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according to the level of  
their understanding.”

— Imam Ali



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# Today's Current Affairs | 7 October 2026

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PYQs + MCQs + Myth Buster

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भौतिकी नोबेल

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Ship  
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3

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THE HINDU • 7 OCT 2026

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## 1 Physics Nobel: IceCube | भौतिकी नोबेल

1  
er of IceCube  
no detector  
wins physics Nobel

IceCube  
This year's Nobel Prize in Physics will be awarded to the IceCube team, led by Peter Adamson, for their discovery of the first high-energy neutrino. The discovery was made in 2012, when the IceCube team announced the detection of a high-energy neutrino with an energy of 290 TeV. This discovery was a major breakthrough in the field of high-energy astrophysics, as it provided the first direct evidence of the existence of high-energy neutrinos. The IceCube team's discovery was made possible by the use of the IceCube detector, which is a large array of sensors buried in the ice at the South Pole. The detector is designed to detect high-energy neutrinos by measuring the Cherenkov light produced by the neutrinos as they travel through the ice. The IceCube team's discovery was a major breakthrough in the field of high-energy astrophysics, as it provided the first direct evidence of the existence of high-energy neutrinos. The IceCube team's discovery was made possible by the use of the IceCube detector, which is a large array of sensors buried in the ice at the South Pole. The detector is designed to detect high-energy neutrinos by measuring the Cherenkov light produced by the neutrinos as they travel through the ice.

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### Centre plans five-pronged reforms as GST Council meets tomorrow

**Tax, Budget**  
The Centre will announce a five-pronged plan for the reform of the GST Council, which is set to meet tomorrow. The plan is expected to include measures to streamline the Council's decision-making process, improve its transparency, and enhance its effectiveness. The Centre's plan is seen as a significant step towards the reform of the GST Council, which has been a major challenge for the government since its formation. The GST Council is a body that is responsible for making decisions on the GST, and its reform is seen as a key priority for the government. The Centre's plan is expected to include measures to streamline the Council's decision-making process, improve its transparency, and enhance its effectiveness. The Centre's plan is seen as a significant step towards the reform of the GST Council, which has been a major challenge for the government since its formation. The GST Council is a body that is responsible for making decisions on the GST, and its reform is seen as a key priority for the government.

### Spy racket sharing data with Pakistan busted; 13 Navy staffers under scanner

**Defence**  
A spy racket involving 13 Navy staffers has been busted, with the government accusing them of sharing sensitive information with Pakistan. The racket was run by a former Navy officer, who is now under investigation. The government has announced that it has recovered a large amount of sensitive information, including details of the Navy's operations and plans. The government has also announced that it has arrested several individuals who were involved in the racket. The government is now conducting a thorough investigation into the matter, and it is expected that more individuals will be arrested in the coming days. The government has also announced that it has taken steps to strengthen its security measures to prevent such incidents from occurring in the future.

# Physics Nobel: IceCube

## भौतिकी नोबेल

### Pioneer of IceCube neutrino detector wins physics Nobel

Jacob Koshiy  
NEW DELHI

This year's Nobel Prize in Physics will be awarded to Belgium-born Francis Halzen, 82, for his contributions to IceCube, a neutrino observatory in the South Pole, and for the discovery of high-energy neutrinos of astrophysical origin.

While there are several massive detectors for these extremely elusive particles, IceCube is designed to find high-energy neutrinos that are believed to have originated far in space from energetic collisions. These "cosmic neutrinos" with extremely high energies are very rare and an enormous volume of ice is needed to observe an adequate number of collisions.

Mr. Halzen, who is presently at the University of Wisconsin-Madison in the U.S., first presented his vision for capturing neutrinos at the South Pole in 1988. Pure, undisturbed ice is an ideal medium to capture these neutrinos: when they occasionally collide with atomic nuclei, they produce charged particles that announce themselves as a flash of pale blue light.

The South Pole's ice has many advantages, as it is free from various types of interference and the area is geologically stable. Mr. Halzen's idea caught on and, just a few years later, preliminary testing was conducted on sensors in ice. IceCube covers an entire cubic kilometre (or about 917 million litres of water) and was completed in 2010. It has 5,160 optical sensors to detect the Cherenkov light produced by



Francis Halzen

neutrino interactions, with its principal scientific focus on higher-energy astrophysical neutrinos.

The Cherenkov light is the blue flash produced when a charged particle travels through a transparent medium faster than light can travel through that medium. Researchers reported the first high-energy cosmic neutrinos in 2013 and, in 2018, traced one such neutrino to a distant blazar, a galaxy with a supermassive black hole at its centre that fires a jet of particles and radiation almost directly towards earth.

"Francis Halzen has led an international team of researchers and engineers who have provided us with a fantastic instrument. His tenacity and scientific vision has paved the way for a new kind of astronomy," Mark Pearce, Chair of the Nobel Committee for Physics, said. The neutrino interactions that are continuously collected by IceCube will provide researchers with knowledge about the violent settings in which high-energy neutrinos can be created – and could even reveal previously unknown cosmic phenomena, a statement added.

EDITORIAL  
PAGE 8

### • NOBEL PRIZE IN PHYSICS

## Through 'ghost particles' in ice, window to universe



AMITABH SINHA

NEUTRINOS, VERY small sub-atomic particles produced mainly in nuclear reactions in stars, are among the most abundant particles in the universe, second only to photons (or light particles). And they can reveal a huge amount of new information about the universe. The problem has been that they are extremely difficult to detect, the reason they are often described as ghost particles.

The quest to detect neutrinos, and attempts to study them, have already led to several Nobel Prize wins. Another one was added on Tuesday, with the 2026 Nobel Prize in Physics being awarded to Francis Halzen, a Belgian-American scientist who designed an elaborate set-up under ice sheets in Antarctica to detect these elusive particles.

The IceCube facility in Antarctica is not the first observatory to detect neutrinos. Neutrinos were first proposed in the 1930s and first detected in the 1950s. Several observatories around the world are dedicated to detecting and studying these particles.

#### Studying distant space

What the IceCube facility managed to do was something unique. It was successful in detecting a special variety of high-energy neutrinos that was coming from far away in space. Till now, only those neutrinos that originated in the close vicinity of the Earth, primarily being produced in the Sun, were being detected. Most of the neutrinos passing through the Earth are produced in the nuclear processes inside the Sun.

For scientists, the detection of extra-galactic neutrinos has opened a new source of information about the universe. Initially, visible light was the only tool available to scientists to study the cosmic phenomena. Then, detectors were developed for the full electromagnetic spectrum of radiation and for cosmic rays. The detection of gravitational waves in 2015 opened an entirely

### • 'For decisive contributions to the IceCube Neutrino Observatory and the discovery of high-energy neutrinos of astrophysical origin'

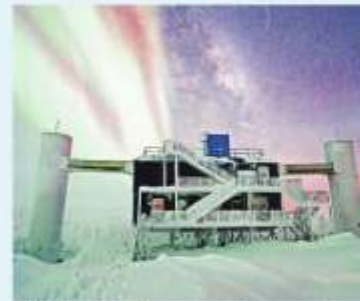


"His idea was to use glacial ice at the South Pole to capture the secretive particles called neutrinos. The result was the IceCube Neutrino Observatory, which can track neutrinos that originate in the distant cosmos."



FRANCIS HALZEN, 82  
University of Wisconsin-Madison, Madison, US

ON WEDNESDAY,  
NOBEL PRIZE IN CHEMISTRY



The IceCube Neutrino Observatory at the Amundsen-Scott South Pole Station, in Antarctica. ICECUBE/NSF

new window for scientists looking at the universe. Extra-galactic neutrinos add another dimension of possibilities.

Together these different kinds of signals enable what is called multi-messenger astronomy, the ability to study the same cosmic event using different kinds of signals, said D Indumathi, a scientist at the Bengaluru-based Indian Institute of Astrophysics who was formerly associated with India's effort to build a neutrino detector.

#### 'Shy' particles

The reason neutrinos are so difficult to detect is that they have an extremely low propensity to interact with matter. The Nobel Prize committee described them as the "shiest particle". They simply pass through very dense regions of matter without any disturbance.

A very common example often cited is the fact that nearly 65 billion neutrinos pass through human finger nails every second without anyone ever noticing. Because they are also electrically neutral, they do

#### 'Shy' particles

Neutrinos are difficult to detect because of their extremely low propensity to interact with matter.

• They simply pass through dense regions without disturbance. Nearly 65 billion neutrinos pass through your fingernails every second.

not respond to electromagnetic fields the way charged particles do.

The detections happen on the very rare occasions that they do interact with matter. That happens to, maybe, one in billions or trillions of neutrinos. That is why neutrino observatories the world over are very large facilities, built in extremely isolated, often underground locations, that maximise the chances of interaction and minimise noise.

The elusive nature of neutrinos is also what makes them particularly interesting to study. They pass through regions of cosmic space that other signals may never be able to cross. Very dense regions in space, for example, can absorb or scatter all electromagnetic radiations, but neutrinos simply flow through. They can thus reveal processes happening within or beyond that dense region, which are otherwise inaccessible to scientists.

#### The IceCube facility

The 82-year-old Halzen, who had been studying cosmic rays since the 1960s, came

to know of the attempts of Soviet researchers to build a neutrino detector in Antarctica, a press release from the Nobel Prize committee said. When a neutrino collides with an atomic nucleus in the ice, it creates an electric spark. This produces radio waves which could be detected using radio antennas.

Halzen thought of a slightly different idea. He realised that light sensors could be installed in glacier ice. These sensors could produce flashes of light from collisions of neutrinos with the nucleus of atoms. The area around the South Pole was a favourable location. It was isolated and, at significant depths, there was a lot of darkness with no disturbance from other radiations or signals.

