EDITORIAL HIGHLIGHTS

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GS 3: SCIENCE AND TECHNOLOGY AND DEFENCE

THE HINDU PAGE: 06

How AI is transforming U.S. military industrial complex



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The core of the U.S. Military Industrial Complex (MIC) is shifting from traditional hardware manufacturers to algorithm and AI companies which will lead to an obvious fallout across the global defence industrial base. Three interlocking attributes to this shift are the inversion of war economics, the restructuring of procurement and capital logic, and the "software-defined" transformation of the military technology stack. This shift was formally sanctified on September 29, 2026, when U.S. President Donald Trump convened the CEOs of the world's most powerful AI companies to sign the White House Accord on Super Intelligence – a voluntary framework that symbolically integrated AI firms into the national security architecture.

The military implications of this Accord are unmissable. Moreover, substantive developments had already occurred months earlier in the military domain. In May 2026, the U.S. Department of War announced agreements with eight AI companies – SpaceX, OpenAI, Google, Nvidia, Reflection, Microsoft, Amazon Web Services, and Oracle – to deploy their capabilities on classified networks at impact levels 6 and 7; the highest classification tiers for sensitive military operations.

Drivers of the shift

The traditional MIC has operated on a 'few but exquisite' logic', which is that multi-billion dollar platforms will ensure deterrence from other parties as they would be technologically overpowered. This logic has, however, been exposed as economically unsustainable and fragile. In recent conflicts, the U.S. and allied defences were compelled to expend expensive interceptors against cheap drones.

The Pentagon's response has been a dramatic funding shift. The Defence Autonomous Warfare Group (DAWG), which absorbed the stalled Biden-era Replicator Initiative (rapidly fielding thousands of low-cost, uncrewed autonomous systems across multiple domains) saw its budget projections jump from $225.9 million in FY26 to $54.6 billion in the upcoming FY27.

The core of the MIC has shifted from the factory to the server due to the arithmetic of cost-imposition, the venture-velocity logic of capital, and the architectural revolution of software-defined warfare

If war economics created demand, capital markets provided the supply-side solution. The traditional MIC relied on "cost-plus" contracts, incentivising risk aversion and prolonged timelines. The new players or the neo-primes, which are software companies such as Palantir, SpaceX, Anduril etc., employ fixed-price contracts, absorbing upfront costs and trading on-time delivery for higher margins. The combined enterprise value of the neo-primes exceeds the value of the 'Big Three' companies (Lockheed Martin, RTX, and Northrop Grumman) by three times, despite revenues nearly eight times smaller.

The explanation lies in procurement reform. In March 2026, the Army awarded Anduril a 10-year, $20 billion enterprise contract that consolidated more than 120 separate procurement actions into one acquisition component. The U.S. Army has signed 14 such enterprise contracts in eight months, replacing 118 individual contracts – an 88% reduction in contract volume. Programs that took seven years to award now move in months. Palantir's Maven Smart System was formally designated an 'official program' with locked in long-term funding, which was the first time a Silicon Valley company has been directly embedded into the defence budgetary skeleton.

The May 2026 agreements by Pentagon with AI companies laid out the functional layers of the algorithmic military stack. The algorithm and the layered-model constitute the brain which include OpenAI (multilingual intelligence analysis), Google (satellite imagery target recognition), and Reflection AI (autonomous combat agents). The compute layer is provided by Nvidia's military-grade GPU clusters. The cloud services layer is built by Microsoft, Amazon, and Oracle. The communications layer is by SpaceX's Starlink and Starshield while Palantir and Anduril serve as strategic hubs and frontline execution terminals (edge AI, drone swarms, counter-drone systems). The core thesis of "software-defined warfare" is that codes and not platforms have become the decisive differentiator. A warship's systems can become smarter overnight through a single download, and drones can switch from reconnaissance to electronic attack by loading a different software.

Traditional contractors however, have not disappeared. Lockheed, RTX, and Northrop still receive the vast majority of defence budget dollars and spend far more on lobbying. However, the symbolic indicators have reversed: capital market valuations now reflect investors' judgment about the future shape of the MIC.

