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Time: 45 Min Date: 02-01-2025

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DISSENT IN THE INDIAN JUDICIARY

Context

• The nature of dissent in the Indian judiciary has been a topic of discussion and debate in the political, social, and intellectual landscape.

Nature of Dissent in the Indian Judiciary

- Dissent in the judiciary is a vital aspect of a democratic society, reflecting the diversity of thought and the independence of the judicial system.
- In India, judicial dissent has played a crucial role in shaping the legal landscape, often highlighting the dynamic interplay between law, politics, and society.
- The right to dissent is a fundamental right and an essential part of democracy in India, protected by Article 19(1) of the Constitution of India.
- It can be traced back to landmark cases such as ADM Jabalpur v. Shivkant Shukla (1976), where Justice H.R. Khanna's dissenting opinion emphasized the importance of fundamental rights even during a state of emergency.

Types of Dissent

- Political Dissent: Judges often express dissenting opinions on matters involving political implications.
 - For instance, in the P.V. Narasimha Rao case (1998), Justices S.C. Agarwal and A.S. Anand dissented on the issue of parliamentary privilege and immunity from prosecution for accepting bribes.
- **Social Dissent:** Judicial dissent arises from differing views on social issues.
 - Cases like Shayara Bano v. Union of India (2017), which dealt with the practice of triple talaq, saw dissenting opinions that reflected varying perspectives on social justice and gender equality.
- Intellectual Dissent: Purely intellectual disagreements among judges often lead to dissenting opinions. These dissents are based on different interpretations of legal principles and doctrines, contributing to the evolution of jurisprudence.
 - Justice B.V. Nagarathna in Lalta Prasad Vaish (2024), the industrial alcohol case said that States could not tax industrial alcohol.

Comparative Perspective

 In the **United States**, judicial dissents are often influenced by the political inclinations of judges, who are appointed by the President and confirmed by the Senate. In contrast, the Indian judiciary, through its collegium system, maintains a degree of insulation from direct political influence, allowing for a broader range of dissenting opinions based on legal and intellectual grounds.

Importance of Dissent

- Safeguarding Democracy: Dissent allows judges to express differing opinions, which is essential for a healthy democracy.
 - It ensures that multiple perspectives are considered in judicial decisions, preventing the dominance of a single viewpoint.
- Preventing Majoritarianism and Safeguarding Minority Views: Judiciary can check majoritarian tendencies and ensure that the rule of law prevails over the rule of the majority.
 - Dissent ensures that minority views are recorded and considered, preventing the dominance of a single perspective in judicial decision-making.
- Enhancing Judicial Accountability: Dissenting opinions hold the majority accountable by providing alternative viewpoints and highlighting potential flaws in the majority's reasoning.
- Protecting Civil Rights: Judicial dissent is vital in protecting the rights of citizens, especially the marginalized and underrepresented.
 - It provides a platform for challenging majority opinions that may overlook or infringe upon individual rights.
- Encouraging Legal Discourse: Dissenting opinions contribute to the evolution of legal principles by fostering debate and discussion.
 - They often highlight alternative interpretations of the law, which can influence future judgments and legal reforms.

Concerns and Challenges

- Impact on Legal Precedents: Dissenting opinions, while not legally binding, can influence future legal interpretations and reforms.
 - They highlight alternative viewpoints and can lead to significant changes in the law over time.
- Social and Intellectual Disagreements: Judicial dissents in India often arise from differing social and intellectual perspectives.
 - For example, in the Shayara Bano case (2017), Justices Khehar and Nazeer dissented from the majority opinion, arguing triple talaq was an integral part of Sunni personal law.
- **Public Perception and Trust:** Frequent dissenting opinions may affect public perception of the judiciary's unity and impartiality.



• It can lead to questions about the consistency and reliability of judicial decisions.

Conclusion

- The nature of dissent in the Indian judiciary reflects the complexity and richness of India's legal system. It underscores the importance of judicial independence and the role of dissent in fostering a vibrant and dynamic democracy.
- As India continues to evolve, judicial dissent will remain a cornerstone of its legal and democratic framework, ensuring that diverse voices are heard and respected.

Source: TH

THE SORRY STATE OF INDIA'S PARLIAMENTARY PROCEEDINGS

In Context

 The recent winter session of Parliament was marred by significant disruptions, leading to a significant loss of productive time and a low overall productivity rate.