He discussed his ideas with some of his colleagues and did most of the theoretical work on designing an observatory deep below the ice-sheets. IceCube is one cubic kilometre of ice equipped with over 5,000 light sensors on long cables, along with an overground facility where signals are collected. On the rare occasion when the neutrino interacts with an atomic nucleus of ice, a charged particle is produced. If that charged particle travels faster than the speed of light in ice, it produces a faint glow. From the characteristics of this glow, scientists are able to reconstruct the energy and direction of the neutrino involved in the collision.

This exquisite set-up became operational in 2011. By that time, it had already recorded a couple of events that suggested the involvement of extra-galactic neutrinos. In 2013, the observatory presented the first evidence of having detected very high-energy neutrinos. Since then several such incidents have been recorded and verified.

"It's a very special detector and the work that Halzen has done is really very exciting. It has opened new avenues for astronomy and astrophysics," said Naba K Mondal, former project director of India-based Neutrino Observatory (INO), a much-delayed effort to build a neutrino detector in India. "In neutrino research circles, this award to Halzen was expected for a few years." INO was supposed to be located initially in Kerala and then in Tamil Nadu but ran into opposition from local and political groups over land acquisition and environmental grounds. A new location is yet to be finalised.

# Physics Nobel 2026: Catching Ghost Particles in Antarctic Ice

भौतिकी नोबेल 2026: अंटार्कटिका की बर्फ में न्यूट्रिनो पकड़ने वाली IceCube वेधशाला के जनक फ्रांसिस हैल्ज़न



Francis Halzen, 82  
फ्रांसिस हैल्ज़न

## 1 The winner | विजेता



- **Francis Halzen (82)**, Belgium-born  
बेल्जियम में जन्मे
- **University of Wisconsin–Madison, USA**  
अमेरिका
- For **IceCube Neutrino Observatory** & high-energy cosmic neutrinos  
**IceCube** के लिए

## 2 IceCube facts IceCube तथ्य



**1 km<sup>3</sup>**

Of ice at South Pole  
बर्फ

**5,160**

Optical sensors  
सेंसर

**2010**

Completed  
पूर्ण

**1988**

Idea first proposed  
विचार

## 3 Key discoveries प्रमुख खोजें



- **2013**: first high-energy cosmic neutrinos  
पहले ब्रह्मांडीय न्यूट्रिनो
- **2018**: one traced to a **blazar** (galaxy with black hole jet)  
ब्लेज़ार तक
- Opened **neutrino astronomy**  
न्यूट्रिनो खगोलविज्ञान

# Physics Nobel: IceCube — in depth (1/2)

## भौतिकी नोबेल — विस्तार से (1/2)

4

What are neutrinos?

न्यूट्रिनो क्या हैं?



- ▶ Tiny, almost **massless**, **no charge** particles  
लगभग द्रव्यमानहीन, आवेशरहित
- ▶ 2nd most abundant particle after **photons**  
फोटॉन के बाद सर्वाधिक
- ▶ ~**65 billion** pass through a fingernail **every second**  
हर सेकंड **65 अरब**
- ▶ Called “**ghost particles**” – rarely interact  
“भूत कण”

5

How detection works

पहचान कैसे



- ▶ Neutrino hits a nucleus → charged particle  
नाभिक से टक्कर
- ▶ Particle faster than light in ice → blue **Cherenkov light**  
चेरेनकोव प्रकाश
- ▶ Sensors buried deep catch the flash  
गहरे सेंसर पकड़ते हैं

6

India link | भारत संबंध



- ▶ **India-based Neutrino Observatory (INO)** – Theni, TN (stalled)  
**INO, थेनी**
- ▶ First atmospheric neutrinos found at **Kolar Gold Fields (1965)**  
**कोलार**
- ▶ **Multi-messenger astronomy** – light, gravity waves, neutrinos  
बहु-संदेशवाहक खगोलविज्ञान

## Physics Nobel: IceCube — in depth (2/2)

भौतिकी नोबेल — विस्तार से (2/2)

### 7 From deep space to the South Pole | अंतरिक्ष से दक्षिणी ध्रुव तक



**Blazar /  
cosmic event**  
ब्लेज़ार

Neutrinos made  
न्यूट्रिनो बने



**Travel billions  
of years**  
यात्रा

No deflection  
बिना मुड़े



**Hit ice**  
बर्फ़ से टक्कर

Blue flash  
नीली चमक



**IceCube  
sensors**  
सेंसर

Trace the source  
स्रोत पता

### 8 Did you know? क्या आप जानते हैं?



► Neutrino idea:  
**Wolfgang Pauli, 1930**  
पाउली

► Prize money: **11 million  
Swedish kronor**  
पुरस्कार राशि



# INS Surya – Fleet Support Ship

सूर्या जहाज़

## *Surya*, India' first indigenous fleet support ship, launched

It is a floating supply powerhouse that can sustain protracted, high-intensity naval engagements; Rajnath urges Indian shipyards to look beyond self-reliance and aim at international markets

**V. Kamalakara Rao**  
VISAKHAPATNAM

Union Defence Minister Rajnath Singh launched the Navy's first indigenous fleet support ship (FSS-1), named *Surya*, and laid the keel for the fifth vessel of the series, FSS-5, at Hindustan Shipyard Limited (HSL) in Visakhapatnam on Tuesday.

The ceremony was attended by Chief of the Naval Staff Admiral Krishna Swaminathan, Defence Secretary Rajesh Kumar Singh, Secretary (Defence Production) Sanjeev Kumar, Flag Officer Commanding-in-Chief of the Eastern Naval Command



**Homemade vessel:** Rajnath Singh speaking at the launch of the fleet support ship, *Surya*, in Visakhapatnam on Tuesday. V. RAJU

Vice Admiral Sanjay Bhalla, HSL CMD Rear Admiral C. Raghuram, and other dignitaries.

The Minister urged Indian shipyards to look beyond self-reliance towards global competitiveness, aiming to serve inter-

national markets, build a presence in marine technology, and provide advanced ship repair services.

The massive Fleet Support Ship (FSS) initiative is backed by a landmark ₹19,000-crore contract between the Ministry of Defence and HSL to construct five indigenous auxiliary vessels.

The FSS platform, with 82% indigenous content, serves as a floating supply powerhouse, engineered to sustain protracted, high-intensity naval engagements and battle groups far from home ports. Its internal storage holds up to 20,000 tonnes of high-speed diesel, 2,500 tonnes of aviation turbine fuel, fresh water, alongside dry cargo containers for ammunition and spares. It can simultaneously transfer fuel, stores, and personnel to multiple warships to maintain continuous high-seas deployment.

# Surya: India's First Indigenous Fleet Support Ship Launched

भारत का पहला स्वदेशी फ़्लीट सपोर्ट शिप “सूर्या” विशाखापत्तनम में लॉन्च



Hindustan Shipyard  
हिंदुस्तान शिपयार्ड

## 1 The launch | लॉन्च



- ▶ **FSS-1 “Surya”** launched by **Rajnath Singh**  
रक्षा मंत्री ने लॉन्च किया
- ▶ Keel laid for **FSS-5**  
पाँचवें जहाज़ का कील
- ▶ Built by **Hindustan Shipyard Ltd (HSL)**, Visakhapatnam  
**HSL**

## 2 Capacity | क्षमता



**20,000 t**

High-speed diesel  
डीज़ल

**2,500 t**

Aviation fuel  
विमान ईंधन

**82%**

Indigenous content  
स्वदेशी

**₹19,000 cr**

Contract, 5 ships  
अनुबंध

## 3 Role | भूमिका



- ▶ **“Floating supply powerhouse”**  
“तैरता आपूर्ति केंद्र”
- ▶ Refuels & resupplies **several warships at sea**  
समुद्र में ईंधन
- ▶ Keeps fleets at sea **far from home**  
दूर तक तैनाती

# INS Surya – Fleet Support Ship — in depth (1/2)

## सूर्या जहाज़ — विस्तार से (1/2)

### 4 Why it matters | महत्व



- **Blue-water navy** needs long-range logistics  
**ब्लू-वॉटर नौसेना**
- Supports presence in **Indian Ocean Region**  
**हिंद महासागर**
- Push for shipyards to **export** & repair ships  
**निर्यात व मरम्मत**

### 5 Key terms | प्रमुख शब्द



| Term<br>शब्द           | Meaning<br>अर्थ                          |
|------------------------|------------------------------------------|
| <b>FSS</b>             | Fleet Support Ship<br>बेड़ा सहायक जहाज़  |
| <b>Keel laying</b>     | Start of construction<br>निर्माण आरंभ    |
| <b>Launch</b>          | Hull floated into water<br>जल में उतारना |
| <b>Commis<br/>sion</b> | Joins the Navy<br>नौसेना में शामिल       |

### 6 Navy leadership नौसेना नेतृत्व



- Chief of Naval Staff:  
**Adm. Krishna Swaminathan**  
**नौसेना प्रमुख**
- Eastern Naval Command: **Vice Adm. Sanjay Bhalla**  
**पूर्वी कमान**
- HSL is under the **Ministry of Defence**  
**रक्षा मंत्रालय**

# INS Surya – Fleet Support Ship — in depth (2/2)

सूर्या जहाज़ — विस्तार से (2/2)

## 7 Life of a warship | युद्धपोत का जीवन



**Keel laid**  
कील

Construction  
starts  
निर्माण



**Launched**  
लॉन्च

Floats  
जल में



**Outfitting &  
trials**  
परीक्षण

Systems fitted  
उपकरण



**Commissioned**  
कमीशन

Joins Navy  
नौसेना में

8

Did you know?  
क्या आप जानते हैं?



