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Dr. GINDI'S IAS ACADEMY

DAILY CURRENT AFFAIRS

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Dr. GINDI'S I.A.S. ACADEMY
Civils & Competitive Careers
TRANSFORMING ASPIRANTS INTO ACHIEVERS

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DAILY CURRENT AFFAIRS

1. How food and fuel are driving India's inflation

Key Highlights & Summary

- Rapid rise: India's CPI inflation breached 4% in June 2026, led by food (5.32%) and fuel/transport (4.38%). Overall CPI stood at 4.31%.
- Primary drivers: Food inflation (vegetables, cereals, oils) and fuel price hikes (petrol, diesel) explain most of the recent uptick.
- Supply and demand factors: Weather-linked crop shortfalls, global commodity shocks, logistics bottlenecks, and higher domestic demand pushed prices.
- Policy response constraints: RBI targets $4\% \pm 2\%$ but faces trade-offs between tightening to curb inflation and supporting growth; fiscal measures (subsidies, taxes) influence administered prices.
- Distributional impact: Higher food and fuel prices disproportionately affect poor and middle-income households, raising poverty and fiscal pressure.
- Outlook and risks: Persistent imported energy inflation, monsoon variability, and geopolitical shocks could keep inflation above target in near term.

Essential Definitions

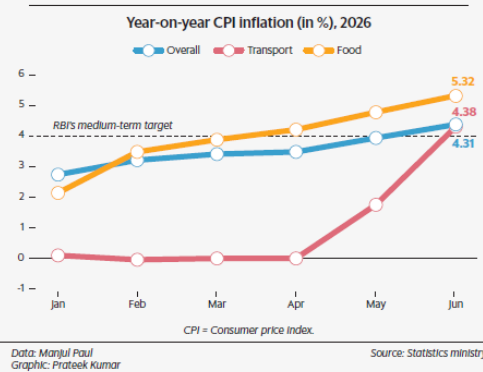
- Inflation: General sustained rise in price level measured by CPI (Consumer Price Index) or WPI (Wholesale Price Index).
- CPI: Index measuring change in retail prices paid by households across consumption categories.
- Food inflation: Year-on-year percentage change in CPI food group.
- Fuel and transport inflation: Change in CPI sub-group including petrol, diesel, and transport services.
- Headline vs Core inflation: Headline includes all items; core excludes volatile food and fuel components.

Legal and Constitutional Framework

- Reserve Bank of India Act, 1934: Empowers RBI to formulate monetary policy; RBI's monetary policy framework (2016 agreement with Government) sets inflation targeting mandate (4% mid-point, $\pm 2\%$).
- Article 39(b) & 39(c) (Directive Principles): State to ensure equitable distribution of resources and adequate livelihood—relevant to policy focus on food security.

HOW FOOD AND FUEL ARE DRIVING INDIA'S INFLATION

India's retail inflation breached the 4% mark in June, with transport seeing a sharp pressure from fuel price hikes. Food inflation jumped past 5%—posing a double whammy for the country.



- Essential Commodities Act, 1955: Allows government to regulate production, supply, and distribution of essential items (used to control food prices).
- Food Security Act, NFSA, 2013: Legal framework ensuring subsidised foodgrains to eligible households; impacts fiscal exposure when food price shocks occur.
- Fiscal Responsibility and Budget Management (FRBM) Act: Constrains fiscal deficit; high subsidy/support to control prices interacts with fiscal limits.
- Customs and Excise law: Tariffs and taxes on fuel and edible oil imports affect domestic prices; central/state GST and excise duties shape administered fuel prices.

Additional Important Keypoints

- Pass-through: Global oil price rises transmit to domestic petrol/diesel despite taxes; exchange rate depreciation amplifies import inflation.
- Supply-side interventions: Buffer stocks, import liberalisation, price controls, and logistics improvement can moderate food inflation quicker than monetary policy.
- Monetary policy lag: RBI rate actions affect inflation with lag; sharp supply shocks reduce effectiveness of rate hikes.
- Targeting poverty alleviation: Direct Benefit Transfers (DBT) and targeted subsidies reduce burden on vulnerable groups.
- Data reading: Disaggregate CPI components and rural-urban splits matter for policy calibration.

