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The U.S. government under President Donald Trump recently announced a sharp hike in the H-1B visa fee to \$100,000. Initially, confusion prevailed as Commerce Secretary Howard Lutnick suggested it would be an annual fee. However, the White House later clarified that this will be a one-time fee applicable only for new H-1B applicants starting from the next lottery cycle. The clarification eased panic among Indian H-1B visa holders abroad, who had rushed to book last-minute flights fearing heavy re-entry charges.

One-time H-1B fee for new applicants: U.S.

Only fresh H-1B visa applicants will have to pay starting with the 'next upcoming lottery cycle'

Announcement eased fears among NRIs that triggered surge in flight bookings to the U.S.

Lutnick had stated that no more would these giant tech companies train foreign workers

Kallol Bhattacharjee
NEW DELHI

A day after U.S. President Donald Trump hiked H-1B visa fees to \$100,000, the White House clarified that the fee will not be an annual feature, but rather a "one-time" payment that will have to be made by companies for fresh H-1B visa applicants, starting with the "next upcoming lottery cycle".

The announcement eased the fears that had triggered a surge in last-minute flight bookings to the United States by Indian H-1B visa holders who are currently outside the country, after U.S. Secretary of Commerce Howard Lutnick's earlier remarks indicating that the fee amount would have to be paid ev-

ery year. However, White House Press Secretary Karoline Leavitt contradicted the Commerce Secretary's comments in a social media post early on Sunday.

"To be clear: this is not an annual fee. It's a one-time fee that applies only to the petition. Those who already hold H-1B visas and are currently outside of the country right now will not be charged \$100,000 to re-enter. H-1B visa holders can leave and re-enter the country to the same extent as they normally would: whatever ability they have to do that is not impacted by yesterday's proclamation," the Press Secretary said.

"This applies only to new visas, not renewals and not current visa holders. It will first apply in the next upcoming lottery

Clarity emerges

The White House issued a clarification after an initial announcement on the H-1B visa fee led to panic

■ The \$100,000 fee will be a 'one-time' payment

■ The fee applies only to new applicants. Those applying for renewals or current visa holders need not make the payment

■ U.S. Commerce Secretary Howard Lutnick had initially said that the fee would be applied annually, leading to much of the confusion

cycle," she added.

Lutnick's remarks

During the signing of the proclamation by Mr. Trump, Mr. Lutnick had said, "No more will these big tech companies train foreign workers. They have to pay the government a

hundred thousand dollars and then they have to pay the employee. So it's just non-economical. If you are going to train somebody, you are going to train one of the recent graduates from one of the great universities across our land." He added, "A hundred

Opposition decry failure to take a strong stand

The Hindu Bureau
NEW DELHI

The Opposition on Sunday took a swipe at Prime Minister Narendra Modi for not taking a firm stand against the "strong-arm tactics" of the U.S. and instead adopting an

"escapist approach" by giving "vague sermons" about self-reliance. They targeted the PM over U.S. President Trump's move to impose a fee of \$100,000 for H-1B visas.

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thousand dollars a year for H-1B visas and all of the big companies are onboard."

Rush for tickets

In its first response on September 20, the Ministry of External Affairs had cautioned that the order would have "humanitarian

consequences" due to family disruptions.

Soon after the proclamation by Mr. Trump, several corporate giants, including Microsoft, JPMorgan and Amazon, instructed their H-1B visa holding employees who were outside the U.S. to re-

turn before midnight on Saturday, telling others to remain in the U.S.

Mr. Lutnick's remarks created a rush among H-1B visa holders for last minute purchases of air tickets.

The Hindu reported on Sunday that travel agents observed a surge in last-minute flight bookings to the U.S. on Saturday as H-1B visa holders attempted to reach their work stations in the U.S. ahead of the September 20-21 midnight deadline when the proclamation came into effect.

Officials also observed the spike in last-minute flight bookings, following which the Indian government instructed its missions and embassies across the world to provide "all possible help" to Indians trying to return to the U.S. before the deadline.

Static Background

1. What is H-1B Visa?

- A non-immigrant U.S. visa that allows companies to employ foreign workers in specialty occupations requiring technical or theoretical expertise (e.g., IT, engineering, finance, research).
- Validity: Initially 3 years, extendable to 6 years.

2. India-U.S. Linkage

- Nearly 70% of H-1B visas go to Indian professionals, especially in the IT sector (Infosys, TCS, Wipro, etc.).
- Acts as a strategic bridge between India and U.S. in technology, education, and services.

3. Historical Context

- U.S. debates over H-1B often revolve around domestic job protection vs. need for global talent.

- Similar controversies happened during Trump's 2017 "Buy American, Hire American" executive order.

Current Development

- Fee Hike: \$100,000 one-time fee on fresh applicants only.
- No Impact On: Current H-1B visa holders or renewals.
- Confusion: Lutnick's remark created panic that it would be annual.
- Clarification: White House confirmed it's not recurring.
- Immediate Consequence:
 - Sudden surge in last-minute flight bookings by H-1B holders abroad.
 - Indian Ministry of External Affairs flagged humanitarian concerns due to family disruptions.
 - Companies like Microsoft, JPMorgan, and Amazon advised employees to rush back to the U.S. before the deadline.

Mains Implications

1. For Indian IT Professionals

- Increased financial burden on employers → reduced hiring of Indians.
- May push companies to look at near-shore centers (Canada, Mexico) or remote work models.

2. For Indian Economy

- IT exports (~\$250 billion sector) could face slowdown.
- Remittances from U.S. (biggest source country for India) may reduce if fewer H-1B visas are issued.

3. For U.S. Economy

- Tech industry dependent on Indian talent may face talent crunch.
- Could increase cost of innovation and reduce competitiveness.

4. Diplomatic Angle

- India has consistently raised concerns on visa restrictions in bilateral talks.
- Could become a sticking point in India-U.S. strategic partnership, even though defense and trade ties are growing.

