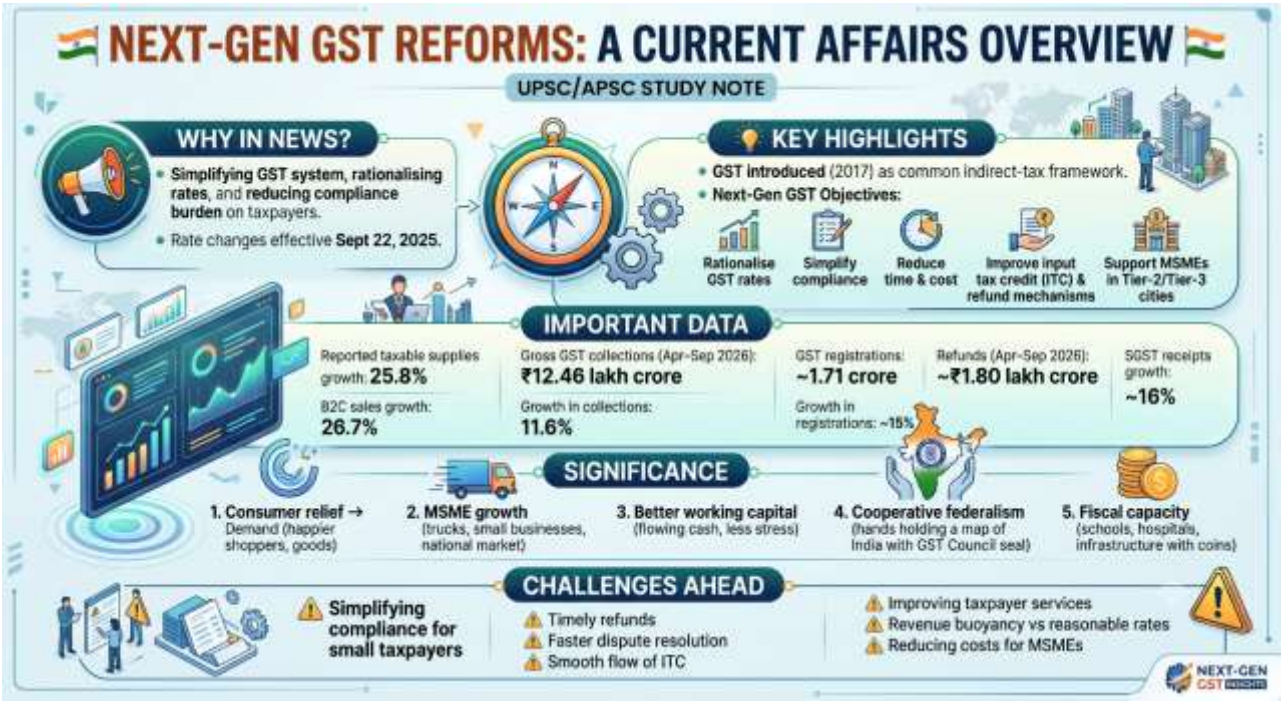
C. 2 and 3 only

D. 1, 2 and 3

Answer: D. 1, 2 and 3

Indian Economy GS Paper 3)

Next-Gen GST



Why in News?

The **Next-Gen GST reforms** aim to simplify the GST system, rationalise tax rates and reduce the compliance burden on taxpayers. The rate changes took effect on 22 September 2025, while further process reforms are proposed to the GST Council.

Key Highlights

- GST was introduced in 2017 as a common indirect-tax framework across India.
- **Next-Gen GST objectives**:
- **Rationalise GST rates**
- **Simplify compliance**
- **Reduce time and cost for taxpayers**
- **Improve input tax credit and refund mechanisms**
- **Support MSMEs and businesses in Tier-2/Tier-3 cities**

Important Data

Indicator	Key figure
• Reported taxable supplies growth	25.8%
• Gross GST collections, Apr–Sep 2026	12.46 lakh crore
• Growth in gross GST collections	11.6%
• GST registrations	1.71 crore
• Growth in registrations	15%
• Refunds, Apr–Sep 2026	1.80 lakh crore
• SGST receipts growth	16%

Significance

1. Consumer relief → Demand

Lower tax burden → greater household purchasing power → higher consumption → stronger demand.