Conclusion

Food and fuel are the proximate causes of the recent inflation surge in India; addressing them requires a combination of supply-side reforms (agri-logistics, storage, import policy), careful fiscal support targeting the vulnerable, and calibrated monetary stance aligned with the RBI's inflation mandate.

UPSC Relevance

- Static links: Understand CPI/WPI, monetary policy framework, RBI Act, Essential Commodities Act, NFSA, FRBM, Directive Principles—common in GS papers.
- Dynamic links: Current affairs on inflation trends, fuel pricing, monsoon impact, government relief measures and RBI policy decisions—relevant for GS Paper III (Economy) and Essay/Interview.

2. SC SOP for Urgent Cases Affecting Life and Liberty

Key Highlights & Summary

- The Supreme Court of India has agreed to consider framing a Standard Operating Procedure (SOP) to allow citizens to approach courts at any time, day or night, for urgent cases affecting life and liberty.
- The petition emphasizes that the absence of an institutionalized mechanism for continuous judicial accessibility can lead to irreversible consequences like illegal detentions, imminent home demolitions, deportations, and custodial violence.

- A three-judge Bench headed by Chief Justice of India Surya Kant noted that the proposed SOP could aim to reduce the "response time" to within an hour of an urgent mention.
- The Solicitor-General of India suggested that the preparation of the SOP should be undertaken by the Supreme Court on its administrative side rather than its judicial side.
- The underlying argument posits that access to justice cannot merely exist in theory, and constitutional remedies must remain practically accessible beyond temporal court schedules.

 The absence of a structured and institutionalised mechanism ensuring continuous judicial accessibility may result in irreversible consequences MAHERAVISH REIN Petitioner	 Preparation of an SOP should be undertaken by the Supreme Court on its administrative rather than judicial side TUSHAR MEHTA Solicitor-General 
	 Maybe the response from the court should come within an hour of an urgent mention SURYA KANT Chief Justice of India 

Essential Definitions

- **Standard Operating Procedure (SOP):** A set of step-by-step instructions compiled by an organization to help workers carry out complex routine operations efficiently and uniformly.
- **Judicial Accessibility:** The practical, unhindered ability of citizens to approach a court of law to seek legal remedies, regardless of temporal, financial, or administrative constraints.
- **Irreversible Consequences:** Legal actions or executive measures (e.g., illegal demolition or deportation) that cause permanent damage or loss which cannot be adequately restored or compensated after the fact.

Legal and Constitutional Framework

- **Article 21 of the Indian Constitution:** Guarantees the protection of life and personal liberty, stating that no person shall be deprived of their life or personal liberty except according to procedure established by law. Continuous judicial access acts as a procedural safeguard for Article 21.
- **Article 32 of the Indian Constitution:** Empowers citizens to move the Supreme Court for the enforcement of Fundamental Rights. Dr. B.R. Ambedkar termed Article 32 the "soul of the Constitution," making its 24/7 availability vital.
- **Article 145 of the Indian Constitution:** Grants the Supreme Court the power to make rules for regulating the practice and procedure of the court, aligning with the administrative side drafting the proposed SOP.

Conclusion

The Supreme Court's willingness to institutionalize a 24/7 access mechanism signifies a progressive shift from a rigid, schedule-bound judiciary to a dynamic, rights-centric institution. By aiming to reduce the response time for urgent liberties to under an hour, the apex court reinforces the rule of law, ensuring that constitutional protections do not fall silent when court doors close.

UPSC Relevance

- **GS Paper II (Governance & Polity):** Structure, organization, and functioning of the Judiciary; Judicial reforms; Enforcement of Fundamental Rights; Executive vs. Judiciary balance.

- **Prelims Link:** Constitutional provisions regarding the Supreme Court (Articles 32, 142, 145), Fundamental Rights (Article 21), and the distinction between the judicial and administrative powers of the Chief Justice of India.