Parliament Productivity

- The frequent disruptions and lack of decorum raise concerns about the effectiveness of parliamentary democracy in India.
- Only 4 Bills passed in Lok Sabha and 3 Bills in Rajya Sabha.
 - The productivity of Lok Sabha was approximately 54.5%.
 - The productivity of Rajya Sabha was approximately 40%.

Major Reasons of Low Productivity

- Decline of Parliamentary Civility: The decline of decorum in Parliament is partly due to precedents set in the past.
 - The Speaker's reluctance to enforce rules and expel unruly MPs has allowed disruptions to become a regular part of parliamentary proceedings.
- Acrimony Between Government and Opposition: The relationship between the government and the Opposition has become increasingly acrimonious.
 - Both sides view each other as enemies, rather than adversaries, making cooperation difficult and eroding the trust necessary for a functioning democracy.
- Diminished Public Expectations: Public expectations from MPs have shifted. Voters no longer primarily assess MPs based on their parliamentary performance, such as debating skills.

- MPs are often judged by their local political influence and constituent services instead.
- **Decline of Parliamentary Debate**: The quality of debate in Parliament has deteriorated.
 - MPs now prioritize disruption over meaningful legislative debate. Parliamentary performance is often overshadowed by media appearances and televised confrontations.

Impact

- Legislative Delays: Important bills and policies are postponed or passed without proper discussion.
- Loss of Time: Precious hours are wasted, reducing overall productivity.
- Public Issues Neglected: Key concerns of citizens are not debated effectively.
- **Economic Costs:** Taxpayer money is wasted on non-productive sessions.
- **Weakened Democracy:** Reduces meaningful debates and erodes trust in Parliament.
- **Delayed Policies:** Essential reforms and governance suffer delays.
- Lost Private Members' Voice: Minimal attention to private members' bills and resolutions.
- **Bad Precedents**: Normalizes disruptions, weakening parliamentary decorum.

Way Forward

- Restore Parliamentary Decorum: All parties must prioritize restoring decorum and constructive dialogue within Parliament.
- Improve Communication: Enhanced communication and dialogue between the government and the Opposition are crucial to address concerns and find common ground.
- Modernize Parliamentary Procedures: Consider modernizing parliamentary procedures to enhance efficiency and address the challenges of the 21st century.
- Focus on Public Interest: Legislators must prioritize the public interest and focus on addressing pressing national issues.

Source:TH

UNIFIED DISTRICT INFORMATION SYSTEM FOR EDUCATION PLUS (UDISE+) REPORT

Context

 As per the Ministry of Education (MoE) Unified District Information System for Education Plus (UDISE+) report, the total enrolment of students has dropped by over a crore in 2023-24 as compared to the previous years.

About

- The Department of School Education & Literacy (DOSEL) has developed the "Unified District Information System for Education Plus (UDISE+)" from the reference year 2018-19.
- It facilitates online uploading of data at school level with subsequent data verification at the Block, District and State level.
 - The data serves as a crucial tool for monitoring and evaluating the quality of education from pre-primary to higher secondary levels.

Major Highlights

- Decrease in No. in Enrolment: A total of 24.8 crore students enrolled in the academic year 2023-24.
 - In 2022-23, there was a drop of 6% as compared to 2018-19.

TOTAL SCHOOL ENROLMENT

2023-24	24.80 cr
2022-23	25.18 cr
2021-22	26.52 cr
2020-21	26.44 cr
2019-20	26.45 cr
2018-19	26.03 cr
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Average total enrolment for 2018-19 to 2021-22 is 26.36 cr

- The drop in 2023-24 has been seen in the primary (Classes 1 to 5), upper primary (Classes 6 to 8), and secondary (Classes 9 and 10) levels.
 - In contrast, the pre-primary and higher secondary (Classes 11 and 12) levels have seen an increase in enrolment in 2023-24.
- Gender Wise Drop in Enrolment: In 2023-24, there was a decrease of 4.87% in enrolment of boys as compared to 2018-19.
 - There was a decrease of 4.48% for the enrolment of girls in the same period.
- **Statewise Drop:** States like Bihar, Uttar Pradesh and Maharashtra saw among the highest drop in enrolments.