2. MSME growth

A unified national market allows small businesses to reach customers beyond their local markets.

3. Better working capital

Efficient Input Tax Credit (ITC) and faster refunds can reduce the working-capital burden on businesses.

4. Cooperative federalism

The GST Council administers GST, where the Centre and States participate in decision-making.

5. Fiscal capacity

Despite tax-rate rationalisation, GST collections and State revenues have continued to grow, providing resources for public expenditure.

Challenges Ahead

- **Simplifying GST compliance for small taxpayers**
- **Timely refunds**
- Faster dispute resolution
- Ensuring smooth flow of ITC
- Improving taxpayer services
- Maintaining revenue buoyancy while keeping rates reasonable
- Reducing compliance costs for MSMEs

Prelims Facts

GST Council

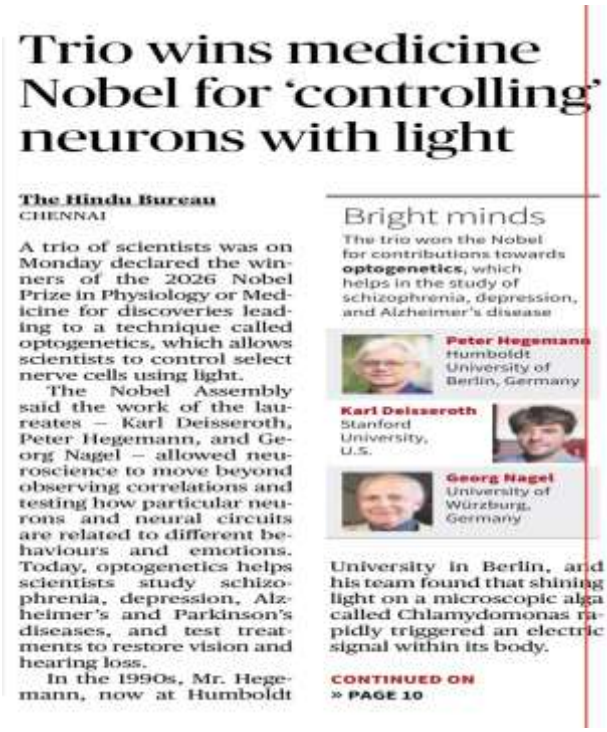
- **Constitutional body under Article 279A.**
- **GST was introduced through the 101st Constitutional Amendment Act, 2016.**
- **GST came into force on 1 July 2017.**
- **It is a major example of cooperative federalism.**

Mains Question

Q. "Next-Gen GST seeks to move beyond tax-rate rationalisation towards improving the overall taxpayer experience." Discuss its potential significance for MSMEs, consumers and cooperative federalism. (150 words)

Science and Technology (GS Paper 3)

Nobel Prize in Physiology or Medicine 2026 – Optogenetics



Trio wins medicine Nobel for 'controlling' neurons with light

The Hindu Bureau
CHENNAI

A trio of scientists was on Monday declared the winners of the 2026 Nobel Prize in Physiology or Medicine for discoveries leading to a technique called optogenetics, which allows scientists to control select nerve cells using light.

The Nobel Assembly said the work of the laureates — Karl Deisseroth, Peter Hegemann, and Georg Nagel — allowed neuroscience to move beyond observing correlations and testing how particular neurons and neural circuits are related to different behaviours and emotions. Today, optogenetics helps scientists study schizophrenia, depression, Alzheimer's and Parkinson's diseases, and test treatments to restore vision and hearing loss.

In the 1990s, Mr. Hegemann, now at Humboldt University in Berlin, and his team found that shining light on a microscopic alga called Chlamydomonas rapidly triggered an electric signal within its body.