3. Union Government Bans Herbicide Paraquat

Key Highlights & Summary

- The Union Ministry of Agriculture and Farmers Welfare has notified a nationwide ban on the manufacture, import, transport, distribution, sale, and use of the highly toxic herbicide paraquat dichloride.
- The decision follows recommendations from a government-appointed Expert Committee and the Registration Committee under the Insecticides Act of 1968, which cited severe public health risks.
- Paraquat has been linked to thousands of human fatalities in India resulting from instances of intentional self-harm, homicides, and accidental occupational exposure.
- Medical and agricultural experts highlighted that the chemical poses extreme hazards because it has no known specific medical antidote.
- The central notification builds upon earlier independent prohibitions enacted by various state governments, including Andhra Pradesh, Telangana, Kerala, and Odisha.
- India joins a global regulatory shift, as paraquat is already banned or severely restricted in more than 70 countries worldwide due to its extreme toxicity.

Essential Definitions

- **Paraquat Dichloride:** A highly toxic, fast-acting, non-selective contact herbicide widely used by farmers after harvests to clear weeds and prepare land for subsequent crops.
- **Herbicides/Weedicides:** Chemical substances specifically formulated to manipulate, inhibit, or destroy the growth of unwanted plants and invasive weeds in agricultural landscapes.
- **Registration Committee:** A statutory regulatory body constituted under the Insecticides Act, 1968, responsible for registering, reviewing, and regulating the safety and efficacy of chemical pesticides in India.

Legal and Constitutional Framework

- **The Insecticides Act, 1968:** The primary central legislation regulating the import, manufacture, sale, transport, and distribution of insecticides and herbicides to prevent risk to human beings and animals. Section 27 of the Act empowers authorities to prohibit substances causing public safety risks.
- **Article 21 of the Constitution:** Guarantees the fundamental right to life and personal liberty. Courts interpret this to encompass the right to



India bans paraquat, weeds out biggest poison from its agricultural fields

a safe environment and public health, placing an obligation on the state to mitigate lethal exposure to unregulated toxins.

- **Article 47 of the Constitution (Directive Principles of State Policy):** Mandates that the State shall regard the raising of the level of nutrition, the standard of living of its people, and the improvement of public health as among its primary duties.

Conclusion

The nationwide prohibition on paraquat dichloride marks a critical milestone in Indian agrochemical regulation, pivoting from hazardous mitigation to complete eradication of lethal toxins. While the ban effectively safeguards human lives and farmworkers from irreversible chemical damage, the transition underscores the urgent need for affordable, bio-friendly alternative weed management strategies to shield farmers from escalating operational costs.

UPSC Relevance

- **GS Paper II (Governance):** Government policies and interventions for development in various sectors; regulatory bodies (Registration Committee under the Ministry of Agriculture).
- **GS Paper III (Agriculture & Environment):** Issues related to direct and indirect farm subsidies and minimum support prices; cropping patterns; environmental pollution, degradation, and occupational health hazards in rural ecosystems.

4. Trade Policy Amendment Prohibiting Forced Labour Imports

Key Highlights & Summary

- The Ministry of Commerce and Industry has amended the Foreign Trade Policy (FTP), 2023, by inserting Paragraph 2.20B to prohibit the import of goods produced or manufactured, wholly or in part, through forced labour.
- The decision establishes a regulatory mechanism empowering the Directorate General of Foreign Trade (DGFT) to conduct inquiries and recommend product-specific import bans.
- This strategic move comes in the wake of the United States Trade Representative (USTR) initiating Section 301 investigations against 60 economies, including India, regarding forced labour enforcement.
- The USTR had proposed a 12.5% tariff on countries failing to implement effective forced labour import bans, threatening to impact Indian commerce and disrupt bilateral trade negotiations.
- Aligning India's domestic framework with global standards strengthens New Delhi's stance in market-access negotiations and safeguards global supply-chain credibility.
- The enforcement protocol will utilize the framework laid down in the Handbook of Procedures, 2023, to verify complaints and determine targeted restrictions.



Essential Definitions

- **Forced Labour:** All work or service exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily, matching international standards.
- **Section 301 Investigation:** A statutory provision under the US Trade Act of 1974 empowering the USTR to investigate and unilaterally impose tariffs on foreign trade practices deemed unfair or restrictive to US commerce.
- **Non-Tariff Barriers:** Regulatory, administrative, or qualitative policy measures other than ordinary customs tariffs that can restrict or displace international trade flows.