Concern about vulnerabilities

In breaking with traditional contractors, the Pentagon may create new dependencies – Palantir's battlefield systems and SpaceX's launch capabilities could become the new single points of failure. More fundamentally, the speed of commercial AI iteration creates a verification gap. As AI companies deploy at commercial velocity, the Pentagon's test and evaluation system, designed around static hardware, may not be enough. Certain programmes are still difficult to be validated. The vulnerability can be serious in the eventuality of unvalidated software-defined weapons failing due to a cyberattack.

The core of the MIC has shifted from the factory to the server due to the arithmetic of cost-imposition, the venture-velocity logic of capital, and the architectural revolution of software-defined warfare. Victory in future wars may now depend on algorithms, data, and code.

GS 2: INTERNATIONAL AFFAIRS
THE HINDU PAGE: 06

Can India and China coexist peacefully?



M.K. Narayanan

Former Director, Intelligence Bureau, a former National Security Adviser, and a former Governor of West Bengal

The state of relations between China and India today can best be described as managed coexistence. The moot question is whether they can, or cannot, exist peacefully in the coming decades. This issue arises because every 'patrolling deviation' is regarded as a 'face-off', endangering peace and tranquillity and in the process, Sino-Indian relations. Consequently, though not at war, even managed coexistence is proving problematic. No obvious reasons exist for the two ancient civilisations to be in conflict, notwithstanding certain border disagreements.

The 1962 Sino-Indian conflict, it might be argued, was an outcome of Mao's 'hubris' in the wake of his disastrous 'Great Leap Forward', though historians also adduce several other reasons for it. Ever since the conflict, the border in the Ladakh region has remained a serious bone of contention between the two countries. For India, Mao's perfidy after years of '*Hindi-Chini Bhai Bhai*' meant that China could not be trusted, and the loss of territory in both Ladakh and Arunachal Pradesh became a permanent sore. However, it still does not wholly explain why feelings remain so embittered to this day.

Commentators today are prone to highlight the impact of the 2020 Galwan Valley clash between Chinese and Indian patrols (which resulted in the loss of 20 Indian soldiers) for the continuing tensions between the two countries. But the distance that exists between the two civilisations cannot be quite explained by this singular event. The time has, perhaps, come to demystify the reasons for this so that India and China can take their appointed place in the comity of nations.

An ancient divide?

Ladakh's improperly delineated terrain is often brought up as one major reason that is preventing a solution between the two nations. Similar reasons are attributed by so-called experts to explain tensions in the Arunachal Pradesh sector, where the true villain, perhaps, is as much the McMahon Line, as are the Chinese, for leaving behind an improperly demarcated border.

Recent history is replete with the many steps taken by the two countries during periods of thaw. However, nothing quite approximates to the one initiated by Prime Minister Rajiv Gandhi who, in 1988, took the initiative to visit China and meet up with leaders such as Deng Xiaoping, achieving a new watershed in relations between India and China. This has, unfortunately, been subsequently frittered away by leaders on both sides, but remains a beacon of light to this day, on how to offset tensions and improve state-to-state relations. The spin-off from the discussions enabled the border question to be discussed separately, often sidestepping bureaucratic hurdles and so-called military confidence building measures.

> While India and China need to sort out many issues, it would be a mistake for India to look upon China as a threat to its very existence

Ever since there have been many 'way stations' in the conflict between the two countries. Many of the current initiatives are, however, beginning to look like a 'zero sum game'. No doubt, extraneous aspects such as the U.S.-sponsored QUAD (Quadrilateral Security Dialogue) initiative have also contributed to the perseverance of the stalemate. Moreover, Chinese strategists, who often tend to be obtuse in their thinking, believe that India's involvement in U.S. plans are a ploy to contain China. As a result, they see no reason to take steps to improve relations with India.