► Earlier tankers like **INS Deepak & Shakti** were built abroad

पहले विदेश में बने

► **Surya** = Sun in Sanskrit  
सूर्य



### 3 Supreme Court judges take oath, strength reaches 37

**The Hindu Bureau**  
NEW DELHI  
Three out of four judges took oath on Tuesday, taking the 37th seat on the bench. Chief Justice of India (CJI) Nageswara Rao administered the oath to the three judges. The fourth judge, Justice Dhananjaya Kumar, is yet to take the oath. The oath-taking ceremony was held in the presence of the CJI, the three judges, and the members of the bar. The oath-taking ceremony was held in the presence of the CJI, the three judges, and the members of the bar. The oath-taking ceremony was held in the presence of the CJI, the three judges, and the members of the bar.

### Bypolls held in five Assembly segments, one Lok Sabha seat

**The Hindu Bureau**  
NEW DELHI  
Bypolls were held in five Assembly segments and one Lok Sabha seat in Karnataka on Tuesday. The results of the bypolls were announced on Wednesday. The bypolls were held in the following segments: Channarayana, Channarayana, Channarayana, Channarayana, and Channarayana. The results of the bypolls were announced on Wednesday. The bypolls were held in the following segments: Channarayana, Channarayana, Channarayana, Channarayana, and Channarayana. The results of the bypolls were announced on Wednesday.

### 'Provisional Census' data expected to be out by March-April

**The Hindu Bureau**  
NEW DELHI  
The provisional census data for India is expected to be released by March-April. The data will be based on the results of the census conducted in 2011. The data will be used to determine the number of seats in the Lok Sabha and the number of members in the State Legislatures. The data will be used to determine the number of seats in the Lok Sabha and the number of members in the State Legislatures.

### SC to hear Punjab's plea against CBI probe linked to CM's office

**The Hindu Bureau**  
NEW DELHI  
The Supreme Court is set to hear Punjab's plea against the CBI probe linked to the CM's office. The plea was filed by the Punjab government. The Supreme Court is set to hear Punjab's plea against the CBI probe linked to the CM's office. The plea was filed by the Punjab government.

### Doctors should not hesitate to serve in remote locations, says President

**The Hindu Bureau**  
NEW DELHI  
President Ram Kovind said that doctors should not hesitate to serve in remote locations. He said that the government is committed to providing healthcare to all citizens. He said that the government is committed to providing healthcare to all citizens.

### Man held over fabricated video of Delhi police officer with woman

**The Hindu Bureau**  
NEW DELHI  
A man was held over a fabricated video of a Delhi police officer with a woman. The video was found to be fake. The man was held over a fabricated video of a Delhi police officer with a woman. The video was found to be fake.

### Three Home Ministry officials hit by graft charges shifted

**The Hindu Bureau**  
NEW DELHI  
Three Home Ministry officials have been hit by graft charges. The charges were filed by the CBI. The three officials are: [Name], [Name], and [Name]. The charges were filed by the CBI.

### Privilege vs free speech case in SC disposed of after two decades

**The Hindu Bureau**  
NEW DELHI  
A case regarding privilege vs free speech in the Supreme Court has been disposed of after two decades. The case was filed by [Name] against [Name]. The case was disposed of after two decades.

### 1. Banks pact to buy BrahMos fire control systems, launchers

**The Hindu Bureau**  
NEW DELHI  
A pact has been signed between the Indian government and BrahMos for the purchase of BrahMos fire control systems and launchers. The pact was signed between the Indian government and BrahMos.

# Page 4 • News

## पृष्ठ 4 • समाचार

Articles covered from this page | इस पृष्ठ से लिए गए लेख

### 1. BrahMos fire control deal | ब्रह्मोस सौदा

# BrahMos Fire-Control Deal

## ब्रह्मोस सौदा

### Govt. inks pact to buy BrahMos fire control systems, launchers

**The Hindu Bureau**  
NEW DELHI

The Defence Ministry on Tuesday signed a ₹661.50-crore contract with BrahMos Aerospace Private Limited (BAPL) for procurement of BrahMos Fire Control Systems and launchers for Indian Navy ships, aimed at strengthening the Navy's maritime strike capability and advancing defence indigenisation.

The Ministry said the contract, signed in New Delhi in the presence of Defence Secretary Rajesh Kumar Singh, has been placed under the Buy (Indian-IDD) category, with a minimum of 68% indigenous content.

The project is expected to encourage greater participation of the Indian defence industry, including micro, small and medium enterprises (MSMEs), and

generate employment over a period of three years, the Ministry said.

The procurement is also aimed at strengthening India's maritime security architecture and enhancing indigenous capability in advanced military technology.

The BrahMos weapon system, fitted onboard various frontline Indian Navy warships, is the Navy's primary surface-to-surface missile system for maritime strike operations. The system is capable of engaging both land and sea targets at extended ranges with high precision while travelling at supersonic speeds.

The latest contract marks another step towards increasing the indigenous content of critical weapon systems and reducing dependence on foreign sources for advanced military equipment.

# Govt Inks Pact for BrahMos Fire Control Systems & Launchers

नौसेना जहाज़ों हेतु ब्रह्मोस फ़ायर कंट्रोल सिस्टम व लॉन्चर के लिए ₹661.5 करोड़ का अनुबंध



Buy (Indian-IDDMM)  
स्वदेशी श्रेणी

## 1 The deal | सौदा



**₹661.5 cr**

Contract value  
मूल्य

**BAPL**

BrahMos  
Aerospace  
कंपनी

**68%+**

Indigenous  
content  
स्वदेशी

**3 yrs**

Jobs period  
रोज़गार

## 2 Purpose | उद्देश्य



► Boost Navy's **maritime strike** capability

समुद्री प्रहार क्षमता

► More **MSME**  
participation

**MSME** भागीदारी

► Cut dependence on  
**foreign** weapons

विदेशी निर्भरता कम

## 3 About BrahMos | ब्रह्मोस



► **Supersonic cruise missile** (~Mach 2.8)

सुपरसोनिक

► Hits **land & sea** targets  
with high precision

भूमि व समुद्र

► Navy's **primary surface-to-surface** missile

प्रमुख मिसाइल

## BrahMos Fire-Control Deal — in depth (1/2)

ब्रह्मोस सौदा — विस्तार से (1/2)

4

India–Russia JV  
भारत–रूस संयुक्त उद्यम



► **DRDO + NPO**  
**Mashinostroyeniya**  
(1998)

**DRDO + रूस**

► Name: **Brahmaputra + Moskva** rivers

**ब्रह्मपुत्र + मॉस्को नदी**

► Exported to the  
**Philippines** (2022 deal)  
**फ़िलीपींस** को निर्यात

5

DAP categories  
खरीद श्रेणियाँ



| Category<br>श्रेणी       | Meaning<br>अर्थ                                                      |
|--------------------------|----------------------------------------------------------------------|
| Buy<br>(Indian-<br>IDDM) | Indigenously<br>designed, developed<br>& made<br>सर्वोच्च प्राथमिकता |
| Buy<br>(Indian)          | Indian vendor<br>भारतीय विक्रेता                                     |
| Buy<br>(Global)          | Foreign vendor<br>विदेशी                                             |

6

Missile types  
मिसाइल प्रकार



- **Cruise** – flies low,  
powered all the way  
**क्रूज़**
- **Ballistic** – arcs high,  
falls by gravity (e.g. Agni)  
**बैलिस्टिक**
- Supersonic = faster  
than sound (Mach > 1)  
**ध्वनि से तेज़**

## BrahMos Fire-Control Deal — in depth (2/2)

ब्रह्मोस सौदा — विस्तार से (2/2)

### 7 From ship to target | जहाज़ से लक्ष्य तक



**Detect**  
पहचान

Radar  
रडार



**Fire control**  
फ़ायर कंट्रोल

Aim & plan  
निशाना



**Launch**  
प्रक्षेपण

Supersonic  
सुपरसोनिक



**Strike**  
प्रहार

Fire & forget  
दागो-भूलो

### 8 Did you know? क्या आप जानते हैं?



► BrahMos was used in  
**Operation Sindoor (2025)**  
ऑपरेशन सिंदूर

► New BrahMos unit in  
**Lucknow** (UP Defence  
Corridor)  
लखनऊ

THE HINDU • 7 OCT 2026

# Page 6 • News

## पृष्ठ 6 • समाचार

Articles covered from this page | इस पृष्ठ से लिए गए लेख

1 NSO travel survey | NSO यात्रा सर्वे

2 New IAF chief | नए वायुसेना प्रमुख

3 DRDO high-altitude platform | DRDO HAPS



# New IAF Chief & DRDO HAPS

नए वायुसेना प्रमुख

## Air Marshal Ashutosh Dixit appointed next Indian Air Force chief

Saurabh Trivedi  
NEW DELHI

Air Marshal Ashutosh Dixit has been appointed the next Chief of the Air Staff, the Defence Ministry announced on Tuesday.

He is currently the Vice-Chief of the Air Staff and will take over the top post on October 31, succeeding Air Chief Marshal Amar Preet Singh, who retires on the same day.

Air Marshal Dixit will be the 29th Chief of the Air Staff. A fighter pilot with nearly four decades of service, he has more than 3,500 hours of flying experience on a range of aircraft, including the Mirage-2000, MiG variants, Jaguar, IL-78, Hawk, and Tejas, the Ministry said.