Legal and Constitutional Framework

- **Foreign Trade (Development and Regulation) Act, 1992:** The enabling legislation under which the DGFT and the Ministry of Commerce amend and enforce provisions of India's Foreign Trade Policy.
- **ILO Forced Labour Convention, 1930 (No. 29):** The international treaty from which India adopted the verbatim definition of forced labour, solidifying compliance with global benchmarks.
- **Article 23 of the Indian Constitution:** A fundamental right that explicitly prohibits traffic in human beings, *begar*, and other similar forms of forced labour within domestic jurisdiction.
- **Article 301 of the Indian Constitution:** Relates to the freedom of trade, commerce, and intercourse, which remains subject to reasonable restrictions imposed by Parliament in the public interest.

Conclusion

By embedding international labour benchmarks directly into the Foreign Trade Policy, India has effectively transitioned from purely penal domestic enforcement to an active trade-based compliance regime. This regulatory adjustment counters unilateral tariff threats while positioning the nation as a responsible, ethically aligned global trade partner. The long-term efficacy of this provision will rely heavily on robust, transparent traceability mechanisms to ensure these rules act as genuine ethical safeguards rather than protectionist barriers.

UPSC Relevance

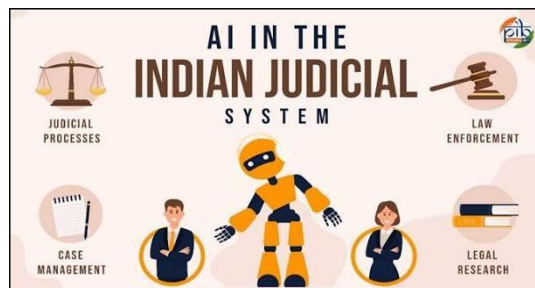
- **GS Paper II (Governance & International Relations):** Bilateral trade agreements and groupings involving India; effect of policies of developed countries on India's economic interests (US Section 301 probes).
- **GS Paper III (Economy):** Changes in industrial policy and foreign trade policy; mobilization of resources; growth, development, and international trade standards.

5. Virtual Courts and the Digital Transformation of Indian Judiciary

Key Highlights & Summary

- The transition from physical to virtual court hearings, accelerated by the pandemic, has established e-courts as a permanent pillar of India's judicial delivery system.

- By December 2025, data submitted to Parliament revealed that the High Courts and district courts had collectively conducted over 3.93 crore virtual hearings.
- Technology has broadened public access, with 11 High Courts offering live streaming of court proceedings on YouTube and the e-courts portal recording approximately 35 lakh daily hits.
- More than 1.03 crore cases have been e-filed electronically, backed by an allocation of over Rs 7,000 crore for phase-three initiatives to digitize court records.
- Despite benefits like democratization of legal practice and reduced travel costs, virtual courts face infrastructural challenges including patchy networks, frozen screens, and a sharp digital divide between high courts and subordinate trial courts.



Essential Definitions

- **Virtual Courts:** A judicial forum where legal proceedings are conducted remotely utilizing secure video-conferencing platforms, eliminating the need for the physical presence of stakeholders.
- **E-Filing:** The electronic submission of legal documents, pleadings, and case files through a designated online portal, advancing the goal of a paperless judiciary.
- **Digital Divide (Judicial):** The disparity in technological infrastructure, digital literacy, and resources available between higher judiciary echelons (Supreme Court/High Courts) and lower subordinate district courts.

Legal and Constitutional Framework

- **Article 21 of the Indian Constitution:** The right to a speedy trial and access to justice are integral facets of the right to life and personal liberty, which virtual courts help uphold by preventing delays.
- **Article 145 of the Indian Constitution:** Empowers the Supreme Court to frame rules regulating its own practice and procedure, providing the legal basis for adopting video-conferencing and e-filing guidelines.
- **Section 65B of the Indian Evidence Act, 1872:** Regulates the admissibility of electronic records in court proceedings, acting as the primary legal standard for digital evidence and virtual submissions.

Conclusion

Virtual courts have successfully decentralized the Indian legal system, changing how justice is observed and delivered by making courtrooms accessible beyond physical boundaries. However, the technology cannot fully replace the introspective quality and body-language reading essential to physical advocacy. To ensure long-term efficacy, the state must bridge the digital divide in rural trial courts, turning temporary pandemic-era fixes into a robust, secure, and equitable hybrid judicial model.