• Infrastructure Gaps: Only 57.2% of schools have functional computers, 53.9% have internet, and 52.3% are equipped with ramps, underscoring significant gaps in accessibility and tech readiness.

Challenges Faced by the Education System in India

- Inequality in Access: There is a significant disparity in access to quality education between urban and rural areas, and among different socioeconomic groups.
- Quality of Education: While enrollment rates are high, the quality of education remains a concern due to outdated teaching methods, lack of skilled teachers, and inadequate infrastructure.
- High Dropout Rates: Many students, particularly at the secondary level, drop out due to factors such as financial constraints, early marriage, or a lack of interest.
- Infrastructure Deficiencies: Many schools, especially in rural areas, lack basic infrastructure such as classrooms, toilets, and electricity, limiting the learning environment.
- **Focus on Rote Learning:** The education system often emphasizes rote memorization over critical thinking, creativity, and problem-solving skills.
 - **Inadequate Funding:** Public spending on education is often insufficient, leading to limited resources for schools, teachers, and educational reforms.
- Overburdened Curriculum: The curriculum is often too rigid and overburdened with content, leaving little room for practical skills and extracurricular activities.
 - Access to Higher Education: Although the number of universities and colleges has grown, the demand for quality higher education still exceeds the supply, leading to intense competition.
 - **Technological Integration:** While digital learning is gaining traction, there is still limited access to technology in many rural and remote areas, widening the digital divide.

Government Initiatives

- Right to Education (RTE) Act, 2009: Guarantees free and compulsory education for children in the 6-14 age group, focusing on quality education and no discrimination.
- Mid-Day Meal Scheme: Provides free meals to students in government schools to encourage school attendance, improve nutrition, and reduce dropout rates.
- Pradhan Mantri Jan Dhan Yojana (PMJDY):
 Focuses on financial inclusion, enabling students from low-income families to access government education benefits and scholarships.



- National Scheme of Incentive to Girls for Secondary Education: Aims to encourage girls from rural areas to continue education by providing financial incentives.
- Swachh Vidyalaya Abhiyan: Improves sanitation facilities in schools, ensuring clean drinking water, toilets, and better hygiene to support girls' education.
- **Digital India Programme:** Promotes the integration of technology in education by providing access to digital learning resources and bridging the digital divide.
- Scholarships and Financial Aid: The government offers various scholarships and financial assistance programs for students from economically weaker sections, such as the Post-Matric and Pre-Matric scholarships.
- New Education Policy 2020:
 - Emphasis on early childhood care and education (ECCE), particularly for children up to 6 years.
 - Encourages multi-disciplinary learning at the school and higher education levels.
 - Introduction of a 5+3+3+4 school structure (5 years of foundation, 3 years of preparatory, 3 years of middle, and 4 years of secondary education).
 - Focus on critical thinking, creativity, and problem-solving rather than rote learning.

Source: TH

CABINET APPROVES MODIFICATIONS IN CROP INSURANCE SCHEME

Context

 The Union Cabinet has approved the continuation of Pradhan Mantri Fasal Bima Yojana and Restructured Weather Based Crop Insurance Scheme till 2025-26.

About

- The Cabinet approved setting up of the Fund for Innovation and Technology (FIAT) for technology improvements in insurance schemes.
 - Key initiatives include Yield Estimation System using Technology (YES-TECH), which uses remote sensing for crop yield estimates.
 - Weather Information and Network Data System (WINDS) for augmenting weather data through automatic weather stations.

About Pradhan Mantri Fasal Bima Yojana

• Launch: In 2016 by the Ministry of Agriculture & Farmers welfare.

- Objectives: It is a crop insurance scheme that provides financial support to farmers in case of crop failure or damage due to natural calamities, pests, or diseases.
 - to stabilize the income of farmers to ensure their continuance in farming;
 - to encourage farmers to adopt innovative and modern agricultural practices;
 - to ensure flow of credit to the agriculture sector.
- **Coverage:** All farmers including sharecroppers and tenant farmers growing the notified crops in the notified areas are eligible for coverage.
- Coverage of Crops: Food crops (Cereals, Millets & Pulses), Oilseeds and Annual Commercial / Horticultural crops.