### Key operations

Commissioned into the fighter stream of the Indian Air Force on December 6, 1986, Air Marshal Dixit has held several key operational and staff appointments.

Before taking over as Vice-Chief of the Air Staff, he served as Chief of Integrated Defence Staff to the Chairman, Chiefs of Staff Committee (CISC) at Headquarters Integrated De-



Air Marshal Ashutosh Dixit

fence Staff and as Air Officer Commanding-in-Chief of the Central Air Command. During his career, he has commanded a frontline fighter airbase in the Western Sector and a fighter training base in the Southern Sector.

He has also been involved in several operations and exercises, including Operation Safed Sagar, Operation Rakshak, and Operation Sindoor.

He is an alumnus of the National Defence Academy; Defence Staff Service College, Bangladesh; and National Defence College. He was awarded the Vayu Sena Medal in 2006, Vishisht Seva Medal in 2011, Ati Vishisht Seva Medal in 2023 and Param Vishisht Seva Medal in 2025 for his service.

## DRDO's flight trial of high-altitude platform successful

The Hindu Bureau  
NEW DELHI

The Defence Research and Development Organisation (DRDO) has successfully carried out the flight trial of an indigenously developed High-Altitude Platform (HAPS), with the experimental platform reaching an altitude of 21 km above mean sea level and remaining at 20 km for more than 30 minutes.

The Defence Ministry said the platform, developed by the Aerial Delivery Research and Development Establishment, Agra, was a lighter-than-air system being designed as a long-endurance stratospheric aerial surveillance platform. The platform carried several instrumentation and control electronic systems, including an inertial measurement



The High Altitude Platform System. DRDO

cameras and an altitude-control mechanism, besides other subsystems.

### 'Key milestone'

Defence Minister Rajnath Singh congratulated the DRDO, the IAF, public sector undertakings and industry involved in the trial, describing the achievement as an important milestone in India's aerospace

# Air Marshal Ashutosh Dixit to Be Next IAF Chief; DRDO Tests HAPS

एयर मार्शल आशुतोष दीक्षित अगले वायुसेना प्रमुख; DRDO का उच्च-ऊँचाई प्लेटफॉर्म परीक्षण सफल



Takes over 31 Oct  
31 अक्टूबर

1

New IAF chief  
नए वायुसेना प्रमुख



► 29th Chief of the Air Staff

29वें प्रमुख

► Succeeds ACM Amar Preet Singh on 31 Oct

ए.पी. सिंह के बाद

► Now Vice-Chief; fighter pilot, 3,500+ hours

फ़ाइटर पायलट

2

Career | करियर



► Commissioned 6 Dec 1986; NDA alumnus

1986 में कमीशन

► Flew Mirage-2000, MiG, Jaguar, Tejas

कई विमान

► Ops: Safed Sagar, Rakshak, Sindoor; PVSM 2026

प्रमुख अभियान

3

DRDO HAPS | DRDO HAPS



► High-Altitude Platform reached 21 km

21 किमी ऊँचाई

► Stayed at 20 km for 30+ min

30 मिनट से अधिक

► By ADRDE, Agra; lighter-than-air, for surveillance

निगरानी

## DRDO HAPS — in depth (1/2)

### नए वायुसेना प्रमुख — विस्तार से (1/2)

4

What is HAPS?  
HAPS क्या है?



- ▶ Airship / balloon in the **stratosphere**  
समताप मंडल में
- ▶ Works like a “**pseudo-satellite**” – cheaper  
छद्म उपग्रह
- ▶ Uses: **border watch**, telecom, disaster relief  
सीमा निगरानी, संचार

5

Atmosphere layers  
वायुमंडल परतें



| Layer परत    | Height ऊँचाई                    |
|--------------|---------------------------------|
| Troposphere  | 0–12 km (weather)<br>क्षोभ मंडल |
| Stratosphere | 12–50 km (ozone)<br>समताप मंडल  |
| Mesosphere   | 50–80 km<br>मध्य मंडल           |

6



# New IAF Chief

नए वायुसेना प्रमुख — विस्तार से (2/2)

## 7 IAF leadership chain | नेतृत्व



**CDS**  
**CDS**

Joint planning  
संयुक्त



**Chief of Air Staff**  
**प्रमुख**

Ashutosh Dixit  
दीक्षित



**Vice-Chief**  
**उप-प्रमुख**

Next in line  
अगला



**7 Commands**  
**7 कमान**

Operational  
परिचालन

8

Did you know?  
क्या आप जानते हैं?



► IAF Day: **8 October**  
(founded 1932)

**8 अक्टूबर**

► Chiefs are appointed by the **ACC** (Appointments Committee of Cabinet)

**ACC**

# NSO Travel Survey

## यात्रा सर्वेक्षण

### More than half of overnight travel is by bus: NSO survey

India's first national travel survey finds 55.8% of overnight household journeys are by bus and 17.7% by rail; two-wheelers are main mode of transport for daily work, accounting for 42.6% of journeys

Jagriti Chandra  
NEW DELHI

**B**uses are used significantly more than trains for overnight travel in India, with more than half of all household overnight journeys undertaken by bus, according to the country's first-ever National Household Travel Survey released by the National Statistics Office (NSO) on Monday.

The survey found that 55.8% of overnight household journeys are undertaken by bus, compared with 17.7% by inter-city railways. Together, buses and railways account for nearly three-fourths, or 73.5% of all overnight travel. Cars account for 15.1% of such journeys, while two-wheelers make up another 8.8%.

Railway use is significantly higher among urban households. About 22.7% of urban households use rail for overnight journeys, compared with around 14% of rural households.

Overnight journeys, however, are largely not undertaken for tourism. The survey found that 70.2% of



The survey found that 70.2% of overnight household trips are for social, communication, and religious purposes. FILE PHOTO

overnight household trips are for social, communication, and religious purposes. Culture, leisure, sports and tourism account for just 7.4% of such trips.

#### The daily commute

The pattern changes sharply when it comes to daily travel to work. Two-wheelers are the dominant mode of transport for workers, accounting for 42.6% of journeys. Their share rises to 52.3% among urban workers, compared with 37.1% in rural areas.

Public transport has a much smaller share of daily workforce mobility nationally. Buses account for

6.7% of work trips, while trains, the monorail, and trams together account for 2.1%. However, urban mass transit is considerably more important in some States and cities.

In Maharashtra, metro, suburban rail, monorail, and trams account for 20.7% of urban worker commutes, followed by West Bengal at 16.5% and Delhi at 14.4%, against the national urban average of 5%.

The survey also shows that most Indians have relatively short daily commutes.

The average journey to a fixed workplace takes 25

minutes, with the average rising to 27 minutes in urban areas.

The average monthly expenditure on commuting to a fixed workplace is ₹785 per worker.

Urban workers spend substantially more, at ₹1,044 a month, compared with ₹612 for rural workers. Male workers spend an average of ₹835 on their commute each month, against ₹533 for female workers.

The survey also highlights a gender disparity in workforce mobility. While 61.9% of male workers undertake work-related trips of more than one kilometre, the corresponding share for women is only 41.9%.

There is also a gender gap in commuting expenditure: male workers spend an average of ₹835 a month, compared with ₹533 for female workers.

The National Household Travel Survey, conducted between July 2025 and June 2026, covered 4,92,023 households and 20,34,371 people across 14,274 villages and 10,377 urban blocks.

# More Than Half of Overnight Travel Is by Bus: NSO

NSO का पहला राष्ट्रीय घरेलू यात्रा सर्वेक्षण: आधे से अधिक रात्रि यात्राएँ बस से



First National Household Travel Survey  
पहला सर्वे

## 1 Overnight trips रात्रि यात्राएँ

55.8%

By bus  
बस

17.7%

By rail  
रेल

15.1%

By car  
कार

70.2%

For  
social/religious  
reasons  
सामाजिक कारण

## 2 Daily commute दैनिक आवागमन



► **Two-wheelers: 42.6%**  
of work trips (urban  
52.3%)

**दोपहिया सबसे अधिक**

► Bus only **6.7%**;  
trains/metro **2.1%**  
**सार्वजनिक परिवहन कम**

► Average trip: **25 minutes**

**औसत 25 मिनट**

## 3 Gender gap | लैंगिक अंतर

► Men spend **₹835/month**,  
women **₹533**  
**खर्च में अंतर**

► 61.9% men vs **41.9%**  
**women** travel > 1 km for work  
**महिलाएँ कम दूरी**

► Women **twice as likely** to  
use public transport  
**महिलाएँ अधिक सार्वजनिक परिवहन**

## NSO Travel Survey — in depth (1/2)

### यात्रा सर्वेक्षण — विस्तार से (1/2)

4

Urban mass transit  
शहरी परिवहन



| State<br>राज्य               | Share of urban<br>commutes<br>हिस्सा |
|------------------------------|--------------------------------------|
| Maharashtra                  | 20.7%                                |
| West Bengal                  | 16.5%                                |
| Delhi                        | 14.4%                                |
| National<br>avg<br>राष्ट्रीय | 5%                                   |

5

Survey details  
सर्वे विवरण



- By **NSO (MoSPI)**, July 2025 – June 2026  
**NSO**
- **4.92 lakh** households  
**4.92 लाख परिवार**
- 14,274 villages, 10,377 urban blocks  
**गाँव व शहरी खंड**

6

Policy lessons | नीति  
सबक



- Invest in **buses** – backbone of travel  
**बसों में निवेश**
- Expand **metro/suburban rail** in cities  
**मेट्रो विस्तार**
- Safe, cheap transport for **women** workers  
**महिलाओं के लिए**

## NSO Travel Survey — in depth (2/2)

### यात्रा सर्वेक्षण — विस्तार से (2/2)

#### 7 How India travels | भारत कैसे यात्रा करता है



Long trips  
लंबी यात्रा

Bus first  
बस



Rail  
रेल

Urban more  
शहरी



Work trips  
काम

Two-wheelers  
दोपहिया



Short trips  
छोटी

Walk  
पैदल

8

Did you know?  
क्या आप जानते हैं?