UPSC Relevance

- **GS Paper II (Governance & Polity):** Structure, organization, and functioning of the Judiciary; government policies and interventions aimed at judicial reforms; issues arising out of design and implementation of e-governance tools.
- **Prelims Link:** E-Courts Integrated Mission Mode Project, functions of the Supreme Court e-committee, constitutional provisions on judicial administration (Articles 21, 130, 145), and IT Act provisions.

6. The Disruptive Rise of India's New Political Generation

Key Highlights & Summary

- A structural shift is underway in Indian democracy, moving away from post-Independence hierarchies toward a youth-led decentralized political paradigm.
- Modern youth mobilization relies on decentralized digital spaces, meme culture, podcasts, and short-form videos to shape and control public discourse.
- The rise of the Tamilaga Vettri Kazhagam (TVK) under C. Joseph Vijay in Tamil Nadu exemplifies the transformation of organic cultural movements into formal electoral forces.
- Established leaders, such as Kerala Chief Minister V.D. Satheesan, are intentionally transitioning away from confrontational styles to adopt accessible, participatory digital personas.
- Younger voters demonstrate a distinct aversion to scripted rhetoric and party-line loyalty, prioritizing systemic responsiveness, authentic communication, and emotional intelligence.
- Recent youth mobilizations across South Asia demonstrate how digitally cohesive networks rapidly translate anti-establishment sentiment into potent democratic accountability.



Essential Definitions

- **Managed Participation:** A superficial form of youth engagement where political establishments involve younger citizens in campaigns or token roles without genuine power-sharing or leadership decentralization.
- **Decentralized Mobilization:** The organization of collective political action or social movements without reliance on a singular, top-down institutional command structure.
- **Anti-Performance Sentiment:** A growing electoral behavior among youth that rejects performative gestures and ideological inheritance in favor of transparent, measurable policy outcomes.

Legal and Constitutional Framework

- **Article 326 of the Indian Constitution:** Establishes adult suffrage, guaranteeing the right to vote for citizens aged 18 and above, providing the statutory base for youth electoral influence.

- **Article 19(1)(a) of the Indian Constitution:** Guarantees the fundamental right to freedom of speech and expression, which directly protects and enables digital commentary, political satire, and citizen-led online journalism.
- **Information Technology Act, 2000:** The primary legislative framework regulating the digital communications ecosystem, social media intermediaries, and online content dissemination used in modern political campaigns.

Conclusion

The evolution of India's youth from passive "citizens in waiting" to active drivers of political discourse marks a critical maturation of the country's democratic fabric. As online spaces and grassroots actions merge, traditional political machines face an ultimatum to either structurally adapt or risk structural irrelevance. The stability of India's future governance depends on the capacity of its constitutional institutions to absorb this new, highly collaborative political energy.

UPSC Relevance

- **GS Paper II (Polity and Governance):** Salient features of the Representation of People's Act; role of pressure groups and formal/informal associations; effects of changing political communication on democratic governance.
- **Essay Paper & GS Paper IV (Ethics):** Changing societal values, youth aspirations, and the ethical parameters of digital political commentary and public narrative building.

7. India-US Defence Technology Ties: Big Ambitions, Little Delivery

Key Highlights & Summary

- The India-United States strategic relationship has generated highly ambitious political announcements over the past two decades that repeatedly fail to translate into tangible industrial outcomes.
- General Electric's (GE) F414 fighter engine co-production initiative—the centerpiece of the 2023 Initiative on Critical and Emerging Technologies (iCET)—remains gridlocked over export controls and intellectual property disputes.
- The estimated cost of each F414 engine has nearly tripled, soaring from around ₹70 crore–₹80 crore to over ₹200 crore, while GE demands an additional \$800 million (₹7,576 crore) investment from India to set up a dedicated assembly line.
- Despite launching platforms like the Defence Technology and Trade Initiative (DTTI) in 2012 and INDUS-X in 2023, meaningful technology transfer remains elusive, turning potential co-development projects like the Javelin anti-tank missile and Stryker infantry combat vehicle into historical purchase-only frameworks.