S.No	Season	Crops	Maximum Insurance charges payable by farmer (% of Sum Insured)
1	Kharif	All foodgrain & Oilseeds crops,(all Cereals,Millets, Pulses, & Oilseeds crops)	2.0% of SI or Actuarial rate, whichever is less
2	Rabi	All food grain & Oilseeds crops, (all Cereals Millets, Pulses, & Oilseeds crops)	1.5% of SI or Actuarial rate, whichever is less
3	Kharif & Rabi	Annual Commercial / Annual Horticultural crops	5% of SI or Actuarial rate, whichever is less

• Share between Centre and State: As the States have a major role in implementation of the scheme the premium subsidy is shared by the Central and State Government on a 50 : 50 basis and for North-Eastern States sharing pattern has been made 90 : 10.

About Restructured Weather Based Crop Insurance Scheme (RWBCIS)

- It was launched in 2016 to mitigate the hardship of the insured farmers against the likelihood of financial loss on account of anticipated crop loss resulting from adverse weather conditions.
 - While PMFBY is based on yield, RWBCIS uses weather parameters as "proxy" for crop yields in compensating the cultivators for deemed crop losses.
 - All standard Claims are processed and paid within 45 days from the end of the risk period.

Agri Credit in India

- Sources of Agricultural Credit: Public sector banks (like the State Bank of India), regional rural banks (RRBs), cooperatives, and NABARD (National Bank for Agriculture and Rural Development) provide most formal agricultural credit.
- Types of Agricultural Credit:

- Short-term Credit: Used for financing working capital needs like seeds, fertilizers, and pesticides.
- Medium and Long-term Credit: Used for purchasing equipment, irrigation systems, and land development.

• Challenges:

- Low credit penetration in rural areas.
- Dependency on informal credit sources with high interest rates.
- Issues with loan recovery and defaults.

Other Relevant Government Schemes

- Kisan Credit Card (KCC) Scheme: Provides short-term credit to farmers for crop production and agricultural needs. Offers flexible repayment terms.
- Pradhan Mantri Kisan Samman Nidhi (PM-KISAN): Direct income support of 6,000 per year to small and marginal farmers in three installments.
- Interest Subvention Scheme: Subsidizes interest rates on crop loans up to 3 lakh, reducing financial burden on farmers.
- Farmers' Development Loans (FDL): Longterm loans for land development, irrigation, and purchasing farm equipment.
- Rashtriya Krishi Vikas Yojana (RKVY):
 Provides funding to states for enhancing agricultural infrastructure and productivity.
- National Mission on Agricultural Extension and Technology (NMAET): Enhances agricultural productivity by supporting extension services and technology adoption.
- Credit Guarantee Fund Scheme (CGS):
 Offers credit guarantees to micro and small enterprises, including agri-businesses.
- Rural Infrastructure Development Fund (RIDF): Provides loans for rural infrastructure projects like irrigation and soil conservation.
- Kisan Rin Portal (KRP): This digital platform aims to revolutionize access to credit services under the Kisan Credit Card Scheme (KCC) by offering a comprehensive view of farmer data & loan disbursement specifics and fostering seamless integration with banks.

Source: PIB

INCINERATION PROCESS

In News

 The plan to incinerate 337 tonnes of chemical waste from the **Bhopal gas tragedy** in Pithampur has generated mixed reactions on the **process of** incineration.

About Incineration

 Incineration is a waste treatment process involving the controlled combustion of materials at high temperatures to reduce their volume, neutralize hazardous components, and recover energy.

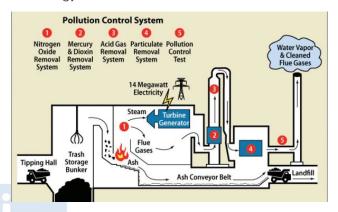


Image Courtesy: Researchgate

Arguments in Favor of Incineration

- **Safe disposal:** Incineration at high temperatures can effectively destroy most hazardous chemicals, reducing the risk of contamination.
- Energy recovery: The heat generated during incineration can be used to produce electricity or steam, providing a source of energy.
- Space-saving: Incineration significantly reduces the volume of waste, reducing the need for landfills.