The moot question, though, is whether India has reasons to fear China. Notwithstanding the much touted remarks of Canadian Prime Minister, Mark Carney, "that the old rules-based order is dead and that new coalitions of the willing need to be constituted to protect the interests of many countries", it would be egregious to think that this applies to India-China relations. While India and China need to sort out many issues, it would be a mistake for India to look upon China as a threat to its very existence, even though China might well visualise India, in course of time, as a challenge to its pre-eminence in certain fields. Instead of pursuing a negative trajectory, it would seem the phrase recently popularised following discussions between Chinese President Xi Jinping and U.S. President Donald Trump that 'building a constructive relationship of strategic stability' applies as much to Sino-Indian relations as to Sino-U.S. relations. Nevertheless, India would do well to contend with the reality – as the *Economist* mentioned – that "even as China produces more research about India, it seems to understand it less".

Another aspect is, how well does India – or for that matter the rest of the world – understand the true extent of China's military strength, and its ability to win wars of the present and those of the future. India is by no means an ally of China, but it is far-fetched to believe that India is its real opponent, one with whom a conflict is inevitable or imminent. Any conflict with India would set China back several years, and derail its 2049 target of becoming *numero uno* in the world. India, for its part, also has no inclination to embark on a conflict with China. This, therefore, should clearly rule out direct conflict as a means to settle disputes between them. Messages would, however, have to go out to the military and border guards of both countries to ensure that instances such as the one that took place in the Galwan Valley in 2020 do not recur. In any event, neither country enjoys an edge in the disputed areas in the high Himalayas, and avoidance of inadvertent action is, hence, essential.

Understanding China is essential

It is also essential to dispel the myth of China's military edge which is often flagged by political entities and military experts. The People's Liberation Army (PLA) and the People's Liberation Army Navy (PLAN), more so the latter, have made major advances to fight future wars, but are not yet world-class. The very fact that China has refrained from embarking on a war to reclaim Taiwan also indicates the degree of realism that pervades the Chinese military. China's accretion of long range missiles and submarines, and related surveillance systems, as also its impressive amphibious ability notwithstanding, India is more than a match for China's capabilities in the high Himalayas. It is a myth perpetuated by interest groups that the threat posed by China to India is a grave one.

One does need to read China right, and avoid anything that might bring forth a response that India had not intended. It is important, hence, to better understand China's intentions. It would also be a gross mistake to regard China as ready to test India's strength to degrade its position in the world. China knows when to bend, as was seen when under President Hu Jintao in 2005, China signed an Agreement with India to foster a long-term constructive and cooperative partnership. Article I of this Agreement stated that neither side shall use or threaten to use force against the other, and Article VII observed that in reaching a boundary settlement, the two sides shall "safeguard the due interests of their settled populations in the border areas".

It needs to be kept in mind that China's national identity is not as cohesive as one is led to think. Understanding the frailties of the 'Qing Dynasty' and the elasticity of the Dynasty's boundaries are a key primer for all nations that have to deal with China; all the more so for India. Misreading China would cost India dearly, for there is nothing in the history of the two that suggests that they have to be permanently at war. India can, today, coexist peacefully with China, and China with India.

GS 3: ENERGY
INDIAN EXPRESS PAGE: 12

For energy security, E100 alone is not the answer



SHYAMASIS DAS

INDIA IS not only gung-ho about the prospect of ethanol-blended petrol; it is moving ahead at full throttle to support high blending rate to as much as entirely replacing oil in a vehicle. With the recent amendment of the Central Motor Vehicles Rules, 1989, the government has paved the way for motor vehicles to run on pure ethanol, branded as E100. Although it may possibly take time to see E100-fuelled vehicles on Indian roads and the associated impact, we have a prequel to this drastic change in front of us.

India has already made the transition to E20 petrol, containing 20 per cent ethanol, marking a significant milestone in its biofuel programme. The policy is intended to reduce crude oil imports, save forex, and strengthen energy security. Yet, as E20 becomes mainstream and the precursor to large-scale use of higher petrol blending levels, an important question deserves closer scrutiny: How much can ethanol blending actually reduce India's dependence on imported crude oil?