- A fundamental philosophical chasm underpins the impasse: India views partnerships as a channel to acquire core technology and boost strategic autonomy, whereas the US treats advanced military tech as a strategic asset governed by strict export control regimes.

- Negotiations are transitioning toward a proposed Reciprocal Defence Procurement Agreement (RDPA) to lower bureaucratic procurement barriers, though experts warn this could expose India's nascent domestic manufacturers to lopsided competition from advanced American defense giants.



Essential Definitions

- **Technology Transfer Divide:** The operational and ideological gap between a buyer nation seeking core intellectual property to build domestic manufacturing capability and a supplier nation restricting high-tech access via strict export control legislation.
- **Reciprocal Defence Procurement Agreement (RDPA):** A bilateral institutional framework intended to harmonize defense procurement rules, enabling defense companies from both signatory nations to bid for each other's military contracts on a reciprocal basis.
- **International Traffic in Arms Regulations (ITAR):** A strict United States regulatory regime that restricts and controls the export of defense- and space-related articles, services, and technical data to safeguard US national security.

Legal and Constitutional Framework

- **Article 73 of the Indian Constitution:** Extends the executive power of the Union to matters with respect to which Parliament has power to make laws, including entering into international treaties, defense pacts, and bilateral strategic frameworks.
- **The Industries (Development and Regulation) Act, 1951:** Provides the statutory basis for regulating industrial development in India, directly influencing policies surrounding licensed domestic military manufacturing by entities like Hindustan Aeronautics Limited (HAL).
- **US Arms Export Control Act (AECA):** The foundational American legislation that gives the US President the authority to control the import and export of defense articles, providing the legal backing for ITAR restrictions that complicate bilateral technology transfers.

Conclusion

The trajectory of India-US defense ties underscores the persistent friction between high-level diplomatic alignment and transactional industrial realities. While bilateral hardware procurement has surpassed \$22 billion since 2002, true structural co-development remains stalled by stringent Western export barriers and misaligned commercial expectations. Resolving these deep-seated institutional deadlocks is essential if both democracies intend to move past a simple buyer-seller model and establish a resilient, high-tech manufacturing partnership in the Indo-Pacific.

UPSC Relevance

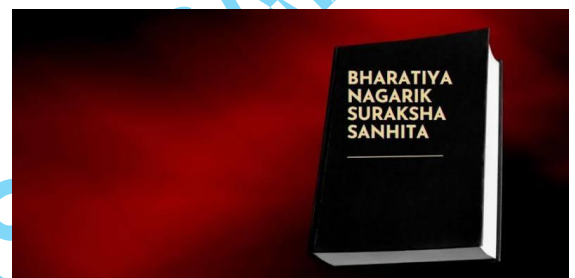
- **GS Paper II (International Relations):** Bilateral, regional, and global groupings and agreements involving India and/or affecting India's interests; effect of policies and politics of developed countries on India's strategic autonomy.

- **GS Paper III (Security & Economy):** Indigenization of technology and developing domestic technology; defense procurement policies; challenges in transferring intellectual property and achieving self-reliance (*Atmanirbharta*) in the defense industrial base.

8. Trial in Absentia Under Bharatiya Nagarik Suraksha Sanhita

Key Highlights & Summary

- A Special National Investigation Agency (NIA) Court in Jammu issued a non-bailable warrant against Lashkar-e-Taiba (LeT) chief Hafiz Saeed for his involvement in the Pahalgam terror attack case.
- Due to the low likelihood of Saeed appearing in court, the NIA plans to seek a trial in absentia under Section 356 of the Bharatiya Nagarik Suraksha Sanhita (BNSS), which replaced the Code of Criminal Procedure (CrPC).
- Unlike the old CrPC, which only allowed courts to record evidence or conduct partial hearings when an accused absconded, the BNSS enables a full-fledged trial, conviction, and judgment in the absolute absence of the offender.
- The law restricts trials in absentia strictly to a "proclaimed offender" accused of severe offenses carrying a punishment of 10 years or more, life imprisonment, or the death penalty.
- Mandatory safeguards require the issuance of two consecutive warrants 30 days apart, national or local newspaper publications, and the provision of a state-funded defense counsel to protect the right to a fair trial.
- The deposition and examination of witnesses must, as far as practicable, be recorded and preserved via audiovisual electronic means to maintain transparency if the accused is apprehended later.