Arguments Against Incineration

- Harmful emissions: Incineration can release harmful pollutants such as dioxins, furans, and heavy metals if not properly controlled.
- Health risks: Exposure to these pollutants can increase the risk of respiratory problems, cancer, and other health issues.
- Air and water pollution: Residual ash and flue gases from incineration can contaminate the environment.
- High costs: Building and operating an incinerator is expensive, and the process requires significant maintenance.

Alternative Solutions to Incineration

• **Secure landfill disposal:** This option would involve storing the waste in a specially designed



- landfill with multiple layers of protection to prevent leakage.
- **Vitrification:** This process involves melting the waste at high temperatures to form a solid glass block that is stable and non-leachable.
- Plasma arc technology: This technology uses a high-temperature plasma to decompose the waste into its basic elements, which can then be safely disposed of.

Source: TH

INDIA DECLARED 2025 AS THE "YEAR OF DEFENSE REFORMS"

In Context

 The Ministry of Defence (MoD) has declared 2025 as the "Year of Defense Reforms," signifying a commitment to modernizing and strengthening its armed forces.

Need for Modernization of Defence

- A strong and modern military is essential to safeguard the nation's sovereignty, territorial integrity, and strategic interests.
- It ensures readiness to address multi-domain conflicts, including cyber, space, and traditional warfare.

Key Features

- Operationaling Integrated Theatre Commands:
 It will enhance tri-services synergy by integrating the Army, Navy, and Air Force under unified commands.
 - Each command will address specific geographical challenges using shared resources.
 - Optimizes resource utilization and ensures joint operations across domains.
- Technological Advancements: Emphasis on cybersecurity, space operations, and emerging technologies like:
 - Artificial Intelligence (AI)
 - Machine Learning (ML)
 - Hypersonic systems
 - Robotics
 - Focus on multi-domain integrated operations.
- Streamlined Procurement: Simplification of acquisition processes for faster capability development.
 - Promotion of indigenous manufacturing and global competitiveness.
 - Collaboration and Integration: Breaking silos across defense stakeholders.

- Encouraging public-private partnerships and technology transfers.
- Collaboration between defense and civil industries.
- **Export-Oriented Approach**: Positioning India as a credible exporter of defense products.
 - Building partnerships with foreign original equipment manufacturers (OEMs).
- Research & Development (R&D): Strengthening R&D for innovation in defense technologies.
 - Establishing partnerships to foster indigenous solutions.

Impacts

- The reforms will ensure India's sovereignty and security, providing a robust defense infrastructure to counter evolving threats.
- Promotes India's goal of becoming a selfreliant defense power with export capabilities, contributing to economic growth.
- Strengthens India's global defense partnerships and enhances its position as a leader in cuttingedge military technologies.

Recent Defence Reforms Taken

- Chief of Defence Staff (CDS): Established in 2020 to promote jointness among the Army, Navy, and Air Force.
- Agnipath Scheme: Short-term recruitment of soldiers for 4 years to modernize and reduce pension costs.
- Atmanirbhar Bharat: Focus on indigenization with a negative import list and defense industrial corridors.
- **Simplified Procurement:** Defence Acquisition Procedure (DAP) 2020 to speed up and simplify purchases.
- **Defence Exports:** Target of \$5 billion by 2025; examples include BrahMos missile exports.
- Space and Cyber Agencies: Establishment of the Defence Space Agency (DSA) and Cyber Agency (DCA).
- Defence R&D: Promotion of startups and MSMEs through iDEX (Innovations for Defence Excellence).

Source: PIB

ANNUAL GROUND WATER QUALITY REPORT, 2024

Context

 The Annual Ground Water Quality Report, 2024, published by the Central Groundwater Board (CGWB) under the Jal Shakti Ministry, highlights significant concerns about groundwater quality in India.

Key Highlights

- **Groundwater Extraction:** The report states that the degree of groundwater extraction across India is **60.4%**.
- Safe Blocks: Approximately 73% of the analysed blocks fall within the 'safe' category, indicating adequate replenishment of groundwater resources.
- Nitrate Pollution: There are 440 districts with excessive nitrates in their groundwater as of 2023.
 - Rajasthan (49%), Karnataka (48%), and Tamil Nadu (37%) reported the highest levels of nitrate contamination.
- The report identifies uranium contamination, particularly in Rajasthan and Punjab, where the highest numbers of samples exceeded 100 ppb (parts per billion).
- Fluoride contamination is a major concern in states such as Rajasthan, Haryana, Karnataka, Andhra Pradesh, and Telangana.