► NSO formed by merging  
**CSO & NSSO** (2019)

**CSO + NSSO**

► Urban workers spend  
**₹1,044/month** on commute  
शहरी खर्च

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# Page 12 • Business

## पृष्ठ 12 • व्यापार

Articles covered from this page | इस पृष्ठ से लिए गए लेख

1 SME Growth Fund | SME ग्रोथ फंड

2 ITLA apex body | ITLA

**Govt. steps in to stop Adani's MIAL slot cuts**

The civil aviation ministry's intervention effectively puts the proposed international slot cuts on ice, while seeking a workable transition plan

**World Bank raises India FY27 growth forecast by 50 bps**

The World Bank on Tuesday raised India's GDP growth forecast for the current fiscal year (FY26), up 50 basis points from 6.5% to 7.0%, and for FY27, up 50 basis points from 6.5% to 7.0%, suggesting robust economic demand and strong exports, despite global headwinds.

**Emphasis extends Scotland deal in £3.4 million contract**

IT services company Infosys has extended its contract with the Indian government to manage and maintain the India's government's e-governance system, extending the contract for another three years, valued at £3.4 million.

**Bondada bags ₹154 cr. order for 280 MW solar project**

Bondada Engineering has secured a ₹154 crore order for development of a 280 MW ground-mounted solar PV project across coastal Karnataka in India's south.

**OpenAI all set to watermark ChatGPT text in Europe**

OpenAI will begin adding a watermark to its ChatGPT text in Europe, as part of its efforts to protect its intellectual property.

**Kasturi Cotton gains as traceability in textiles turns crucial**

Kasturi Cotton, a leading textile company, has gained momentum as traceability in the textile industry becomes a key factor for consumers.

**MDR cannot be on consumers, says Punjab & Sind Bank MD**

The Managing Director of Punjab & Sind Bank has stated that the Monetary Discipline Requirement (MDR) should not be placed on consumers.

**Jio IPO 'sans OFS, may list in top 3 at ₹12 lakh cr. valuation'**

Analysts predict that Jio's IPO will be a massive success, with the company likely to list in the top 3 of the market at a valuation of ₹12 lakh crore.

**Hindoga Tech names Fair Ahmad as CEO**

Hindoga Tech has appointed Fair Ahmad as its Chief Executive Officer (CEO).

**Auto retail sales surge 32% year-on-year**

Auto retail sales in India surged 32% year-on-year in September, driven by strong demand and festive season.

**ITLA apex body**

The IITs Leadership Association (ITLA) has been established as an apex body for IITs.

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## ITLA & SME Growth Fund

### ITLA व SME फंड

# Cabinet approves ₹10,000-crore SME growth fund

**The Hindu Bureau**

NEW DELHI

The Union Cabinet on Tuesday approved the proposal by the Ministry of Finance to commit ₹10,000 crore of central government funding for the setting up of a Small and Medium Enterprises (SME) Growth Fund in line with a proposal in Budget 2026.

The SME Growth Fund is “aimed at catalysing growth-oriented capital for

India’s SMEs and enabling the emergence of champion Indian enterprises across manufacturing, services, technology, innovation-driven sectors, and strategic value chains”, the government said in a release following the Cabinet’s decision.

The Fund was first mentioned in Union Budget 2026, when Finance Minister Nirmala Sitharaman had spoken about it as a means to incentivise enter-

prises based on select criteria.

“There are existing funds which provide equity support but majority of them focus on early-stage enterprises and cover majorly micro enterprises,” the release added. “A structural gap exists for equity growth capital for small and medium enterprises.”

The government further said that the majority of the allocation from the

Fund will be made towards small and medium manufacturing focused enterprises. The Fund will also consider SMEs in industrial clusters in Tier II and Tier III cities, it added.

“By providing long-term capital, the initiative will enable Indian SMEs to scale operations, invest in technology and manufacturing capacity, expand into international markets, integrate into global value chains, and undertake stra-

tegic investments,” the release said.

The release went on to say that the SME Growth Fund was one part of the government’s overall efforts to strengthen the SME sector through reforms, digitalisation initiatives, credit support mechanisms, ease of doing business measures, public procurement reforms, startup promotion initiatives, and production-linked incentive programmes.

# ITLA & SME Growth Fund

## ITLA व SME फंड

Cabinet clears apex body to handle roads, rail, ports as one network

Jagriti Chandra  
NEW DELHI

The Union Cabinet on Tuesday approved a Special Purpose Vehicle – the Integrated Transport & Logistics Authority (ITLA) – which will be the apex body to plan, appraise and monitor transport and logistics projects that are now handled separately by different ministries and agencies.

Its central task will be a National Transport Master Plan with a horizon of 10 years or more, covering every major mode.

Short-term sectoral plans of about five years, and the annual plans of the transport ministries, will be checked against that master plan so that new capacity is multi-modal rather than mode by mode, according to a statement.

ITLA will also technically appraise Government of India infrastructure projects costing ₹500 crore or more. Financial appraisal will stay with the existing mechanisms. The same threshold applies after sanction: the authority will monitor implementation of transport and infrastructure projects above ₹500 crore, run a coordinated mechanism for resolving bottlenecks, and carry out impact assessments once projects are completed.

ITLA will build a National Transport Data Repository, drawing on GSTN e-way bills, FASTag, Vahan, GPS-based systems, and other databases.

# Cabinet Clears Apex Transport Body & ₹10,000-cr SME Growth Fund

मंत्रिमंडल: सड़क, रेल, बंदरगाह के लिए एकीकृत प्राधिकरण (ITLA) और ₹10,000 करोड़ का SME ग्रोथ फंड



Cabinet decisions  
कैबिनेट निर्णय

## 1 ITLA | ITLA



► **Integrated Transport & Logistics Authority** – an SPV

एकीकृत प्राधिकरण

► Plans roads, rail, ports as **one network**

एक नेटवर्क

► Prepares **National Transport Master Plan** (10+ yrs)

## 2 ITLA powers ITLA की शक्तियाँ



► Technically appraise projects **≥ ₹500 crore**  
₹500 करोड़+

► Monitor, resolve bottlenecks, impact studies  
निगरानी

► **National Transport Data Repository** (FASTag, Vahan, e-way bills)  
डेटा भंडार

## 3 SME Growth Fund SME ग्रोथ फंड



► **₹10,000 crore** from Centre (Budget 2026)  
₹10,000 करोड़

► **Equity growth capital** for small & medium firms  
इक्विटी पूँजी

► Focus: **manufacturing**, Tier II–III clusters  
विनिर्माण

मास्टर प्लान

## ITLA & SME Growth Fund — in depth (1/2)

### ITLA व SME फंड — विस्तार से (1/2)

#### 4 Why ITLA | ITLA क्यों

- ▶ Ministries planned **mode by mode** in silos  
अलग-अलग योजना
- ▶ Logistics cost high (~8-9% of GDP)  
उच्च लॉजिस्टिक्स लागत
- ▶ Builds on **PM GatiShakti** (2021)  
पीएम गतिशक्ति

#### 5 Why an SME fund SME फंड क्यों

- ▶ Existing funds focus on **startups & micro** firms  
मौजूदा फंड सूक्ष्म पर
- ▶ **Gap** in growth capital for mid-sized firms  
पूँजी की कमी
- ▶ Help create **champion** Indian enterprises  
चैंपियन उद्यम

#### 6 MSME definition MSME परिभाषा

| Type<br>प्रकार | Investment / Turnover<br>निवेश / कारोबार |
|----------------|------------------------------------------|
| Micro          | ≤ ₹2.5 cr / ₹10 cr                       |
| Small          | ≤ ₹25 cr / ₹100 cr                       |
| Medium         | ≤ ₹125 cr / ₹500 cr                      |

## ITLA & SME Growth Fund — in depth (2/2)

### ITLA व SME फंड — विस्तार से (2/2)

#### 7 One plan for all transport | सबके लिए एक योजना



**Master Plan**  
मास्टर प्लान

10+ years  
10 वर्ष



**Sector plans**  
क्षेत्रीय योजना

5 years  
5 वर्ष



**Appraise**  
आकलन

≥ ₹500 cr  
परियोजनाएँ



**Monitor**  
निगरानी

Impact study  
प्रभाव

#### 8 Did you know? क्या आप जानते हैं?



► MSMEs: ~30% of GDP,  
~45% of exports  
GDP व निर्यात

► Fund set up as an **AIF**  
(Alternative Investment  
Fund)  
**AIF**

## Page 2 · Economy

## पृष्ठ 2 • अर्थव्यवस्था

Articles covered from this page | इस पृष्ठ से लिए गए लेख

**1 Effective GST rate 13.1% | प्रभावी GST दर**

IN THE NEWS

**SITHARAHANG**  
DISCUSSES  
BY WITH EDGES PREZ

President Natarajan has been elected to the post of President of the Tamil Nadu Sahitya Akademi. He is the first person to hold the post for two consecutive terms. He was elected to the post in 2011 and re-elected in 2015. He is a well-known Tamil writer and has written several books. He is also a member of the Tamil Nadu Sahitya Akademi.