5. Social & Humanitarian Concerns

- Family disruptions due to sudden orders.
- Anxiety among NRI community.

Way Forward

- **For India:**
 - Diversify IT markets (Europe, ASEAN, Africa).
 - Push for Mode 4 liberalisation (movement of natural persons) in WTO negotiations.
 - Invest in domestic high-tech ecosystem to reduce dependency on foreign markets.
- **For U.S.:**
 - Balance between protecting domestic jobs and maintaining innovation edge.
 - Structured visa policy instead of abrupt announcements.

Conclusion

The U.S. decision to impose a \$100,000 one-time H-1B visa fee highlights the persistent tension between domestic political compulsions and global talent needs. For India, it is a reminder to strengthen its domestic innovation capacity and reduce over-dependence on H-1B visas for IT exports. While the clarification has reduced immediate panic, the development underscores how visa policy continues to remain a strategic and economic variable in India-U.S. relations.

UPSC Prelims Practice Question

Ques: Consider the following statements about the H-1B Visa:

1. It is a U.S. immigrant visa that allows permanent residence for skilled workers.
2. The visa is initially valid for 3 years and can be extended up to 6 years.
3. A majority of H-1B visas are issued to professionals from India.

How many of the above statements are correct?

- (a) Only one (b) Only two
(c) All three (d) None

Ans: (b)

UPSC Mains Practice Question

Ques: Evaluate the implications of the U.S. H-1B visa fee hike on India's IT industry and foreign exchange earnings. What measures can India take to reduce over-dependence on H-1B visas? **(250 Words)**

On September 26, 2025, the Indian Air Force (IAF) will formally retire the MiG-21, its first supersonic fighter jet, after almost 62 years of service. Known as the “workhorse” of Indian air defence, the MiG-21 not only fought wars and conflicts but also symbolised India’s growing aerospace ambitions. Its de-induction marks the end of an era and raises questions about India’s combat strength at a time of increasing regional security challenges.

IAF’s legendary workhorse MiG-21 to fly into sunset on Sept. 26 after six decades of service

Saurabh Trivedi
NEW DELHI

The Indian Air Force will officially retire its legendary MiG-21 fighter jets on September 26, marking the end of nearly six decades of service for the aircraft widely hailed as the “workhorse” of India’s air defence.

A ceremonial flypast and decommissioning event will be held at the IAF base in Chandigarh and will be attended by senior military leaders and veteran pilots who have flown the jet across



Glorious stint: Air Chief Marshal A.P. Singh flew the aircraft recently ahead of its official retirement. FILE PHOTO

generations.

Inducted in 1963, the MiG-21 was India’s first su-

personic fighter, with its maiden squadron – the 28 Squadron at Chandigarh –

earning the nickname ‘First Supersonics’. Over the years, India inducted more than 700 MiG-21s of different variants, many built domestically by the Hindustan Aeronautics Limited.

The aircraft was the backbone of the IAF till the mid-2000s, playing crucial roles in the 1965 and 1971 wars, the 1999 Kargil conflict, the 2019 Balakot air strikes, and most recently Operation Sindoor. It was in a MiG-21 that Group Captain Abhinandan Varthaman (then Wing Commander) shot down a Pakistani

F-16 in 2019 before being captured across the border. Besides combat successes, the MiG-21 also boosted India’s aerospace industry, pushing indigenous manufacturing and technological capabilities to new levels.

The IAF, in a post on X, described the MiG-21 as a “warhorse that carried the pride of a nation into the skies” and released a tribute video showcasing its storied history.

As the MiG-21 squadrons are phased out, the IAF’s combat strength will dip to 29 squadrons.

Static Background

- Induction: 1963; first squadron = 28 Squadron, Chandigarh → “First Supersonics”.
- Numbers: India inducted over 700 MiG-21s (various variants, many built by HAL).
- **Wars & Operations:**
 - 1965 & 1971 Indo-Pak wars → decisive roles.
 - 1999 Kargil conflict.
 - 2019 Balakot air strike & aerial dogfight → Abhinandan Varthaman shot down Pakistani F-16.
 - 2023 “Operation Sindoor” (latest combat role).
- Contribution to industry: Strengthened HAL & indigenous aerospace capability.
- Nicknames: “Workhorse”, “First Supersonics”, “Warhorse that carried the pride of a nation into the skies” (IAF tribute).

Current Development (2025)

- Ceremonial Retirement: Sept 26, 2025, IAF Base Chandigarh.
- Attended by: Air Chief Marshal A.P. Singh, veterans, senior officers.
- Symbolic Last Flight: A flypast showcasing its 60+ years of service.
- IAF Status After Retirement: Combat strength dips to 29 squadrons (below the sanctioned 42).

Implications

1. Operational Gap

- Retirement reduces squadron strength → capability challenge against a two-front threat (China & Pakistan).
- Greater reliance on Su-30 MKI, Rafale, Tejas, Mirage-2000.

2. Indigenisation Push

- Opens space for accelerated induction of LCA Tejas Mk-1A, AMCA, and foreign collaborations.
- Boost to Atmanirbhar Bharat in defence sector.

3. Historical Legacy

- Symbol of India's Cold War-era defence ties with USSR.
- Helped India develop HAL's licensed production capabilities → foundation for present aerospace industry.

4. Strategic Concerns

- Pakistan still operates JF-17s (China-Pak co-production).
- China has advanced 5th-gen jets (J-20).
- India's fleet rationalisation and new acquisitions (Tejas, MRFA deal) become urgent.

5. Public Sentiment

- Emotional connect: generations of IAF pilots trained and fought in MiG-21.
- Also associated with safety concerns (high crash record in later years).