CONTINUED ON » PAGE 10

Bright minds

The trio won the Nobel for contributions towards **optogenetics**, which helps in the study of schizophrenia, depression, and Alzheimer's disease

Peter Hegemann
Humboldt University of Berlin, Germany

Karl Deisseroth
Stanford University, U.S.

Georg Nagel
University of Würzburg, Germany

Why in News?

Karl Deisseroth, Peter Hegemann and Georg Nagel won the 2026 Nobel Prize in Physiology or Medicine for discoveries that enabled optogenetics—a technique to control specific nerve cells using light.

What is Optogenetics?

- **A neuroscience technique that combines genetics and optics (light).**
- **Specific neurons are genetically modified to produce light-sensitive proteins**.
- **Light can then activate or inhibit selected neurons, allowing scientists to study their role in behaviour, emotions and diseases.**

Key Scientific Discovery

- **Hegemann and Nagel studied the microscopic alga Chlamydomonas.**
- They identified light-sensitive proteins called **channelrhodopsins.**
- **Channelrhodopsin-2 (ChR2) opens when exposed to light, allowing positively charged ions to enter the cell and generate an electrical signal.**
- **Deisseroth's team demonstrated the technique in rat neurons (2005) and later in living mice.**

Applications

- **Study of schizophrenia, depression, Alzheimer's and Parkinson's disease.**
- **Understanding neural circuits involved in pain, sleep, memory, attention and social behaviour**.
- **Potential applications in restoring vision and hearing.**

Practice Questions

Q1. Consider the following statements about optogenetics:

1. It uses light to control specific neurons.

2. Channelrhodopsins are light-sensitive proteins used in the technique.

3. It can be used only for studying vision-related disorders.

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

Answer: A

Mains Question:

"What is optogenetics? Discuss its significance in understanding neurological disorders and neural circuits." (10 marks)

Indian Economy (GS Paper 3)

World Unemployment Crisis



Why in News?

World Bank President Ajay Banga has warned of a major global employment challenge: **around 1.2 billion young people in the Global South are expected to enter working age over the coming decade, while only about 400 million jobs may be created.**

Key Points

- Potential job gap: Nearly 800 million employment opportunities could be lacking.
- **Demographic dividend:** A large working-age population can boost savings, productivity and economic growth—but only when adequate jobs and skills exist.
- **Premature deindustrialisation**: **Developing countries are losing the traditional manufacturing-led pathway to mass employment because of automation, robotics and advanced technologies.**
- **Skill mismatch**: **Lack of digital skills, vocational training and quality education limits youth employability.**
- India's challenge:
- **Median age is below 30 years**.
- **Persistent underemployment and skill mismatch**.
- **Low female labour-force participation.**
- **Agriculture continues to employ a large share of the workforce despite its relatively low contribution to GDP**.

Potential job-rich sectors:

- **Agriculture & agro-processing**
- **Healthcare and care economy**
- **Tourism and culture**
- **Green manufacturing**
- **MSMEs**
- **Digital and technology-enabled services**

Way Forward

1. Promote labour-intensive manufacturing.

2. Strengthen MSMEs and entrepreneurship.

3. Improve physical and digital infrastructure.

4. Expand vocational and industry-linked skill training.

5. Increase women's participation in the workforce.

6. Develop agro-processing and rural value chains.

7. Promote tourism and green industries.

8. Improve regulatory certainty and access to finance.

Prelims Question

Q. Consider the following statements regarding demographic dividend:

1. It refers to the economic growth potential arising from a relatively larger working-age population.

2. It automatically results in higher economic growth whenever the working-age population increases.

3. Employment generation and human-capital development are important for converting demographic potential into an economic dividend.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 1 and 3 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: B

Explanation: A demographic dividend is not automatic. Jobs, skills, health, education and productive opportunities are necessary to convert a large working-age population into economic growth.

Mains Question

Q. "A large young population can become either a demographic dividend or a demographic challenge depending on employment opportunities." Discuss with special reference to India.