Essential Definitions

- **Trial in Absentia:** A formal criminal trial conducted by a court of law in the absolute physical absence of the accused person.
- **Proclaimed Offender:** A person against whom a judicial proclamation has been published under Section 84 of the BNSS for failing to appear despite being accused of specified serious offenses.
- **Waiver of Presence:** A legal doctrine applied under Section 356 of the BNSS where an accused person's deliberate act of absconding to evade justice is legally treated as an implicit surrender of their right to attend the trial.

Legal and Constitutional Framework

- **Section 356 of the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023:** The specific statutory provision that empowers Indian courts to conduct complete inquiries, trials, and pronounce judgments against absconding proclaimed offenders.

- **Section 84 of the BNSS, 2023:** Defines the criteria and judicial process required to officially declare an absconding individual a proclaimed offender.
- **The Unlawful Activities (Prevention) Act (UAPA), 1967:** The anti-terror legislation invoked by the NIA alongside provisions of the Bharatiya Nyaya Sanhita (BNS), 2023, to prosecute cross-border terrorism.
- **Article 21 of the Indian Constitution:** Guarantees the right to a fair trial and due process, which is balanced in Section 356 through mandatory defense counsel appointments and options for witness cross-examination if the accused is arrested later.

Conclusion

The introduction of full-fledged trials in absentia under the BNSS marks a transformative shift in India's criminal jurisprudence, preventing high-profile offenders and cross-border terrorists from stalling the judicial process indefinitely. By balancing national security imperatives with stringent procedural safeguards, the framework ensures accountability while respecting the limits of constitutional due process.

UPSC Relevance

- **GS Paper II (Polity and Governance):** Criminal justice reforms; significant features of the BNSS and BNS; statutory bodies (NIA); balance between state security and fundamental rights (Article 21).
- **GS Paper III (Internal Security):** Linkages of organized crime with terrorism; cross-border terrorism; institutional mechanisms to combat internal security challenges.

9. Protein Biosensors in Medical Emergency Diagnosis

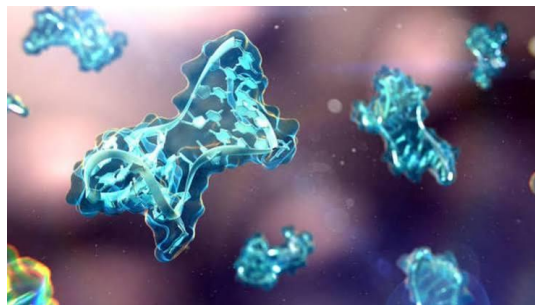
Key Highlights & Summary

- Protein biosensors leverage the fact that proteins are involved in almost every biological process and serve as vital diagnostic targets, showing structural or quantitative alterations within hours of a medical emergency.
- Recent breakthroughs include compact bedside sensor platforms capable of real-time detection of multiple immune proteins linked to sepsis, which kills 11 million people annually and requires rapid treatment within hours.
- Nanotechnology infrastructure incorporating gold nanoparticles, carbon nanotubes, and graphene has significantly enhanced biosensor sensitivity by providing high surface areas for protein binding.
- The domain is increasingly converging with biotechnology tools like CRISPR enzymes and machine-learning systems trained to analyze complex signals, allowing simultaneous multi-marker detection for pancreatic cancer, malaria, and SARS-CoV-2.
- Beyond clinical diagnostics, scientists are adapting cell-free biosensors for environmental and industrial use, such as detecting heavy metals, antibiotic residues, foodborne pathogens, and biological threat agents.

- Key technological bottlenecks remaining before widespread clinical deployment include thermal degradation of biological elements, high calibration complexities due to individual baseline variations, and rigorous regulatory validation demands.

Essential Definitions

- **Protein Biosensor:** An analytical device that pairs a biological recognition element (like an antibody or aptamer) with a physical transducer to convert a biological signal into a measurable electrical or optical current.
- **Aptamers:** Short, synthetic single strands of DNA or RNA engineered to bind to specific target proteins with high selectivity, offering greater thermal stability and cheaper production than traditional antibodies.
- **Closed-Loop Systems:** Advanced diagnostic-therapeutic devices that use artificial intelligence to interpret multi-protein sensor data and automatically trigger a precise drug delivery or therapeutic response.