Way Forward

- Fast-track induction of Tejas Mk-1A, Tejas Mk-2, Rafale-M, AMCA.
- Strengthen squadron numbers towards sanctioned 42.
- Invest in domestic manufacturing with private sector + DRDO-HAL synergy.
- Maintain balanced foreign partnerships (France, Russia, U.S.) for advanced fighter jets.

Conclusion

The MiG-21's retirement closes a historic chapter in Indian air power. From the 1965 war to the 2019 Balakot aerial dogfight, it was the steel spine of IAF's combat might. However, its phasing out exposes India's urgent need to modernise its fleet amidst rising regional tensions. The legacy of the MiG-21 lies not just in victories in the sky, but also in how it laid the foundation of India's self-reliant aerospace journey.

UPSC Prelims Practice Question

Ques: Consider the following statements about MiG-21:

1. It was the first supersonic fighter jet inducted by the Indian Air Force.
2. The first squadron of MiG-21 was based at Ambala and was called "First Supersonics."
3. Group Captain Abhinandan Varthaman flew a MiG-21 during the 2019 Balakot air skirmish.

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

Ans: (c)

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The Union Territory (UT) of Ladakh, carved out of Jammu & Kashmir in 2019, has witnessed repeated protests and hunger strikes led by local bodies such as the Leh Apex Body (LAB) and the Kargil Democratic Alliance (KDA). Their demands—Statehood, Sixth Schedule inclusion, separate Lok Sabha seats for Leh and Kargil, and filling of government vacancies—highlight the tensions between strategic national interests and local aspirations of protection over land, jobs, and culture.

'We fear big industries; outsiders will occupy our land'

The ongoing protest in Ladakh is for Statehood, Sixth Schedule safeguards, Lok Sabha seats for Leh, Kargil, filling of job vacancies, says president of Ladakh Buddhist Association and co-convenor of Leh Apex Body; he says their primary complaint is that talks are not taking place on a regular basis

INTERVIEW

Cherring Dorjay Lakruk

Vijaita Singh
NEW DELHI

Climate activist Sonam Wangchuk and other residents of Ladakh are on a hunger strike to demand constitutional safeguards for the region bordering China that was converted into a Union Territory in 2019. A high-powered committee (HPC) led by Minister of State for Home Nityanand Rai was constituted in January 2023 to address the concerns of people in Ladakh. The committee was reconstituted in November 2023, but the talks broke down in March 2024. The

discussions resumed on December 3, 2024, and the last round was held on May 27. Cherring Dorjay Lakruk, the president of the powerful Ladakh Buddhist Association and co-convenor of the Leh Apex Body, which is part of the HPC, speaks about their protest.

Why are you protesting again?

This is essentially for our four demands [inclusion in the Sixth Schedule of the Constitution (tribal status), Statehood, separate Lok Sabha seats for Leh and Kargil districts, and filling of existing government vacancies]. The Home Ministry has suspended the talks, and it is being done to resume the process.

How long will it go on?



Mr. Wangchuk has declared that the protest and the hunger strike will go on for 35 days. However, this could be extended.

How many meetings did you have with the Home Ministry so far?

For the past four or five years, we have had many rounds of talks, but those have been irregular. Last year, Sonam Wangchuk had to march from Leh to Delhi and sit on a hunger strike, only then the talks

resumed. Our primary complaint is that the talks are not taking place on a regular basis.

In May, President Droupadi Murmu notified four regulations for Ladakh, defining new policies on reservation, languages, domiciles, and composition of hill councils. Didn't these incorporate your demands?

No, talks have taken place pertaining to our two major demands - Statehood and Sixth Schedule.

When Ladakh became a Union Territory, there were celebrations in Leh by the BJP. You have been associated with it.

I was in BJP then, but did

not celebrate. Our main demand then was U.T. with legislature.

Has the Home Ministry ever assured Statehood in the talks so far?

They said they will discuss, but the provision for Statehood is there in the Constitution.

What are the changes you expect if Statehood is granted?

Our main concern is land. This is a lot of barren land here. Safeguarding land is our priority. Jobs and culture can be protected by the Sixth Schedule.

What is the fear around land?

We fear big industries and hotels will come here and

outsiders will occupy our land. Here, hotels are run by family businesses; we do not have 400-500 room hotels here. Outsiders will take away our businesses.

What kind of protection you had when you were part of J&K?

Our land was 100% protected then. No outsiders could apply for jobs. Because of Article 370, outsiders could not buy land. Now they can.

What will be your next move?

The Ministry has sent us feelers for talks. It wants us to end the fast, but we cannot call off the strike. If the talks go in the right direction, we can consider. We won't suspend the hunger strike.

Current Context

- **Protests:** Climate activist Sonam Wangchuk and civil society leaders are on a hunger strike (planned 35 days, may extend) demanding constitutional safeguards.
- **Talks with Centre:** A High-Powered Committee (HPC) was formed in 2023 under MoS Home Nityanand Rai. Talks have been irregular, breaking down in March 2024 and resuming briefly in Dec 2024–May 2025.
- **Concerns:**
 - Fear of outsiders buying land & setting up big industries/hotels.
 - Lack of regular dialogue with the Home Ministry.
 - Discontent with recent Presidential notifications (May 2025) on reservation, domicile, language, hill councils—since they didn't address Statehood & Sixth Schedule.

Static Context

1. Sixth Schedule (Articles 244 & 275)

- Provides autonomy to tribal areas in Assam, Meghalaya, Tripura, Mizoram.
- Safeguards land, culture, and jobs through Autonomous District Councils.
- Ladakh leaders demand similar protection given its 95% tribal population (ST status).

2. Statehood Demand

- Current UT status means administration by L-G without legislature.
- Statehood would allow elected representatives & greater autonomy.
- Precedent: Similar demand arose in Delhi (UT with legislature).

3. Article 370 Removal (2019)

- Earlier, Ladakh under J&K enjoyed land & job protection.
- Now, land can be purchased by outsiders, raising demographic and cultural fears.