(150 words | 10 marks)

International Relations (GS Paper 2)

Methanol Shipment from Assam to Bangladesh



Why in News?

A cargo barge carrying 540 metric tonnes of methanol from Assam to Bangladesh was flagged off from Bogibeel River Terminal, Dibrugarh.

Key Facts

- Cargo: 540 MT methanol
- Origin: Assam Petrochemicals Limited (APL), Namrup
- **Destination: Pangaon Port, Dhaka**
- **Vessel: Cargo barge DLB Patkai, tugboat Kushal Konwar**
- **Waterway: National Waterway-2 (NW-2) — Brahmaputra**
- **NW-2 distance: 768 km before entering the Indo-Bangladesh Protocol Route**
- **Total Bogibeel–Narayanganj journey: 1,300 km**
- **Flagged off by: Union Minister Sarbananda Sonowal**
- Importance: Strengthens India-Bangladesh connectivity, inland water transport and Assam's role in regional trade.
- **Facilitation: Customs and immigration facilities established at Bogibeel and Dhubri**.

Significance

Economic: Lower-cost transportation and greater export opportunities for Assam.

Regional: Strengthens India–Bangladesh trade and connectivity.

Environmental: Inland waterways can reduce dependence on road transport and associated emissions.

Northeast: Provides the landlocked Northeast with an alternative international trade route.

Prelims MCQ

Q. Consider the following statements:

1. National Waterway-2 is located on the Brahmaputra River.

2. Bogibeel and Dhubri are important points for facilitating international inland-water cargo movement from Assam.

3. The Indo-Bangladesh Protocol Route facilitates inland water connectivity between India and Bangladesh.

Which of the statements given above is/are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

Answer: D

Mains Question

Q. "Inland waterways can become a major driver of economic integration and sustainable development in Northeast India." Discuss with reference to the recent Assam–Bangladesh methanol shipment. (150 words)

Environment (GS Paper 3)

Buxa Tiger Reserve – Tiger Reintroduction



Why in News?

A 3-year-old tigress from Valmiki Tiger Reserve, Bihar, was released in Buxa Tiger Reserve, West Bengal, on 2 October 2026. This is part of a phased programme to establish a viable and self-sustaining tiger population in Buxa.

Key Facts

- Buxa Tiger Reserve (BTR) – declared in 1983, India's 15th Tiger Reserve.
- **Area: 760.87 sq km.**
- **Location: Alipurduar district, West Bengal.**
- **Important connectivity:**
- **North: Bhutan forests**
- **East: Kochugaon forests & Manas Tiger Reserve**
- **West: Jaldapara National Park**
- **Tiger population declined due to:**
- **Habitat degradation & fragmentation**
- **Land-use changes**
- **Decline in prey availability**
- **Anthropogenic pressure**
- **Valmiki Tiger Reserve was selected because its terrain and ecological conditions are similar to Buxa.**
- **Sundarbans was not selected because its mangrove ecosystem and terrain differ significantly from Buxa.**

Major Challenges in Buxa

- **Human settlements and tea estates**
- **Low prey availability**
- **Habitat fragmentation**
- **Railway and road infrastructure**
- **Human–wildlife conflict**
- **Heavy commercial traffic between Bhutan and West Bengal**

Important: Around 300 families have been persuaded to relocate to facilitate the programme.

Prelims Question

Q. With reference to Buxa Tiger Reserve, consider the following statements:

1. It is located in West Bengal.

2. It shares ecological connectivity with forests of Bhutan.

3. Valmiki Tiger Reserve was selected as the source for tiger reintroduction because of similarities in terrain.

4. Buxa is India's first Tiger Reserve.

Which of the statements given above are correct?

A. 1, 2 and 3 only

B. 1 and 4 only

C. 2, 3 and 4 only

D. 1, 2, 3 and 4

Answer: A

Mains Question

Q. Tiger reintroduction can restore ecological balance, but its success depends on landscape-level conservation. Discuss with reference to Buxa Tiger Reserve.

(150 words | 10 marks