**FACELESS CGST SYSTEM SOON**  
The Government is planning to launch a faceless system for the Central Goods and Services Tax (CGST). This system will eliminate the need for physical presence of taxpayers at the tax office. It will be a fully digital system where taxpayers can file their returns and pay their taxes online. The system is expected to be launched in the next few months.

**Jairam Singh begins 3-nation Africa tour in Ghana**  
Jairam Singh, Minister of State for External Affairs, has begun a three-day tour of Ghana. He will be meeting with the Ghanaian Minister of Foreign Affairs and other officials. He will also be addressing the Ghanaian Parliament. This is his first visit to Ghana as a Minister of State.

**Govt urges private banks for financial inclusion schemes**  
The Government has urged private banks to launch financial inclusion schemes. It has asked them to focus on providing financial services to the underserved population. The Government has set a target of 100% financial inclusion by 2025. It has also asked the banks to launch schemes for financial inclusion in rural areas.

**India, Sri Lanka to boost fuel supply via cooperatives**  
India and Sri Lanka have agreed to boost fuel supply via cooperatives. This is part of a larger agreement between the two countries to strengthen their economic ties. The agreement was signed during the visit of the Indian Prime Minister to Sri Lanka. It will help in providing fuel to the people of both countries at a lower cost.

**Q-comm, logistics lead festive season hiring**  
The IT and logistics sectors are leading the festive season hiring. This is due to the increased demand for IT services and logistics during the festive season. Many companies are hiring fresh graduates and experienced professionals in these sectors. The hiring is expected to continue throughout the festive season.

**AN UNEVEN TREND**  
The Indian economy is showing an uneven trend. While the services sector is growing, the manufacturing sector is slowing down. This is due to the increased competition from China and other countries. The Government is trying to boost the manufacturing sector by providing incentives and support. It is also trying to improve the infrastructure and reduce the cost of doing business.

**WIDER SCOPE**  
The Indian economy has a wider scope for growth. The services sector is growing rapidly and is expected to continue to grow in the future. The manufacturing sector is also showing signs of recovery. The Government is trying to boost the manufacturing sector by providing incentives and support. It is also trying to improve the infrastructure and reduce the cost of doing business.

**TO IMPROVE THE SERVICE**  
The Government is trying to improve the service provided by the public sector. It is doing this by providing incentives and support to the public sector. It is also trying to improve the infrastructure and reduce the cost of doing business. This will help in providing better service to the people of India.

# Govt to set up new logistics authority

■ ITLA may break silos, overhaul infra planning  
New Delhi, October 2

**THE UNION CABINET** has today approved the formation of a new Logistics Infrastructure Authority (ITLA). The authority will be headed by the Minister of Transport and Road Transport Infrastructure, Nitin Gadkari. It will be a multi-ministerial body with representatives from the Ministry of Transport, Ministry of Road Transport and Highways, Ministry of Railways, Ministry of Shipping, Ministry of Civil Aviation, Ministry of Ports, Airports and Shipping, Ministry of Defence, Ministry of Home Affairs, Ministry of External Affairs, Ministry of Information and Public Relations, Ministry of Statistics and Programme Implementation, Ministry of Planning, Ministry of Finance, Ministry of Law and Justice, Ministry of Labour and Employment, Ministry of Skill Development and Entrepreneurship, Ministry of Health and Family Welfare, Ministry of Education, Ministry of Culture, Ministry of Sports and Youth Affairs, Ministry of Women and Child Development, Ministry of Social Justice and Empowerment, Ministry of Tribal Affairs, Ministry of Panchayats, Ministry of Rural Development, Ministry of Agriculture, Ministry of Animal Husbandry and Fisheries, Ministry of Food Processing Industries, Ministry of Textiles, 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## Effective GST Rate 13.1%

### प्रभावी GST दर

# Effective GST rate on domestic supply falls to 13.1% in Oct-July

FE BUREAU  
New Delhi, October 6

**POSTTHEGOODS** and services tax (GST) rate cuts and the slab rejig in September 2025, the tax base expanded strongly between October 2025 and July 2026, with taxable supply rising 25.8% year-on-year and business-to-consumer supply increasing 26.7%, sources said.

Gross tax liability grew 13.6% during the period, while the effective tax rate on domestic taxable supply declined from 14.55% to 13.13%, sources said.

"Consumption has held up and the base has widened while the revenue has stabilised," a senior official said, adding that the revenue shock that was feared did not occur.

Revenue growth remained positive through the 12 months. In the last four months, there

### EXPANDING BASE

■ Taxable supply rose

# 25.8%

in Oct-July after last year's GST rate cuts and slab rejig

■ B2C supply grew **26.7%**, signalling a widening tax base



■ Gross tax liability rose **13.6%**, while effective GST rate fell to **13.13%** from 14.55%

■ Revenue growth remained positive through the 12 months

has been an acceleration in revenue growth, sources said.

The 56th GST Council meeting, held on September 3-4, 2025, replaced the multi-rate, complex structure of the indirect tax system with a relatively simpler two-rate structure of 5% and 18%, along with an additional special rate of 40% for demerit and sin goods.

The 57th GST Council meet-

ing, set to take place on Thursday, will likely approve a host of proposals to make refunds faster and largely automated, widen input-tax credit, protect genuine buyers, bar notices for demands below ₹10,000 and decriminalise routine offences.

Besides process reforms, the meeting will focus on a limited set of issues aimed at rationalisation and removing ambiguity.

Tax rate changes are not on the agenda for this Council meeting.

The Council will seek to restrict the power to arrest under GST. Sources said tax officers should primarily be tax collectors and not law-enforcement authorities, and therefore, should not exercise arrest powers merely while pursuing tax-related matters.

# Effective GST Rate Falls to 13.1%; Council Meets Tomorrow

GST दर कटौती के बाद प्रभावी GST दर 14.55% से घटकर 13.13%; कर आधार 25.8% बढ़ा



57th Council: 8 Oct  
57वीं बैठक

1

What the data shows  
आँकड़े क्या बताते हैं



- ▶ Period: **Oct 2025 – July 2026**, after GST 2.0 rate cuts  
दर कटौती के बाद
- ▶ B2C supply **+26.7%** – tax base widening  
उपभोक्ता आपूर्ति बढ़ी
- ▶ The feared **revenue shock did not happen**  
राजस्व झटका नहीं लगा

2

57th Council agenda  
57वीं बैठक का एजेंडा



- ▶ **Faster, largely automated refunds**  
तेज़ रिफ़ंड
- ▶ **Wider ITC**; protect genuine buyers  
व्यापक ITC
- ▶ **No notices** below ₹10,000; decriminalise offences  
नोटिस नहीं
- ▶ **No rate changes** on agenda  
दरें नहीं बदलेंगी

3

Rates unchanged  
दरें नहीं बदलेंगी



**13.13%**

Effective GST rate  
प्रभावी दर

**14.55%**

Earlier rate  
पहले

**+25.8%**

Taxable supply  
कर योग्य आपूर्ति

**+13.6%**

Gross tax liability  
कर देयता

## Effective GST Rate 13.1% — in depth (1/2)

### प्रभावी GST दर — विस्तार से (1/2)

4

Also on the table  
अन्य प्रस्ताव



- ▶ **Faster, automated refunds**  
स्वचालित रिफ़ंड
- ▶ **No notices** for demands below ₹10,000  
₹10,000 से कम पर नोटिस नहीं
- ▶ **Restrict arrest powers;** decriminalise routine offences  
गिरफ़्तारी सीमित
- ▶ GST on **UPI MDR** – not on agenda  
UPI MDR पर GST नहीं

5

GST 2.0 structure  
GST 2.0 ढाँचा



| Slab<br>स्लैब | Applies to<br>किस पर              |
|---------------|-----------------------------------|
| 5%            | Essentials<br>आवश्यक              |
| 18%           | Most goods<br>अधिकांश             |
| 40%           | Sin & luxury<br>विलासिता/हानिकारक |

6

Why it matters | महत्व



- ▶ Lower **compliance burden** for small firms  
छोटे व्यापारियों को राहत
- ▶ Fewer **mismatch notices**, less litigation  
कम विवाद
- ▶ Tax base **widened** after rate cuts  
आधार बढ़ा

## Effective GST Rate 13.1% — in depth (2/2)

### प्रभावी GST दर — विस्तार से (2/2)

#### 7 GST reform path | GST सुधार यात्रा



Jul 2017

GST launched  
शुरुआत



Sep 2025

56th: 2-slab GST  
2 स्लैब



8 Oct 2026

57th: process  
reforms  
प्रक्रिया सुधार



Till 2027

Phased roll-out  
चरणबद्ध

#### 8 Did you know? क्या आप जानते हैं?



► **61%** of taxpayers get  
GST registration in **3  
working days**

3 दिन में पंजीकरण

► **MDR = Merchant  
Discount Rate**  
व्यापारी छूट दर

THE HINDU • 7 OCT 2026

# Page 14 • World

पृष्ठ 14 • विश्व

Articles covered from this page | इस पृष्ठ से लिए गए लेख

1 NASA's Moon reactor | चंद्र रिएक्टर

2 Jeffrey Archer dies at 86 | जेफ्री आर्चर का निधन



# Nuclear Reactor on the Moon

## चंद्रमा पर रिएक्टर

### Why NASA wants to build a nuclear reactor on the moon

#### NEWS ANALYSIS

Vasudevan Mukunth

NASA wants to install a nuclear reactor near the moon's south pole by 2030. Its planned output, 20 kilowatt (kW), could power a few households on earth. Russia's planned reactor for the International Lunar Research Station (ILRS), led by China, will produce around 10 kW. But the fact that they are nuclear makes them significant. The U.S. and China are pursuing parallel efforts today – in partnership with other countries – to be the first to set up a semi-permanent, and in future permanent, moon base. Such a facility will need electricity for everything from heating and life-support to recharging rover batteries. European scientists are also exploring lunar microreactors.