Issues Involved

- Security Dimension: Ladakh borders China (Eastern Ladakh LAC) → strategic location means Centre reluctant to devolve too much power.
- Development vs Identity: Locals fear uncontrolled tourism & industrialisation will erode fragile ecosystem and cultural traditions.
- Political Representation: Currently, Ladakh has 1 Lok Sabha seat; demand is for 2 seats (Leh & Kargil) for better representation.
- Employment: Large number of government job vacancies remain unfilled.

Way Forward

- Structured Dialogue: Regular institutionalised talks between Centre & Ladakh leaders.
- Tailored Safeguards: Explore special protections outside Sixth Schedule, similar to Article 371 provisions for NE states.
- Balanced Development: Encourage sustainable tourism and local entrepreneurship instead of large industrial entry.
- Political Empowerment: Consider UT with legislature model as an intermediate step.

Conclusion

The ongoing protests in Ladakh represent the clash between strategic centralisation and local aspirations for autonomy. While Ladakh holds immense importance in terms of national security and geopolitics, ignoring genuine concerns of land, jobs, and culture could deepen alienation. A balanced constitutional solution, possibly inspired by Sixth Schedule or Article 371 safeguards, along with regular dialogue, is essential to ensure that Ladakh becomes a model of both security and inclusivity.

UPSC Prelims Practice Question

Ques: Consider the following statements about the Sixth Schedule of the Constitution:

1. It provides for autonomous district councils in certain tribal areas.
2. It is applicable only to the Union Territories of Ladakh and Andaman & Nicobar Islands.
3. Councils under the Sixth Schedule can make laws on land, forest, and culture.

How many of the statements given above are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Ans :b)

UPSC Mains Practice Question

Ques: Ladakh's demand for Statehood and Sixth Schedule safeguards reflects the tension between national security interests and local aspirations. Discuss. **(150 Words)**

Astronomy continues to reshape our understanding of the cosmos. After gamma-ray bursts (GRBs) were long considered the most powerful events since the Big Bang, astronomers from the University of Hawaii's Institute for Astronomy (IfA) have now identified a new category: Extreme Nuclear Transients (ENTs). These are rare, immensely powerful explosions caused when massive stars are torn apart by supermassive black holes.

Astronomers have spotted the biggest bangs since the Big Bang

Black holes are one of nature's most inscrutable creations, and supermassive black holes that lurk near the centres of galaxies are the biggest of them all. As a star nears a black hole's event horizon, extreme forces stretch and compress the star into a long, thin stream, releasing enormous amounts of electromagnetic energy

Prakash Chandra

For all its apparent serenity, the universe is a very violent place, teeming with cataclysmic events: from colliding galaxies and supernovae (the explosive deaths of massive stars), to immensely powerful geysers of X-rays and black holes that gobble up stars.

In this deafening cosmic din, astronomers have always considered gamma-ray bursts (GRBs), produced during the formation of black holes, to be the most powerful flare-ups in the universe. Incredibly energetic GRBs traverse vast distances, making them the most luminous electromagnetic events since the Big Bang, the accepted cosmological model to explain the origin and evolution of the universe.

But recently, astronomers from the University of Hawaii's Institute for Astronomy (IfA) identified a new category of events that they found to be much more powerful than GRBs: extreme nuclear transients (ENTs). In astronomy, transients refer to celestial objects whose brightness changes significantly over a relatively short period.

Inscrutable creations

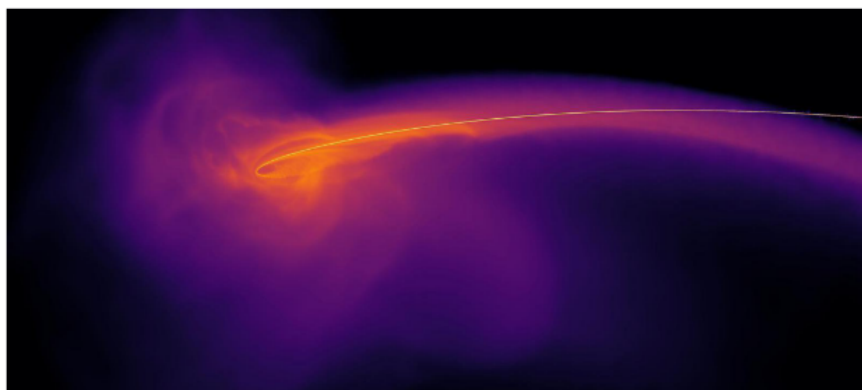
The IfA findings, published recently in *Science Advances*, described extraordinary phenomena that occurred when extremely big stars wandered too close to gargantuan black holes in galactic centres and literally got eaten up. Their fate was much like that of Icarus in Greek mythology, who flew too close to the sun on wings of wax and feathers only for the wings to melt, causing him to plummet to his death.

"ENTs are powered by accretion from the debris of a massive star at least three times heavier than our sun that has been ripped apart by a supermassive black hole," Jason Hinkle, the lead author of the IfA study, wrote to the author.

Black holes are one of nature's most inscrutable creations, and supermassive black holes that lurk near the centres of galaxies are the biggest of them all. There is one in the Milky Way galaxy, too: Sagittarius A*.

As a star nears a black hole's event horizon – its outer edge that marks the point of no return for even light – extreme tidal forces stretch and compress the star into a long, thin spaghetti-like shape, releasing enormous amounts of electromagnetic energy. This emission is the ENT.

These brilliant space streamers traverse immense distances and remain luminous in radio wavelengths for years, making it possible for astronomers to



A scene from a computer simulation of a tidal disruption of a one-solar-mass star by a one-million-solar-mass supermassive black hole. The snapshot shows the star being 'spaghettified' into a long thin stream. DANIEL JAMES PRICE (CC BY-SA)

study them. In fact, ENTs are so powerful that astronomers now believe they are the "biggest explosions" to have taken place since the Big Bang.