Reasons for groundwater contamination

- Excessive Use of Fertilizers: Over-reliance on nitrogen-based synthetic fertilizers in agriculture leads to nitrate leaching into groundwater.
- Industrial Effluents: Discharge of untreated or inadequately treated industrial waste introduces heavy metals and other toxic substances into groundwater.
- **Geological formations** in some regions release naturally occurring contaminants like arsenic, fluoride, and uranium into groundwater.
- **Excessive extraction** lowers water tables, concentrating naturally occurring contaminants like arsenic, uranium, and fluoride.

Government Initiatives

- National Aquifer Mapping Programme (NAQUIM) to delineate and characterize the aquifer system in the country.
- National Rural Drinking Water Programme (NRDWP): Addressing contaminants such as fluoride and arsenic through water treatment plants and alternate water supply solutions.
- Jal Kranti Abhiyan, aimed at consolidating water conservation and management initiatives in the country through a holistic and integrated approach involving all stakeholders.
- Atal Bhujal Yojana, was launched to improve groundwater management in priority areas with critical and overexploited blocks.

 Namami Gange Program: Clean and rejuvenate the Ganga River Basin, including the mitigation of groundwater contamination in adjacent regions.

Policy Recommendations

- Regulatory Framework: Implementation of the National Water Policy with an emphasis on water quality monitoring is essential.
- Sustainable Agricultural Practices: Implement precision farming techniques to minimise the overuse of fertilizers and irrigation water.
- Water Treatment Technologies: Promote lowcost filtration techniques for rural households to address contaminants like nitrates and heavy metals.
- **Groundwater Recharge Initiatives:** Accelerate the adoption of rainwater harvesting and managed aquifer recharge (MAR) projects to replenish groundwater levels.

Source: TH

NEWS IN SHORT

RED SEA

In News

• Iran's UN envoy rejected US and British accusations regarding Tehran's role in escalating tensions in the **Red Sea**.

Red Sea

 The Red Sea is a semi-enclosed, inlet (or extension) of the Indian Ocean between the continents of Africa from Asia.





- It is connected to the Arabian Sea and the Indian Ocean to the south through the Gulf of Aden and the narrow strait of Bab el Mandeb.
- Bordering Countries: Egypt, Saudi Arabia, Yemen, Sudan, Eritrea and Djibouti.
- The Red Sea contains some of the world's hottest and saltiest seawater.
 - With its connection to the Mediterranean Sea via the Suez Canal, it is one of the most heavily travelled waterways in the world, carrying maritime traffic between Europe and Asia.

Do you know?

- The Houthi group, supported by Iran, has launched rocket and drone attacks on Israel and disrupted Israeli-linked shipping in the Red Sea since November 2023, in solidarity with Palestinians.
- Response to Houthi Attacks: In retaliation, Israel and the US-British naval coalition have conducted strikes on Houthi targets to deter further attacks.

Source:TH

BINODINI MANCHA

Context

 West Bengal Chief Minister announced that Kolkata's Star Theatre, a cultural institution of the city, would be renamed Binodini Mancha or Binodini theatre.

About Binodini

- Born in 1863 in a Kolkata suburb known for its red-light district, Binodini was among the first women in Bengal to join theatre professionally.
 - Despite societal challenges, she redefined the scope of female performance in Indian theatre.
- When Star Theatre was being built, a promise was made to name it "B. Theatre" in her honor, but it was ultimately named Star Theatre.
 - The first show performed there was **Dakshayajna**, starring Binodini.
- Despite her success, she voluntarily withdrew from theatre in 1887, just four years after the theatre's opening.
- Her autobiography, Aamar Katha (1913), vividly narrates the challenges of caste, class, and patriarchy she faced.

Source: IE

BUSINESS READY (B-READY) 2024 REPORT

Context

 India is facing challenges in achieving good scores in the World Bank's Business Ready report.

About

- The B-READY report, launched by the World Bank, benchmarks the business environment and investment climate across economies.
- It evaluates regulatory frameworks, public services, and their effectiveness in facilitating business operations, replacing the previous Doing Business index.