The question matters for an economy that imports over 80 per cent of its crude oil requirements, leaving the country exposed to volatile international prices and geopolitical disruptions. The impact of the ongoing West Asia conflict on the international oil trade holds a mirror up to us. While ethanol blending can displace a portion of petrol consumption (depending on the blending rate), its contribution to reducing crude oil imports must be assessed against the structure of petroleum demand and the technical constraints of refining. Petrol accounts for only 15-18 per cent of the petroleum products processed from a barrel of crude oil. Diesel, by contrast, accounts for approximately 44-45 per cent. This asymmetry is central to understanding the limits of an ethanol-led strategy.

The consumption gap is equally striking. Between FY 2020-21 and FY 2024-25, India consumed approximately 503 million tonnes of diesel, compared to 200 million tonnes of petrol. Diesel powers freight transport, agriculture and industrial logistics, making it integral to economic activity. Its demand is expected to remain substantial. Ethanol blending therefore addresses a relatively small component of India's overall petroleum demand. Its benefits are real, but the scale of those benefits should not be confused with an equivalent reduction in crude oil imports.

Modelling the impact of a 20 per cent blend, accounting for the lower energy content of ethanol and the resulting reduction in vehicle fuel economy, suggests that petrol consumption could decline by about 15.56 per cent. This is a meaningful reduction in petrol consumption. However, it does not imply that crude oil imports will fall by an equivalent proportion. Crude oil processing produces several products, including petrol, diesel, LPG, aviation turbine fuel, and naphtha. Refineries can alter product yields to some extent, but the flexibility is not unlimited. Increasing the yield of diesel is constrained. Consequently, lower petrol demand does not automatically translate into a commensurate reduction in crude oil throughput. Policymakers must therefore distinguish between petrol displaced by ethanol, expenditure avoided on petrol supply and the actual reduction in crude oil imports. These are related but different outcomes.

If reducing oil import dependence is a central objective, India's biofuel strategy must give greater attention to diesel. Biodiesel blending has lagged behind ethanol, despite an earlier target of 5 per cent. Past efforts to promote non-edible oil feedstocks and used cooking oil encountered several challenges. Increasing biodiesel blending will require sustained investment in research and development, improved feedstock collection systems, viable supply chains, and technologies that can support commercially sustainable production.

Coming back to E100. Like E20, it holds promise. However, India will benefit from a broader measure of energy security. The impact of the country's biofuel programme should be assessed based on actual reductions in crude oil demand and import expenditure, rather than relying solely on the volume of ethanol blended. Reducing import exposure will require India to look beyond the petrol pump and address the full spectrum of its petroleum consumption. The real test of India's biofuel strategy is not how much ethanol it blends, but how effectively it reduces the country's dependence on imported oil.

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If reducing oil import dependence is a central objective, India's biofuel strategy must give greater attention to diesel. Biodiesel blending has lagged behind ethanol, despite an earlier target of 5 per cent

GS 2: POLITY

INDIAN EXPRESS PAGE: 20

• POLITY

The intricate system to elect MLCs

A general election is simple: one vote for one candidate. But MLC polls are much more complex, involving preferential voting by MLAs, local bodies, graduates and teachers, besides nominations by the Governor

•Legislative Council seats: The break-up

Six states in India have Legislative Councils. Here's how their seats are distributed among different electorates and the Governor's nominees.

STATE	TOTAL MLC SEATS	ELECTED BY				NOMINATED BY GOVERNOR
		Local authorities	Graduates	Teachers	MLAs	
Andhra Pradesh	58	20	5	5	20	8
Bihar	75	24	6	6	27	12
Maharashtra	78	22	7	7	30	12
Karnataka	75	25	7	7	25	11
Telangana	40	14	3	3	14	6
Uttar Pradesh	100	36	8	8	38	10
Madhya Pradesh*	90	31	8	8	31	12
Tamil Nadu*	78	26	7	7	26	12

*NOT OPERATIONAL; SOURCE: REPRESENTATION OF THE PEOPLE ACT, 1950



EXPERTS EXPLAIN

CHAKSHU ROY & YASHIKA KEDIA

THE WRITERS WORK AT PRS LEGISLATIVE RESEARCH

THE BJP-LED NDA has won 16 out of the 28 Legislative Council seats for which elections were held in four states.