"ENTs are the most energetic class of transient events yet discovered," Dr. Hinkle said. "They emit up to ten-times more energy than the previous record holders."

Torn apart

Dr. Hinkle stumbled on to ENTs when sifting through data from the European Space Agency's Gaia spacecraft, which mapped the Milky Way for more than a decade.

"We were looking for smooth, high-amplitude, and long-lived events," he said. "In 2020, we began following two sources I had identified in 2016 and 2018 in the Gaia data with space-based UV/X-ray missions and ground-based spectroscopy to measure physical parameters, which gave the first indications that we were seeing something special."

When the Zwicky Transient Facility [which scans the entire Northern sky every two days using an extremely wide field of view camera at the Palomar observatory in California] published data on a third similar event in 2023, it gave additional confidence that we had found a rare, new class of transient phenomena," he added.

Astronomers have previously observed stars being torn apart in tidal disruption events (TDEs), which happens when a star is pulled apart by a black hole's tidal forces, releasing the energy equivalent of more than a hundred supernovae in the



ENTs are also much rarer than the TDEs we observe in the local universe. However, we think that ENTs are TDEs of massive stars that are just too rare to observe in the nearby universe

JASON HINKLE
LEAD AUTHOR OF THE IF A STUDY

process. In that sense, TDEs share many similarities with ENTs, including hot temperatures, brilliant emissions, and broad emission lines. But the two are actually quite different.

"The host galaxies of ENTs are much larger than that of a TDE and have a more massive central black hole," Dr. Hinkle explained. "ENTs are also much rarer than the TDEs we observe in the local universe. However, we think that ENTs are TDEs of massive stars that are just too rare to observe in the nearby universe."

ENTs also differ from the mysterious fast X-ray transients (FXTs), short-lived bursts of X-rays from distant galaxies that have puzzled astronomers since they were first found in the 1970s.

The origins of FXTs remained elusive largely because their signals are less energetic and more fleeting than traditional X-ray driven GRBs.

In extreme light

Despite an exhaustive search, which even included candidate sources such as TDEs

where a small black hole interacted with a white dwarf, astronomers couldn't determine where FXTs originated. The mystery was finally solved in June when researchers from Northwestern University in the US and the University of Leicester in England discovered FXTs actually arose from high energy particles trapped inside a supernova.

It turned out that when high-energy particle jets break through a star's outer layers, they produce GRBs. But if these jets are contained within the star, they release lower-energy X-ray signals that we observe as FXTs. In other words, unlike ENTs, FXTs are essentially an X-ray phenomenon that occurs on very short timescales.

Astronomers are excited about the prospect of observing the universe in the light of the extreme luminosity of ENTs.

As Dr. Hinkle said: "By building a sample of ENTs, we can study massive black holes in the early universe, especially the large majority of those that are not otherwise accreting, serving as an excellent complement to studies of accreting black holes in the early universe."

This will be made easier by a new generation of telescopes and instruments with AI-powered data analysis, such as the Vera C. Rubin Observatory in Chile and the Nancy Grace Roman Space Telescope, scheduled to be launched in 2027. They promise to revolutionise our understanding of the extreme physics behind a universe filled with cosmic destruction on such immense scales.

(Prakash Chandra is a science writer. prakashisat@gmail.com)

THE GIST

Astronomers have identified celestial events more powerful than gamma-ray bursts: extreme nuclear transients. Transients are objects whose brightness changes over a short period. ENTs are powered by accretion from the debris of a massive star that has been ripped apart by a supermassive black hole

ENTs traverse immense distances and remain luminous in radio wavelengths for years. Astronomers now believe ENTs are the biggest explosions since the Big Bang. Researchers stumbled upon ENTs when sifting through data from the Gaia spacecraft

By building a sample of ENTs, it will be possible to study massive black holes in the early universe, especially the large majority of those that are not otherwise accreting, serving as an excellent complement to studies of accreting black holes in the early universe

Current Context

- **Discovery:** ENTs were identified in 2020–2023 from ESA's Gaia spacecraft and the Zwicky Transient Facility.
- **Energy Output:** ENTs emit up to 10 times more energy than gamma-ray bursts.
- **Mechanism:**
 - Massive stars (≥ 3 solar masses) wander too close to a supermassive black hole.
 - They undergo "spaghettification"—stretched into thin streams by tidal forces.
 - The debris accretes into the black hole, releasing extreme electromagnetic radiation visible for years.
- **Comparison with other phenomena:**
 - TDEs (Tidal Disruption Events): Similar but involve smaller stars/black holes; ENTs involve bigger stars and larger black holes.
 - FXTs (Fast X-ray Transients): Short-lived, lower-energy X-ray events; different origin.

Static Context

1. Black Holes:

- Regions where gravity is so strong that not even light can escape.
- Types: Stellar-mass, Intermediate, Supermassive (e.g., Sagittarius A* in Milky Way).

2. Event Horizon:

- Boundary beyond which nothing can return; "point of no return."

3. Tidal Forces & Spaghettification:

- Extreme stretching and compression as objects approach event horizon.

4. Transients in Astronomy:

- Celestial phenomena with short-lived, high brightness changes (novae, supernovae, GRBs, TDEs, ENTs).

Significance of ENTs

- **Astrophysics:** Provide insights into supermassive black holes that are otherwise dormant and invisible.
- **Cosmology:** Help study conditions of the early universe, when black holes were rapidly growing.
- **Technology:** Future telescopes like the Vera C. Rubin Observatory and Nancy Grace Roman Space Telescope (2027) will enhance ENT detection with AI-powered data analysis.
- **UPSC Relevance:** Showcases India's interest in space science collaborations (e.g., AstroSat, Aditya L-1, ISRO–ESA projects).