At most locations on the moon, a fortnight of daylight follows a fortnight of darkness. Near the south pole, where both factions are focusing their activities, promontories and craters create a patchwork of lit and shadowed patches, with temperatures inside some of the latter dipping under a frigid -200 C. But unlike solar panels, a nuclear reactor can produce power even in the dark.

The colder craters preserve water ice, which can quench astronauts' thirst and can also be electro-



View of Moon limb. ISTOCKPHOTO

lysed to produce hydrogen and oxygen, to power rockets launched from the moon itself. In one 2020 assessment, NASA scientists Julie Kleinhenz and Aaron Paz figured producing 10 tonnes of oxygen this way would require around 68 kW of power. So a 20-kW reactor could be a stepping stone in countries' plans to set up an array of reactors on the moon.

While the moon as a whole is barren, the more ideal locations, with longer periods of sunlight, terrain more suitable to land on, access to craters with water ice, and so on, are highly limited. Research commissioned by NASA has recommended siting nuclear reactors at least 1 km away from humans.

Now, the Outer Space Treaty 1967 says no country may appropriate any part of the moon through occupation or other means. But the Artemis Accords, to which the U.S. and its allies vis-à-vis the moon are signatories, envisage 'safety zones' to prevent harmful interference. Put differently, a state does not have to stake territory

on the moon to limit access to others: it can simply plunk a nuclear reactor there and appeal to the need for legitimate safety requirements.

The Accords say these zones must be temporary and respect free access – but a country or a bloc operating a cluster of reactors, landing pads, mines, and habitats could nevertheless gain a controlling advantage. For the appeal of this idea, however, both Artemis and ILRS face breathtaking technical hurdles. Shielding a nuclear reactor on the moon demands either launching the components to ensure its safe operation or producing them on the moon with lunar resources. Dismantling a reactor from a base demands deployment machines and power cables. The reactor core will also have to be launched unirradiated and, once online, space agencies will have to find ways to absorb and store all the heat – or radiate waste heat away from large surfaces kept free of moon dust. If a reactor fails on the moon, it could contaminate the same few places astronauts would like to be at.

While nuclear power could prove indispensable to a mature economy centred on the moon, no country possesses that economy today even as governments are being tempted to install reactors before their opponents – a danger in itself.

# Why NASA Wants a Nuclear Reactor on the Moon

नासा 2030 तक चंद्रमा के दक्षिणी ध्रुव पर परमाणु रिएक्टर क्यों लगाना चाहता है



Target: 2030  
लक्ष्य 2030

## 1 The plan | योजना



**20 kW**

NASA reactor  
नासा

**2030**

Target year  
लक्ष्य

**~10 kW**

Russia–China  
ILRS  
रूस-चीन

**South pole**

Location  
स्थान

## 2 Why nuclear | परमाणु क्यों



► **14 days of night** on the Moon

**14 दिन की रात**

► Craters below **–200°C**;  
solar fails in dark

**सौर ऊर्जा नहीं**

► Power for **base, life-support, rovers**

**आधार व जीवन रक्षा**

## 3 Water ice | बर्फ



► Polar craters hold **water ice**

**ध्रुवीय गड्ढों में बर्फ**

► Split into **hydrogen + oxygen** for rockets

**रोकेट ईंधन**

► 10 t oxygen needs **~68 kW** of power

**बिजली की ज़रूरत**

# Nuclear Reactor on the Moon — in depth (1/2)

चंद्रमा पर रिएक्टर — विस्तार से (1/2)

## 4 The race | होड़



| Bloc<br>गुट       | Programme<br>कार्यक्रम                        |
|-------------------|-----------------------------------------------|
| USA +<br>allies   | Artemis Accords<br>आर्टेमिस                   |
| China +<br>Russia | ILRS lunar station<br>ILRS                    |
| India             | Signed Artemis Accords<br>(2023)<br>हस्ताक्षर |

## 5 Space law | अंतरिक्ष क़ानून



- ▶ **Outer Space Treaty**  
**1967**: no country can own the Moon  
स्वामित्व नहीं
- ▶ Artemis Accords allow temporary “**safety zones**”  
सुरक्षा क्षेत्र
- ▶ Worry: reactors may give **de facto control**  
वास्तविक नियंत्रण का डर

## 6 India's Moon plans भारत की योजना



- ▶ **Chandrayaan-3** landed near south pole (**23 Aug 2023**)  
चंद्रयान-3
- ▶ Chandrayaan-4 (sample return), LUPEX with Japan  
आगामी मिशन
- ▶ Indian on Moon target: **2040**  
2040 लक्ष्य

## Nuclear Reactor on the Moon — in depth (2/2)

चंद्रमा पर रिएक्टर — विस्तार से (2/2)

### 7 Power to a Moon base | चंद्र आधार को ऊर्जा



**Reactor**  
रिएक्टर

Day & night  
दिन-रात



**Melt ice**  
बर्फ

Water  
पानी



**Electrolysis**  
विद्युत अपघटन

$H_2 + O_2$



**Fuel & air**  
ईंधन व हवा

Rockets, crew  
रोकेट

### 8 Did you know? क्या आप जानते हैं?



- ▶ NASA advises reactors  $\geq 1$  km from people  
1 किमी दूर
- ▶ Chandrayaan-3 landing site: **Shiv Shakti Point**  
शिव शक्ति पॉइंट

# Jeffrey Archer Dies at 86

जेफ्री आर्चर

## Jeffrey Archer, bestselling British novelist, dies at 86

Associated Press  
LONDON

Bestselling British author Jeffrey Archer, whose career as a politician was derailed by a perjury conviction, has died. He was 86.

Archer died "suddenly and peacefully" at his home on Monday, a day before the global release of his final novel, *Adam and Eve*, publisher HarperCollins said. Like his bestseller *Kane and Abel*, the new book follows a pair of biblically named characters born on the same day to different social classes.

Both a celebrated author and scandal-plagued politician, Archer's professional life teetered between triumph and turmoil as he wrote his way through a brief prison sentence and returned to the political arena.

His writing career spanned five decades and helped him bounce back from financial ruin following some bad investments. His debut novel, *Not a Penny More, Not a Penny Less*, hit the shelves in 1976 and was said to have been in-



Jeffrey Archer climbed the ranks of Britain's Conservative Party under Prime Minister Margaret Thatcher. NAGARA GOPAL

spired by his own experience nearly going bankrupt.

He went on to spend 14 years and five months on Britain's *Sunday Times* bestseller lists and over five years on *The New York Times* bestseller lists, selling 300 million books worldwide, according to HarperCollins.

### Political stint

Archer climbed the ranks of Britain's Conservative Party under Prime Minister Margaret Thatcher and was appointed in 1992 to the House of Lords by her successor, Prime Minister John Major.

Archer was cast out of his political party just before he was jailed on perjury charges in 2001.

Archer chronicled his time behind bars in a three-volume series titled *A Prison Diary*. The memoirs – *Hell, Purgatory and Heaven* – shared rare insight into the lives of inmates in British prisons, from the high-security HMP Belmarsh to the North Sea Camp open prison.

Archer is survived by his wife of 60 years, Dame Mary Archer, their two sons, two granddaughters and three grandsons, his publisher said.

# Jeffrey Archer, Bestselling British Novelist, Dies at 86

ब्रिटेन के बेस्टसेलर उपन्यासकार और राजनेता जेफ्री आर्चर का 86 वर्ष की आयु में निधन



300 million books sold  
30 करोड़ पुस्तकें

## 1 Who he was | कौन थे



- ▶ British **novelist** and **politician**  
उपन्यासकार व राजनेता
- ▶ Died at home on **Monday**, aged **86**  
**86 वर्ष की आयु में निधन**
- ▶ Last novel **Adam and Eve** released a day later  
अंतिम उपन्यास **एडम एंड ईव**

## 2 Writing career | लेखन



- |                                                                 |                                            |
|-----------------------------------------------------------------|--------------------------------------------|
| <b>300 mn</b><br>Books sold<br>पुस्तकें बिकीं                   | <b>1976</b><br>Debut novel<br>पहला उपन्यास |
| <b>14 yrs 5 mo</b><br>On Sunday<br>Times list<br>बेस्टसेलर सूची | <b>5 decades</b><br>Of writing<br>लेखन     |

## 3 Rise and fall उत्थान व पतन



- ▶ Rose in **Conservative Party** under **Margaret Thatcher**  
थैचर के समय
- ▶ Made a member of the **House of Lords (1992)** by **John Major**  
हाउस ऑफ़ लॉर्ड्स
- ▶ Jailed for **perjury** in **2001**  
झूठी गवाही पर जेल

## Jeffrey Archer Dies at 86 — in depth (1/2)

जेफ्री आर्चर — विस्तार से (1/2)

4

Famous works  
प्रसिद्ध कृतियाँ



| Book<br>पुस्तक                     | Note<br>विवरण                         |
|------------------------------------|---------------------------------------|
| Not a Penny More, Not a Penny Less | Debut, 1976<br>पहला उपन्यास           |
| Kane and Abel                      | Bestseller, 1979<br>सर्वाधिक प्रसिद्ध |
| A Prison Diary (3 vols)            | Hell, Purgatory, Heaven<br>जेल डायरी  |
| Adam and Eve                       | Final novel, 2026<br>अंतिम            |