The ruling alliance won all four seats in Karnataka, six out of 11 in Uttar Pradesh, four out of eight in Bihar, and two of five in Maharashtra. Unlike elections for Members of the Legislative Assembly (MLAs), not every adult citizen is eligible to vote for Members of the Legislative Councils (MLCs). Not all states have Legislative Councils, either.

A second chamber for states

India's legislatures are divided into two categories — unicameral (single House) or bicameral (two Houses). The Constitution mandates a bicameral legislature (Lok Sabha and Rajya Sabha) at the national level and gives states the option of having a second chamber called the Legislative Council.

During the framing of the Constitution, there was disagreement in the Constituent Assembly on having a second chamber in states. The arguments in support of a second chamber were that it would bring different viewpoints, be the voice of reason and check hasty action by the popularly elected House.

The opposing viewpoint was that having a second chamber would be costly, delay government action and leaders would use its membership to dispense favours.

Our Constitution framers resolved these differences by giving states the power to decide whether they wanted a second chamber, capped the size of the House and put limits on its powers. And in doing so, they created a unique legislative institution.

Six states — Andhra Pradesh, Bihar, Maharashtra, Karnataka, Uttar Pradesh and Telangana — have a Legislative Council.

Article 171 specifies that a Legislative Council will have a minimum of 40 members, and pegs the maximum number to a third of the size of the Assembly.

The Constitution also specifies the membership structure of the state Legislative Councils. MLAs elect one-third of the Council's members, local body members elect another third, graduates elect one-twelveth, teachers elect another one-twelveth, and the Governor nominates the remaining MLCs. The Representation of People Act, 1950 provides the membership breakup of every Legislative Council in the country.

The voting process

MLCs have a six-year term and a third of a Council's members retire every two years. To contest an MLC election, an individual should be at least 30 years old and be an elector in the state. Governors can nominate individuals from the fields of literature, science, art, co-operative movement and social service who are residents of the state.

Elections for MLC seats in which MLAs are the voters are straightforward. Only those who are current members of the Assembly get to vote in the election.

But the other three categories of MLCs — local body, graduate and teacher — are all territorial constituencies. So local body members, graduates and teachers of those areas in the state get to vote in the election.

For local body MLC constituencies, only current members of those bodies can vote.

The electoral roll for graduate and teacher constituencies has different requirements. These rolls are prepared fresh before every election and even existing voters have to apply again to get on the roll. They also have to fulfil the specified criterion from the qualifying date, which is November 1 every year.

In the case of graduate constituencies, the voter should be a citizen, ordinarily a resident in the constituency and for three years holding a graduate degree from anywhere in India. In case of teacher constituencies, the voter should, in the last six years, have been a teacher in an educational institution (not lower than a secondary school) for at least three years.

Graduates and teachers

Here, a question arises. What's the rationale for an electorate representing specific sections of society (like graduates and teachers)?

The practice of lawmakers representing specific sections of society began in pre-independent India. The Government of India Act of 1935 provided for representation based on religious, economic and social grounds.

Constituent Assembly Member Shibban Lal Saxena suggested that the Council should represent the intelligentsia of a province. He suggested that some members should be elected by different subsets of the entire electorate. A subset could be graduates, members of trade unions, local body members, learned professionals, and more. This idea was then incorporated into the Constitution.

Preferential choice

Voting in a general election is simple — a voter casts their vote for one candidate. The simplicity of this process allows the use of an electronic voting machine. But voting in an MLC election is done through a single, transferable vote. This method requires a voter to rank the candidates by indicating their preference, just like in a Rajya Sabha election. *(See story and box alongside).*

A ballot paper contains the names of the candidates (besides NOTA). The voter is required to indicate their preference by writing 1, 2 or 3 in front of the candidate's name. At the time of counting of votes, candidates get eliminated if they don't get the required number of votes meeting the threshold.

In Rajya Sabha polls, MLAs have to show their votes to their party's election agent. They don't have to do so in MLC polls.

How Councils differ from Rajya Sabha

Rajya Sabha is a continuous body. But Assemblies have the power to recommend the creation and abolition of a Legislative Council.

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Councils don't have the Constitutional mandate to give shape to legislation passed by the Assembly.