Issues & Challenges

- **Rarity:** ENTs are far less common than TDEs, making them hard to detect.
- **Data Overload:** Sky surveys generate petabytes of data; requires AI & machine learning for analysis.
- **Observation Limits:** Many ENTs occur in distant galaxies → only detectable with next-gen instruments.

Way Forward

- **Global Collaborations:** Data sharing among ESA, NASA, ISRO, and international observatories.
- **AI in Astronomy:** Automating transient detection.
- **Indian Role:** Leveraging ISRO's missions and potential collaborations with Rubin & Roman telescopes.
- **Public Science:** Communicating such discoveries boosts STEM awareness.

Conclusion

Extreme Nuclear Transients redefine the limits of cosmic violence, surpassing gamma-ray bursts as the most powerful explosions since the Big Bang. Their discovery illustrates how cutting-edge telescopes, AI-driven data analysis, and global cooperation are unlocking mysteries of the universe. For UPSC, ENTs are a reminder that science and technology not only deepen our knowledge of space but also symbolize the frontiers of human curiosity and exploration.

UPSC Prelims Practice Question

Ques : Consider the following astronomical phenomena:

1. Gamma-Ray Bursts (GRBs)
2. Tidal Disruption Events (TDEs)
3. Extreme Nuclear Transients (ENTs)

Which of the above is/are associated with supermassive black holes consuming stars?

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

Ans: b)

UPSC Mains Practice Question

Ques: Extreme Nuclear Transients (ENTs) have been described as the most powerful explosions since the Big Bang. Explain how their study can help us understand supermassive black holes and the evolution of the early universe. **(150 Words)**

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The recent decision by the U.S. administration under President Donald Trump to raise the H-1B visa fee for new applicants to \$100,000 has triggered widespread concern in India and abroad. With Indian nationals constituting over 70% of H-1B visa recipients, this policy change directly impacts India's tech workforce, families, and the IT services industry. It also raises broader questions about skilled migration, protectionism, and India's need to reduce overdependence on U.S. jobs.

Current Context

- Fee Increase: \$100,000 (almost 6x hike from current levels).
- Cap: Annual limit remains 85,000 visas (since 2004), allocated via lottery.
- Application Trends: 2025 cycle saw applications drop to 3.59 lakh (4-year low).
- India's Share: ~71% of recipients are Indian nationals; 60% earn < \$100,000, raising cost-benefit concerns for U.S. employers.
- Diplomatic Reaction: India's MEA highlighted the contribution of Indian tech talent to U.S. innovation, but leverage to reverse the policy is limited.

Static Context

1. H-1B Visa:

- Non-immigrant visa for skilled workers in specialty occupations (tech, engineering, medicine).
- Initially created to fill skill gaps in the U.S. workforce.

2. Brain Drain & Brain Gain:

- India long suffered brain drain of tech talent to U.S.
- Recent policies + rise of India's IT industry → gradual shift towards brain gain (talent returning, remote work).

3. Protectionism vs Globalisation:

- U.S. move reflects nativist, protectionist economic policies, clashing with principles of free movement of labor in globalisation.

H-1B, maybe

India's tech workers must reduce their reliance on U.S. jobs

President Donald Trump's decision to charge new applicants for the H-1B highly skilled non-immigrant visa \$100,000, nearly six times the current fee, has caused widespread consternation that not only might the lives of tens of thousands of potential visa applicants in the tech space be impacted, leading to "humanitarian consequences" for families, as mentioned by India's Ministry of External Affairs, but there will also be widespread disruption among major tech companies in the U.S. that rely on hiring skilled workers under this visa. While the number of visas issued in this category has been capped at 85,000 per year since 2004, and allocations are decided through a lottery, reports based on U.S. Citizenship and Immigration Services data suggest that applications for the upcoming fiscal year have dropped to a four-year low of nearly 3,59,000. Indian nationals typically account for 71% of these visas, yet data also suggest that close to 60% of these visa recipients earn less than \$100,000, which, over the longer term, implies that their employers may find it harder to justify hiring such specialised workers from abroad. The External Affairs Ministry's response to the White House action included a reiteration of the fact that "Skilled talent mobility and exchanges have contributed enormously to technology development, innovation, economic growth, competitiveness and wealth creation in the U.S. and India", yet there is limited scope for South Block to apply pressure, diplomatic or political, to get the policy reversed.

However, the fallout for Indian citizens can be contained if there is a proactive approach by the Government to bolster India's infrastructure and undertake necessary reforms to improve the prospects for the Indian tech industry to make even greater strides than it has done so far. This might be achieved by capitalising on opportunities to develop new capabilities in the Artificial Intelligence space and exploring new markets across Asia, including China and Russia, and in parts of Europe, where the transatlantic contagion of nativist protectionism has not yet found willing takers. While the Trump order is set to expire within a year, there is no guarantee that it would not be extended, making it all the more pertinent for policymakers in India to evolve a long-term plan to reduce reliance of Indian tech workers on the shrinking pool of job opportunities in the U.S. economy. As India and other countries adjust to this new reality of the hostility of the Trump White House to welcoming future innovators, job-creators, and tax-payers to their shores, it is the U.S. rather than other nations that will suffer a shortage of scientific and engineering prowess to fuel economic progress.

Implications for India

- **Short-term:**
 - Families of potential migrants face uncertainty.
 - Indian IT firms may face revenue dips and rising operational costs.
 - Talent pipeline to Silicon Valley disrupted.
- **Long-term:**
 - Opportunity for India to build domestic tech ecosystem (AI, quantum computing, cybersecurity).
 - Explore new markets in Asia, Europe, Africa to diversify dependence.
 - Push for remote work models and global freelancing in IT.