5

Prison diaries | जेल  
डायरी



- ▶ Wrote about life in **HMP Belmarsh** (high-security)  
**बेलमार्श जेल**
- ▶ And **North Sea Camp** open prison  
**खुली जेल**
- ▶ Rare insight into **British prisons**  
**ब्रिटिश जेलों की झलक**

6

Key terms | प्रमुख शब्द



| Term<br>शब्द   | Meaning<br>अर्थ                              |
|----------------|----------------------------------------------|
| Perjury        | Lying under oath<br>शपथ पर झूठ               |
| House of Lords | UK upper house<br>ब्रिटिश उच्च सदन           |
| Life peer      | Lord for life, not hereditary<br>आजीवन सदस्य |

## Jeffrey Archer Dies at 86 — in depth (2/2)

जेफ्री आर्चर — विस्तार से (2/2)

### 7 A life of ups and downs | उतार-चढ़ाव भरा जीवन



Near bankrupt  
दिवालियापन

Bad investments  
ग़लत निवेश



1976 novel  
उपन्यास

Bounces back  
वापसी



1992 Lords  
लॉर्ड्स

Peak of politics  
राजनीति



2001 prison  
जेल

Wrote diaries  
डायरी

### 8 Did you know? क्या आप जानते हैं?



► UK Parliament: **House of Commons + House of Lords**

ब्रिटिश संसद

► India's upper house = **Rajya Sabha**

भारत का उच्च सदन

## Asked in Exams — guess the answer! | पहले स्वयं उत्तर सोचें

### UPSC CSE Prelims 2015 (GS Paper I)

Exam date: 23 Aug 2015 • Topic: IceCube (Physics Nobel)

In the context of modern scientific research, consider the following statements about 'IceCube', a particle detector located at South Pole, which was recently in the news: 1. It is the world's largest neutrino detector, encompassing a cubic kilometre of ice. 2. It is a powerful telescope to search for dark matter. 3. It is buried deep in the ice. 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

### UPPSC PCS Prelims 2018 (Paper I)

Exam date: 28 Oct 2018 • Topic: BrahMos

Supersonic Cruise Missile BrahMos is a joint venture of which of the following?

- (a) India and Russia
- (b) India and China
- (c) India and Israel
- (d) None of the above

## Answers & Explanation | उत्तर व व्याख्या

### UPSC CSE Prelims 2015 (GS Paper I)

Exam date: 23 Aug 2015 • Topic: IceCube (Physics Nobel)

In the context of modern scientific research, consider the following statements about 'IceCube', a particle detector located at South Pole, which was recently in the news: 1. It is the world's largest neutrino detector, encompassing a cubic kilometre of ice. 2. It is a powerful telescope to search for dark matter. 3. It is buried deep in the ice. 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: (d)** All three are correct.  
तीनों कथन सही।

### UPPSC PCS Prelims 2018 (Paper I)

Exam date: 28 Oct 2018 • Topic: BrahMos

Supersonic Cruise Missile BrahMos is a joint venture of which of the following?

- (a) India and Russia**
- (b) India and China
- (c) India and Israel
- (d) None of the above

**Answer: (a)** DRDO + Russia's NPO Mashinostroyeniya.  
भारत व रूस।

## Asked in Exams — guess the answer! | पहले स्वयं उत्तर सोचें

### SSC CGL 2025 (Tier I)

Exam date: 19 Sept 2025 (Shift 3) • Topic: GST

**Fill in the blanks: The Chairperson of the GST Council is the \_\_\_\_\_ of India.**

- (a) Prime Minister
- (b) Union Finance Minister
- (c) President
- (d) Vice-President

## Answers & Explanation | उत्तर व व्याख्या

### SSC CGL 2025 (Tier I)

Exam date: 19 Sept 2025 (Shift 3) • Topic: GST

**Fill in the blanks: The Chairperson of the GST Council is the \_\_\_\_\_ of India.**

- (a) Prime Minister
- (b) Union Finance Minister**
- (c) President
- (d) Vice-President

**Answer: (b)** Article 279A – Union Finance Minister.  
केंद्रीय वित्त मंत्री।

## Test Yourself — Q1–4 | स्वयं को परखें

**Q1** The 2026 Physics Nobel was linked to which observatory?

**2026 भौतिकी नोबेल किस वेधशाला से जुड़ा?**

- (a) LIGO
- (b) IceCube
- (c) Hubble
- (d) ALMA

**Q2** The blue light produced when a particle moves faster than light in a medium is called:

**माध्यम में प्रकाश से तेज़ कण से बनने वाला नीला प्रकाश:**

- (a) Raman effect
- (b) Cherenkov radiation
- (c) Tyndall effect
- (d) Doppler shift

**Q3** India's proposed Neutrino Observatory (INO) is in:

**भारत की INO कहाँ प्रस्तावित है?**

- (a) Kerala
- (b) Tamil Nadu
- (c) Karnataka
- (d) Sikkim

**Q4** After the 56th GST Council, the two main slabs are:

**56वीं परिषद के बाद दो मुख्य स्लैब:**

- (a) 5% and 12%
- (b) 12% and 18%
- (c) 5% and 18%
- (d) 18% and 28%

## Test Yourself — Q5–8 | स्वयं को परखें

**Q5** “Surya” launched at Visakhapatnam is a:  
“सूर्या” क्या है?

- (a) Submarine
- (b) Destroyer
- (c) Fleet support ship
- (d) Aircraft carrier

**Q6** BrahMos is named after rivers:  
ब्रह्मोस का नाम किन नदियों से?

- (a) Brahmani & Mahanadi
- (b) Brahmaputra & Moskva
- (c) Brahmaputra & Volga
- (d) Brahmani & Don

**Q7** Who will be the next Chief of the Air Staff?  
अगले वायुसेना प्रमुख:

- (a) A.P. Singh
- (b) Ashutosh Dixit
- (c) V.R. Chaudhari
- (d) Narmadeshwar Tiwari

**Q8** DRDO's HAPS flew in which layer?  
DRDO का HAPS किस परत में उड़ा?

- (a) Troposphere
- (b) Stratosphere
- (c) Mesosphere
- (d) Thermosphere

## Test Yourself — Q9–12 | स्वयं को परखें

**Q9** Most overnight trips in India are by:  
अधिकांश रात्रि यात्राएँ:

- (a) Rail
- (b) Bus
- (c) Car
- (d) Air

**Q10** ITLA will technically appraise projects costing at least:  
ITLA किस लागत से ऊपर परियोजनाओं का आकलन करेगा?

- (a) ₹100 crore
- (b) ₹500 crore
- (c) ₹1,000 crore
- (d) ₹5,000 crore

**Q11** Which treaty says no country can claim the Moon?  
कौन-सी संधि चंद्रमा पर स्वामित्व रोकती है?

- (a) Moon Agreement 1979
- (b) Outer Space Treaty 1967
- (c) Artemis Accords
- (d) Antarctic Treaty

**Q12** Jeffrey Archer's famous novel is:  
जेफ्री आर्चर का प्रसिद्ध उपन्यास:

- (a) The Godfather
- (b) Kane and Abel
- (c) Wolf Hall
- (d) Atonement

## Answer Key — Q1–6 | उत्तर व व्याख्या

1-b

**IceCube** — IceCube, South Pole.  
IceCube I

2-b

**Cherenkov radiation** — Cherenkov radiation.  
चेरेनकोव विकिरण।

3-b

**Tamil Nadu** — Bodi West Hills, Theni, Tamil Nadu.  
तमिलनाडु।

4-c

**5% and 18%** — 5% and 18%, plus 40% special.  
5% व 18%।

5-c

**Fleet support ship** — India's first indigenous FSS.  
फ्लीट सपोर्ट शिप।

6-b

**Brahmaputra & Moskva** — Brahmaputra (India) + Moskva (Russia).  
ब्रह्मपुत्र व मॉस्को।

## Answer Key — Q7–12 | उत्तर व व्याख्या

7-b

**Ashutosh Dixit** — Air Marshal Ashutosh Dixit, from 31 Oct.  
आशुतोष दीक्षित।

8-b

**Stratosphere** — ~20–21 km = stratosphere.  
समताप मंडल।

9-b

**Bus** — 55.8% by bus (NSO).  
बस।

10-b

**₹500 crore** — ₹500 crore and above.  
₹500 करोड़।

11-b

**Outer Space Treaty 1967** — Outer Space Treaty, 1967.  
बाह्य अंतरिक्ष संधि।

12-b

**Kane and Abel** — Kane and Abel (1979).  
केन एंड एबेल।



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## Myth Buster of the Day — Science & Universe | आज का मिथक



### MYTH | मिथक

**“Seasons happen because the Earth is closer to the Sun in summer.”**

गर्मी इसलिए होती है क्योंकि तब पृथ्वी सूर्य के पास होती है।



### FACT | तथ्य

False. Earth is actually closest to the Sun in early January – winter in India! Seasons happen because Earth's axis is tilted about  $23.5^\circ$ . When our half leans towards the Sun, sunlight falls more directly and days are longer – that is summer.

ग़लत। पृथ्वी जनवरी की शुरुआत में सूर्य के सबसे पास होती है – जब भारत में सर्दी होती है! ऋतुएँ पृथ्वी की धुरी के लगभग  $23.5^\circ$  झुकाव के कारण होती हैं। जब हमारा गोलार्ध सूर्य की ओर झुका होता है, तो किरणें सीधी पड़ती हैं और दिन लंबे होते हैं – यही गर्मी है।



**The obvious answer is not always the right one – check the evidence. जो उत्तर स्पष्ट लगे, ज़रूरी नहीं कि सही हो – प्रमाण जाँचें।**

Thank you ?