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In 2013, a Parliamentary panel examining the creation of a Council in Rajasthan flagged a need to evolve a national policy on the creation or abolition of Councils.

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It said that a Council, once created, should not be abolished at the whim of a newly elected state govt.

Ballot papers in Indian elections: Where they are still used, and why



VIKAS PATHAK

PRIME MINISTER Narendra Modi took a swipe at the Congress after it won just one of the 28 Member of Legislative Council (MLC) seats that went to the polls across four states. This is because MLC elections use ballot papers rather than electronic voting machines (EVMs), which the Congress has in the past blamed for losses.

Since the PM's remarks have brought the spotlight back to the EVMs-vs-ballot-papers debate, it's instructive to see which sets of elections in India are conducted with ballot papers.

Elections using ballot papers

Most elections to gram panchayats, panchayat samitis, and zilla parishads are held through ballot papers. A 2023 study sponsored by the Ministry of Panchayati Raj and undertaken by the Indian Institute of Public Administration (IIPA) found that 53% of states conduct gram panchayat elections using ballot papers.

"Only three States/UTs (Kerala, Sikkim, and Dadra & Nagar Haveli and Daman & Diu) conduct gram panchayat elections through EVMs in all constituencies of the gram panchayat. However, other States are in a transitional phase wherein 22 percent of the States have adopted EVMs in some of the constituencies while in the rest of the constituencies, ballot papers are still followed," the report added. "However, in the higher levels of panchayat elections, i.e., intermediate and district panchayats, the share of EVMs used by States increases. For instance, in district/zilla panchayat elections, 17 percent of States use EVMs in all the constituencies."

The report also said: "States which are using ballot papers hinted that lack of funds and awareness about the usage of EVM is one of the major hindrances in conducting panchayat elections. But the same voters cast their vote using EVMs in the assembly and the parliamentary elections; so this argument of lack of awareness among the voters is lopsided." It added that counting of ballot papers was a cumbersome process requiring huge manpower, adding that it was also not environmentally friendly.

Former elected sarpanch from Chandrapur in Maharashtra Kalyan Kumar said that the tehsildars provide symbols to candidates days before the elections in rural local bodies. "They ask for three options and allot one of these. These are not the party symbols we know." According to him, how much in touch a candidate is with their electors and whether they help them get everyday work done is more crucial than ideology in these polls.

Describing the process of elections to rural local bodies, a Bihar official told *The Indian Express* that multiple elections at gram panchayat, panchayat samitis, etc., happen at around the same time, and this makes ballot papers more handy because using so many machines would be difficult. But he agreed that ballot papers make counting difficult.

Regarding how some states conduct panchayat elections with EVMs if the symbols are not the conventional party symbols, former Election Commissioner Ashok Lavasa told *The Indian Express* that there is a procedure called "symbol loading" that is used to load the required symbols onto the EVMs. Municipal corporation elections, Lavasa said, lie within the purview of the State Election Commissions, and they can decide to use EVMs or ballot papers. The Municipal Corporation of Delhi elections, for instance, are conducted via EVMs, but Punjab decided to shift to ballot papers in 2026. The Punjab and Haryana High Court said that the Punjab Municipal Election Rules, 1994, allowed both ballot papers and EVMs, legally permitting the SEC to choose either of them.

Student union elections are also held either using EVMs or ballot papers. The Delhi University Students' Union polls, for instance, use EVMs. "The EVMs display the names of the candidates in alphabetical order. Here, the name and the ballot number of the candidate is important," said Akhil Bharatiya Vidyarthi Parishad national media convener Harsh Attri. The Jawaharlal Nehru University Students' Union election uses ballot papers.

Single, transferable vote

Elections held via a single transferable vote, however, have to use ballot papers. As per Article 171 of the Indian Constitution, elections to the legislative councils are held through a single, transferable vote. In this procedure, the voters have to mark their first, second, etc., preferences on the ballot paper, so that the vote is transferable. This happens on a ballot paper rather than an EVM.

Rajya Sabha elections also happen by a single transferable vote, where preferences are marked by the elector on a ballot paper. A formula is used here to calculate the quota required for a candidate to win.