Way Forward for India

1. **Policy Reforms:** Strengthen India's digital infrastructure, ease of doing business, and startup ecosystem.
2. **Upskilling:** Massive investment in AI, semiconductor design, cloud, green tech skills to move up value chain.
3. **Global Strategy:** Forge bilateral talent mobility partnerships beyond the U.S. (e.g., with EU, Japan, Australia).
4. **Leverage Diaspora:** Encourage Indian-origin tech leaders abroad to invest back in India's innovation ecosystem.

Conclusion

The U.S. visa fee hike underscores the risks of India's overdependence on one country's job market for its skilled professionals. While the U.S. may face a shortage of talent in the long run, the immediate challenge is for India to recalibrate its tech strategy. By diversifying markets, nurturing domestic innovation, and fostering global partnerships, India can convert this challenge into an opportunity—reducing reliance on U.S. visas and positioning itself as a global hub of technology and innovation.

UPSC Prelims Practice Question

Ques: With reference to the H-1B visa, consider the following statements:

1. It is a non-immigrant visa that allows U.S. companies to employ foreign workers in specialty occupations.
2. The annual cap for H-1B visas has been fixed at 85,000 since 2004.
3. Indian nationals account for less than 25% of H-1B recipients.

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

Ans: (b)

UPSC Mains Practice Question

Ques: Critically analyse how protectionist policies such as the H-1B visa fee hike can impact India's technology sector. In this context, highlight measures India can adopt to strengthen its domestic innovation ecosystem. **(150 Words)**

Can timelines be fixed for Governors?

Can the Governor withhold assent to a Bill passed by the State legislature based on his own discretion? Why has the Centre said that courts cannot prescribe a timeline for Governors/President to decide on a Bill? What have Opposition-rule States said on the matter?

EXPLAINER

Rangarajan R.

The story so far:

The Supreme Court is currently hearing a Presidential reference made in May 2025 that has sought the opinion of the Court on 14 questions, primarily surrounding the interpretation of Articles 200 and 201 of the Constitution.

What is the current reference?

The current reference is a result of a Supreme Court judgment in April 2025 (*The State of Tamil Nadu versus the Governor of Tamil Nadu & Anr*) that had specified timelines for Governors and the President to act on Bills passed by State legislatures. It had held that if the Governor was to withhold assent or reserve the Bill for consideration of the President, contrary to the advice of the State Council of Ministers, he/she should do so within a period of three months. It further held that if a Bill for which assent has been withheld is again passed by the State legislature, the Governor shall assent to such Bill. It had prescribed a timeline of three months for the President to decide on State Bills reserved for his/her consideration. The Court had also held that decisions by Governors and the President on such Bills, including delays beyond the prescribed timelines, will be subject to judicial review.

The government has raised questions regarding the authority of the Court to prescribe timelines when they are not specified in the Constitution.

What does the Constitution say?

Article 200 of the Constitution lays down that when a Bill, passed by a State Legislature, is presented to the Governor for his/her assent, he/she has four alternatives: (a) may give assent to the Bill (b) may withhold assent to the Bill, that is, reject the Bill in which case the Bill fails to become law; (c) may return the Bill for reconsideration of the State Legislature; or (d) may reserve the Bill for the consideration of the President.

As held by the Supreme Court in various cases including the *Shamsher Singh* case (1974), the Governor does not exercise his/her discretionary powers while withholding assent for a Bill. He/she is required to act as per the advice of the Council of Ministers. The return of any Bill to the State Legislature for reconsideration is also to be done based on ministerial advice. As explained in the *Constituent Assembly* by T.T. Krishnamachari, this may be done if the Government feels that the Bill needs modifications. The Governor shall assent to such a Bill if it is passed again by the State Legislature.

As far as reserving any Bill for consideration of the President, the Governor must reserve certain Bills like those which reduce the powers of the High Court. He/she may reserve certain Bills based on the advice of the Council of Ministers like those that relate to a subject enumerated in the Concurrent List, to ensure operation of its provisions despite repugnancy to a Union Law. It is only under rare circumstances that the Governor may exercise his/her discretion and reserve a Bill where he/she feels that the provisions of the Bill contravene any of the provisions of the Constitution and therefore, reserve it for the consideration of the President.

The Constitution does not lay down any time limit within which the Governor is required to make a decision with



New rules: Tamil Nadu Governor R.N. Ravi welcomed by Chief Minister M.K. Stalin during the Republic Day celebrations in Chennai, on January 26, 2021.

respect to any Bill presented for his/her assent. The main part of Article 200 states that once a Bill is presented to the Governor, he/she 'shall' declare that he/she assents to the Bill or withholds assent or reserves the Bill for consideration of the President. The proviso to the article adds that the Governor may 'as soon as possible' return the Bill for reconsideration of the State legislature.

What are the recommendations?

The Sarkaria Commission (1987) had stated that only the reservation of Bills for consideration of the President, that too under rare cases of patent unconstitutionality, can be implied as a discretionary power of the Governor. Apart from such exceptional cases, the Governor must discharge his functions under Article 200 as per the advice of Ministers. It further recommended that the President (Central Government) should dispose of such Bills within a maximum period of six months. The Punchhi Commission (2010) had recommended that the Governor should take a decision with respect to a Bill presented for his/her assent within a period of six months.

What are the arguments?

Article 163(1) of the Constitution requires the Governor to act as per the advice of the Council of Ministers except in so far as he/she is required by or under the Constitution to act as per his/her discretion. Article 163(2) further provides that if any question arises on whether the matter is a matter which the Governor is required to act as per his/her discretion,

the decision of the Governor in such cases shall be final and shall not be called into question.

The Centre has argued that the Governor enjoys discretion as per the above Article which cannot be inquired into by the Courts and consequently no timelines can be fixed. It also raised objections to the three-month timeframe that has been stipulated for the President to decide on Bills which have been reserved. Article 201 that deals with this matter does not stipulate any timeline. The Centre has maintained that any issues between the elected government in a State, the Governor and the President need to be resolved politically within the framework of the Constitution and that the courts cannot be an adjudicator for every such impasse.