Legal and Constitutional Framework

- **Article 21 of the Indian Constitution:** Guarantees the right to life, which the Supreme Court has interpreted to include the right to health and access to timely, high-quality emergency medical care.
- **National Health Policy, 2017:** Mandates the promotion of domestic research and development in indigenous, affordable diagnostic technologies and biomedical devices to reduce import dependency.
- **Drugs and Cosmetics Act, 1940 (and Medical Devices Rules, 2017):** The legal framework governing the quality, clinical validation, and manufacturing approval parameters for advanced diagnostic kits, implantables, and wearable biosensors in India.

Conclusion

The evolution of protein biosensors from rigid laboratory protocols to rapid, AI-driven bedside tools represents a paradigm shift in emergency medicine and epidemiological surveillance. By bridging chemistry, material sciences, and artificial intelligence, these diagnostic systems can circumvent traditional 48-hour testing delays, drastically lowering mortality rates for acute conditions like sepsis. Scaling this technology from a laboratory prototype to a public health utility will necessitate substantial institutional funding and a streamlined, safety-oriented regulatory approval pathway.

UPSC Relevance

- **GS Paper III (Science and Technology):** Recent developments and their applications and effects in everyday life; indigenization of technology; advancements in biotechnology, nanotechnology, and artificial intelligence.
- **GS Paper II (Governance & Public Health):** Issues relating to development and management of Social Sector/Services relating to Health; institutional infrastructure for tackling biological threats and medical emergencies.

10. India-UK Comprehensive Economic and Trade Agreement (CETA)

Key Highlights & Summary

- The landmark India-UK Comprehensive Economic and Trade Agreement (CETA) alongside the Double Contribution Convention (DCC) has officially entered into force, establishing a future-oriented economic architecture.
- Under the CETA, the UK immediately eliminates tariffs on 96.8% of its tariff lines, which accounts for 97.7% of bilateral trade value, significantly boosting Indian export competitiveness.
- India will immediately eliminate tariffs on 30.3% of trade value, with an additional 47% of trade value seeing tariff elimination in a phased manner to protect local industries.
- The agreement explicitly shields India's highly sensitive domestic sectors, including dairy, cereals, pulses, vegetables, gold, jewellery, smartphones, and critical polymers.
- The accompanying DCC exempts Indian workers and their employers from paying double social security contributions in the UK for up to 5 years, saving substantial sunk costs.
- The deal is expected to directly benefit over 75,000 Indian skilled professionals and more than 900 employers, facilitating easier services sector integration and labor mobility.



Essential Definitions

- **Comprehensive Economic and Trade Agreement (CETA):** A deep integration trade pact that goes beyond traditional tariff reduction to cover digital trade, government procurement, intellectual property, and environmental standards.
- **Double Contribution Convention (DCC):** A bilateral social security agreement designed to prevent cross-border workers and employers from paying double social security taxes on the same income in two countries.
- **Tariff Lines:** Individual product codes within a country's customs classification system used to specify national tariff rates on imported goods.

Legal and Constitutional Framework

- **Article 73 of the Indian Constitution:** Extends the executive power of the Union to international relations, treaties, and the implementation of bilateral trade agreements like the CETA.
- **Article 253 of the Indian Constitution:** Empowers Parliament to legislate on any subject to implement international treaties, agreements, and conventions with foreign nations.
- **Entry 14 of the Union List (Seventh Schedule):** Places the entering into treaties and agreements with foreign countries under the exclusive jurisdiction of the Central Government.

Conclusion

The operationalization of the India-UK CETA and DCC marks a watershed moment in India's trade diplomacy, balancing aggressive export ambitions with strategic defensive barriers. By resolving long-standing non-tariff and double-taxation bottlenecks, this deal establishes a "gold standard" template for India's upcoming trade negotiations with other major Western economies like the European Union.

UPSC Relevance

- **GS Paper II (International Relations):** Bilateral, regional, and global groupings and agreements involving India and/or affecting India's interests; policies of developed nations impacting domestic interests.
- **GS Paper III (Economy):** Effects of liberalization on the economy; changes in industrial policy; growth, development, and international trade dynamics.