• THE FORMULA TO CALCULATE RAJYA SABHA VOTES

- **The total** number of MLAs voting in a state is divided by the number of seats heading to polls plus 1. Then, 1 is added to the resulting number to calculate the quota.
- **Say the** total number of MLAs voting in a state is 200 and elections are on for four seats. So, 200 will be divided by 4+1, or 5, which results in 40. The quota will thus be 40+1, or 41. Any candidate getting 41 votes is declared elected.
- **The system** followed, however, is of a single transferable vote. So, MLAs can mark their first, second, third, preferences.
- **In the above** example, every candidate getting 41 first preference votes will be declared elected. If this does not fill all the seats, the surplus votes of those already elected are transferred to the second preference candidates of MLAs whose first preferences have already won.
- **Say, 41 is** the winning quota: If a winning candidate secures 45 votes, this would mean this candidate has four surplus votes. These four surplus votes will be moved to the second preference candidates.
- **If more** than one victorious candidate has surplus votes, the largest surplus will be transferred first. If even this does not fill all vacancies, the candidate with the lowest number of first preference votes is eliminated, and the second preference votes in their ballot paper are transferred.
- **This process** goes on until all the seats are filled.

GS 3: CYBERSECURITY (INTERNAL SECURITY)
INDIAN EXPRESS PAGE: 20

CYBERSECURITY

$6.3 bn stolen in 20 min: Inside the mega Binance hack

Akash Mandal
Mumbai, October 30

BINANCE, THE world's largest cryptocurrency exchange, was hit by a massive security breach late Thursday in which cyberattackers stole around $6.3 billion. The hack, considered to be the biggest-ever hack to date, led the exchange to freeze assets worth $3 billion and caused panic in the crypto market, leading to sharp falls in the prices of several cryptocurrencies.

The breach

"Binance's initial investigation suggests that the security incident may involve a compromised DevOps engineer's laptop, which allowed an attacker to gain access to a service container and submit unauthorised withdrawal transactions," the company posted on X. It later said that it had "uncovered additional points of breach".

Reuters reported that the bulk of the incident unfolded in around 20 minutes beginning late on Thursday and bore similarities to previous large attacks blamed on North Korea, citing US blockchain analysis firms TRM Labs and Chainalysis. TRM said the attackers were able to order wallets that Binance uses to empty into hacker-controlled wallets.

"The attackers gained access to the pathway through which transactions and information flow. The wallet was unaffected. However, with this access, the attackers could instruct the wallet to execute transactions," an industry executive said on the condition of anonymity. "However, once you gain access to the DevOps system, you can identify other access points too. So, it is important to see how quickly you can contain the breach."

PAST BREACHES

- In 2019, bitcoins worth about $40 million were stolen from Binance after attackers used a combination of viruses and phishing techniques, which the exchange couldn't recover.
- North Korea's state-backed Lazarus Group stole around $1.5 billion from Bybit last year through spoofing. Only a small portion was recovered.

Impact of the hack

Bitcoin, the world's largest cryptocurrency, plunged 4.5% Thursday, hitting its lowest level since September. Ethereum slumped 5%. Other major cryptocurrencies also saw similar sell-offs, though many of them recovered slightly on Friday. "When a player as big as Binance is hit, it affects sentiment across the industry," another industry executive said.

Binance, however, assured users that the company would cover losses from its own funds. The company said it had revoked the authorisation of the network responsible for the breach and had informed law enforcement agencies and blockchain intelligence platforms.

It had initially suspended deposits and withdrawals. However, it subsequently clarified that deposits would remain unaffected, while withdrawals could resume within 45 hours. The $3 billion in blocked funds represents assets frozen by the exchange and other entities, including blockchain-enabled platforms Tether and Circle, which the attackers could have accessed.

Impact on India

The impact on crypto investors in India could be significant. "India currently has around 100 million users, out of which 80-90% have direct or indirect exposure to Binance. It provides the vast majority of the liquidity in the Indian crypto market. Even Indian exchanges like CoinDCX have exposure to the exchange," one of the industry executives mentioned above said.