However, Opposition-ruled States have argued that the Governors in such States have been selectively delaying assent or reserving Bills, against the advice of the Council of Ministers, for the consideration of the President. They have argued that such deliberate delays cannot be termed as discretion and that it disrespects the popular mandate of the people of the State.

What should be the way forward?

All the issues stated above are in the nature of symptoms. The underlying disease that has plagued our federal set up has been the politicisation of the gubernatorial post. Many political leaders starting from C.N. Annadurai to Nitish Kumar have called for the abolition of the Governor's post in the past. However, as per our Constitutional scheme, there is a need for a nominal head of the State

executive just like the President for the Union executive.

Nevertheless, federalism is also a basic feature of our Constitution and the Governor's office should not undermine the powers of popularly elected governments at the States.

The Court usually exercises restraint while stipulating timelines for action by constitutional authorities where none is provided in the Constitution. However, when there are unreasonable delays, the Court has stipulated timelines in the past like in *K. M. Singh* case (2020) where it laid down a three-month timeframe for Speakers to decide on the Tenth Schedule disqualification.

The Supreme Court has purposively interpreted the words in Article 200 in its judgment in April 2025. It has interpreted that the main part of Article 200 uses the words 'Governor shall' and hence it is not a discretionary power. It relied on its own past judgments including the *Nabam* case (2019), the recommendations of various commissions as well as the Office Memorandum of the Home Ministry in 2016 to prescribe the timeline of three months for actions by Governors and the President.

The Centre and the Governors should follow the timeline prescribed by the April 2025 judgment to uphold democratic and federal principles. Hopefully, the opinion of the Supreme Court in the Presidential reference would also reiterate this position.

Rangarajan R is a former IAS officer and author of 'Courseware on Polity Simplified'. He currently trains at Officers IAS academy. Views expressed are personal.

THE GIST

Article 200 of the Constitution lays down that when a Bill, passed by a State Legislature, is presented to the Governor for his/her assent, he/she has four alternatives: (a) may give assent to the Bill (b) may withhold assent to the Bill, that is, reject the Bill in which case the Bill fails to become law; (c) may return the Bill for reconsideration of the State Legislature; or (d) may reserve the Bill for the consideration of the President.

Article 163(1) of the Constitution requires the Governor to act as per the advice of the Council of Ministers except in so far as he/she is required by or under the Constitution to act as per his/her discretion.

Opposition-ruled States have argued that the Governors in such States have been selectively delaying assent or reserving Bills, against the advice of the Council of Ministers.

GS. Paper 02– Indian Polity

UPSC Mains Practice Question: Can timelines be fixed for Governors to act on Bills? Discuss in light of Articles 200, 201 and federal principles in India.

(150 Words)

Context :

The office of the Governor in India, constitutionally designed as the nominal head of the State, often finds itself at the center of federal tensions, especially when Bills passed by State legislatures are withheld, returned, or reserved for the President's consideration. A Supreme Court judgment in April 2025 and the subsequent Presidential reference have reignited debates on whether timelines can be fixed for Governors and the President under Articles 200 and 201 of the Constitution.

Constitutional Framework

- Article 200: When a Bill is presented to a Governor, he/she can:
 1. Give assent
 2. Withhold assent (reject)
 3. Return the Bill for reconsideration
 4. Reserve the Bill for the President
- Article 201: Governs President's assent for Bills reserved by Governors.
- Article 163: Requires Governors to act on ministerial advice, except in matters where discretion is mandated.

Key Points:

- Normally, Governor does not exercise personal discretion except in rare cases like potential unconstitutionality or certain Bills affecting High Courts.
- Constitution does not prescribe timelines for Governors/President to act on Bills.

Supreme Court Judgments & Commission Recommendations

- Shamsher Singh Case (1974): Governor must act per Council of Ministers' advice; discretionary powers are limited.
- April 2025 Judgment (TN vs Governor):
 - Specified 3-month timeline for Governor to act on Bills.
 - If a Bill is re-passed by the legislature, the Governor must assent.
 - Timeline of 3 months also suggested for President to decide on reserved Bills.
- Sarkaria Commission (1987): Only rare unconstitutional Bills can be reserved at Governor's discretion; President to dispose within 6 months.
- Punchhi Commission (2010): Recommended Governor to act on Bills within 6 months.

Arguments For and Against Timelines

Centre/Governor-side:

- Article 163(2) grants discretionary powers; courts cannot interfere.
- Constitution lacks explicit timelines; judicial imposition may usurp executive discretion.
- Political issues should be resolved within the constitutional framework, not by courts.

Opposition/State-side:

- Governors in Opposition-ruled States have selectively delayed Bills.
- Such delays undermine popular mandate and federalism.
- Timelines ensure accountability and respect for elected governments.

Issues at Stake

1. Federalism: Protecting the balance between Centre, Governor, and State legislature.
2. Democratic Mandate: Preventing misuse of gubernatorial office to obstruct elected governments.
3. Judicial Review: Courts exercise restraint, but intervene when unreasonable delays threaten constitutional governance (e.g., K.M. Singh, 2020).
4. Politicisation of Governor's post: Calls for reforms, but abolition is constitutionally impractical.

Way Forward

- Governors should adhere to April 2025 SC timelines to uphold democratic norms.
- Centres and State governments must respect federal principles, avoiding political manipulation.
- Courts may intervene selectively to prevent undue delays without encroaching on executive discretion.
- Consideration of constitutional reforms or guidelines to reduce politicisation of Governor's office.

Conclusion

The Governor's assent powers are largely ministerial rather than discretionary. The April 2025 judgment reflects a judicial attempt to protect federalism and the democratic mandate without disturbing the constitutional office. While Article 163 allows limited discretion, timelines for assent reinforce accountability and prevent misuse of power, ensuring that elected governments can function without obstruction.