Challenges in India

- Business Entry and Labour Regulations: Multiple steps in business entry and incomplete digital integration, leading to moderate scores.
 - Four labour codes introduced, but uneven state-level implementation results in slow progress and moderate to low scores.
- High logistics costs, customs delays, and inconsistent trade regulation enforcement hinder efficiency.
- Burdensome GST compliance, slow dispute resolution, and limited SME credit access add to challenges.

Strengths of India

- Strong performance expected in Quality of Regulations, Effectiveness of Public Services, and Operational Efficiency.
- Positive strides in digital and green technologies enhance India's regulatory framework, though further improvement is needed.

Source: BS

PAINLESS NEEDLE-FREE SHOCK SYRINGES

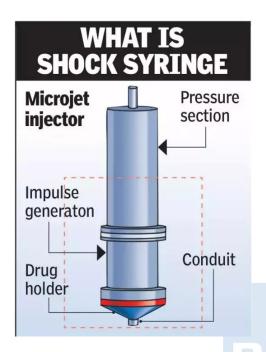
Context

 Researchers at ITT Bombay develop a shockwavebased needle-free syringe that ensures painless and safe drug delivery with lesser damage to skin and lower risk of infection.

About

 Unlike traditional syringes that use needles, this shock syringe does not rely on piercing the skin with a sharp tip. Instead, it utilizes high-energy pressure waves (shock waves) that travel faster than the speed of sound to penetrate the skin.

- These shock waves, when generated, compress the surrounding medium, such as air or liquid, through which they travel.
 - This effect is similar to the sonic boom created by an aircraft flying faster than the speed of sound, which generates shock waves that disturb the surrounding air.

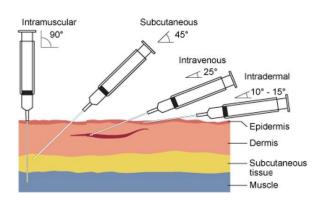


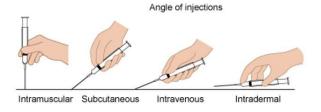
Implications for Healthcare

- Needle-free insulin delivery significant relief to diabetic patients.
- Addresses vaccine hesitancy stemming from needle fear.

Key Facts on Administering Injections

- Intramuscular: This injection is made to go deep into the muscle. The needle will be placed at a 90-degree angle (perpendicular) to the skin to allow for penetration into that tissue.
- Intravenous: The needles used for either injections or removal of blood should be placed where a vein is readily accessible. The needle should be inserted at an angle of 25 degrees to the skin.
- Intradermal: This injection requires the needle to be placed just under the epidermis (outer layer of skin) and into the dermis (inner layer of skin).
- **Subcutaneous:** Needle to be placed underneath the two layers of skin (epidermis and dermis). The needle will be placed at an angle of 45 degrees to the skin surface.





Source: TH

NAVY TO COMMISSION 2 FRONTLINE WARSHIPS AND 1 SUBMARINE

Context

 The Indian Navy is set to commission three frontline platforms into service at the Naval Dockyard, Mumbai.

About

- Following are the new additions:
 - sixth and last Scorpene-class submarine Vagsheer.
 - the fourth and last of the Project-15B stealth destroyers, Surat,
 - and the lead ship of the Project-17A stealth frigates, Nilgiri.
- All three platforms had been manufactured at Mazagon Dock Shipbuilders Limited (MDL), Mumbai.
- **Nilgiri:** It is the lead ship of Project-17A, is a major advancement over the Shivalik-class frigates, incorporating significant stealth features.

Project 15 B:

- These are the next-generation stealth guidedmissile destroyers which are follow-on classes of the weapon intensive P15A (Kolkata Class) Destroyers.
- The four ships of the Project are christened after major cities from all four corners of the country, viz. Visakhapatnam, Mormugao, Imphal and Surat.



Project-75

- Project 75 includes the indigenous construction of six diesel electric attack submarines of Scorpene class.
- The submarines are being constructed by the Mazagon Dock Shipbuilders Limited (MDL) in Mumbai in collaboration with the Naval Group of France.
- Under the project INS Kalvari, INS Khanderi, INS Karanj and INS Vela were commissioned between 2017 and 2021.
- The fifth submarine, INS Vagir, was commissioned recently.
- The sixth submarine Vagsheer is the last from the project.

Source: TH



