

Economy (1)

• **India's coal — output growth and commercial mining**

Body: Ministry of Coal

Detail: July 2026 production rose 7.51% year-on-year to 69.75 MT with dispatch up 17.34% to 86.33 MT; India holds the world's fifth-largest coal resource and is the second-largest producer and consumer, coal meeting close to 55% of primary energy and over 70% of electricity; after the Supreme Court cancelled 204 of 218 blocks in 2014, the Coal Mines (Special Provisions) Act, 2015 restored auctions and commercial mining was launched on 18 June 2020

Exam hook: Coal ranks rise peat, lignite, bituminous, anthracite; about 98% of reserves are Gondwana coal of the Damodar, Son, Mahanadi and Godavari valleys — Jharia the largest coking field, Raniganj where mining began in 1774; lignite at Neyveli

Defence (3)

• **CRPF Raising Day and India's CAPFs**

Body: Ministry of Home Affairs

Detail: The CRPF is the largest Central Armed Police Force, raised on 27 July 1939, with a role in internal security and anti-Naxal operations; its motto is 'Seva aur Nishtha'

Exam hook: CAPFs under the MHA — CRPF (internal security), BSF (Pakistan and Bangladesh borders), ITBP (China/LAC), SSB (Nepal and Bhutan), CISF (industrial and airport security); Assam Rifles guards the Myanmar border; the Armed Forces under the Defence Ministry handle external defence

• **XWG Diesel for extreme cold — the chemistry**

Body: Indian Army with oil marketing companies

Detail: Diesel contains paraffin wax that crystallises in cold, gelling the fuel and blocking filters; the cloud point is where wax first makes the fuel cloudy, the CFPP is where a filter blocks, and the pour point is where the fuel stops flowing; Extreme Winter Grade Diesel uses tailored refining plus cold-flow improver additives to remain usable to about minus 42 degrees Celsius

Exam hook: Developed for Siachen and Ladakh, replacing imported fuel — an Aatmanirbhar Bharat case study

• **The President's Bodyguard and the PBG Soldierathon**

Body: President's Secretariat

Detail: The President flagged off the PBG Soldierathon at Rashtrapati Bhavan, raced at the Cariappa Parade Ground in 3, 5 and 10 km categories, with proceeds supporting the Paraplegic Rehabilitation Centre and wards of battle casualties; the President's Bodyguard is the Indian Army's senior-most regiment, raised in September 1773 as the Governor-General's Bodyguard by Warren Hastings from 50 troopers of the Moghul Horse, and marked 250 years in 2023

Exam hook: Its troopers are horsemen, tank crew and paratroopers; the President is Supreme Commander under Article 53(2); Cariappa was the first Indian C-in-C (1949) and Manekshaw the first Field Marshal (1973)

Environment (2)

• **International Tiger Day and Project Tiger**

Body: NTCA / MoEFCC

Detail: Project Tiger was launched on 1 April 1973 with 9 reserves, beginning at Jim Corbett; the Wildlife (Protection) Act 1972 is the parent law and the NTCA became a statutory body under the 2006 amendment; India has 50-plus tiger reserves, 3,682 tigers (2022 estimate) and roughly 70-75% of the world's wild tigers

Exam hook: The tiger (*Panthera tigris*) is the National Animal, IUCN Endangered and CITES Appendix I; reserves have an inviolate core and a buffer; International Tiger Day is 29 July

• **Legacy waste, biomining and dumpsite remediation**

Body: Ministry of Housing & Urban Affairs

Detail: Legacy waste is old, mixed, unsegregated municipal waste piled at open dumpsites; it pollutes through leachate seeping into groundwater and methane (about 25 times more potent than CO₂) generated by anaerobic decomposition, which also causes dumpsite fires; biomining stabilises the heap with microbial bio-cultures, then excavates and screens it through trommels into bio-earth, recyclables, refuse-derived fuel and inerts

Exam hook: Solid Waste Management Rules, 2016 under the Environment (Protection) Act, 1986; segregation into wet, dry and domestic hazardous; SBM-Urban 2.0 (2021) targets garbage-free, dumpsite-free cities; hierarchy Reduce-Reuse-Recycle-Recover-Dispose

Sci/Tech (5)

• **Blue straggler stars and stellar evolution**

Body: Indian Institute of Astrophysics / ISRO ASTROSAT

Detail: A star is plasma powered by the fusion of hydrogen into helium; its life runs nebula to main sequence (most of its life) to red giant, ending as a white dwarf if low mass, or as a supernova leaving a neutron star or black hole if high mass; a blue straggler is a cluster star that looks younger and bluer than its true age because it gained mass from a companion or a merger

Exam hook: Studied using ASTROSAT (2015), India's first dedicated UV and X-ray space observatory

• **PM Surya Ghar and how rooftop solar works**

Body: Ministry of New & Renewable Energy

Detail: A solar PV cell is a silicon semiconductor p-n junction converting light directly into electricity by the photovoltaic effect; photovoltaic (light) differs from solar thermal (heat); the panel's DC output passes through an inverter to AC; net metering credits surplus power exported to the grid

Exam hook: PM Surya Ghar Muft Bijli Yojana (Feb 2024) subsidises rooftop solar for 1 crore homes; PM-KUSUM covers farm solar; the International Solar Alliance is headquartered at Gurugram; target 500 GW non-fossil capacity by 2030

• **Gaganyaan — India's human spaceflight programme**

Body: ISRO

Detail: Gaganyaan will carry three crew to about 400 km in low Earth orbit for up to three days aboard the Human-Rated LVM3 (HLVM3); a Crew Escape System handles aborts; the Orbital Module comprises the Crew Module and the Service Module; ECLSS provides life support — air, pressure and temperature; Vyommitra is the humanoid robot flying on uncrewed tests

Exam hook: The astronaut-designates are four IAF test pilots; Rakesh Sharma (1984) was the first Indian in space, aboard a Soviet mission

• **NavIC and satellite navigation**

Body: ISRO

Detail: NavIC (formerly IRNSS) is India's regional navigation system covering the country and about 1,500 km beyond, designed around seven satellites mixing geostationary and geosynchronous orbits, broadcasting in the L5 and S bands, with an open Standard Positioning Service and an encrypted Restricted Service for the military; accuracy is better than 20 m; a fix needs at least four satellites (three for coordinates, one to correct clock error) by trilateration

Exam hook: Global GNSS are GPS (US), GLONASS (Russia), Galileo (EU) and BeiDou (China); regional systems are NavIC (India) and QZSS (Japan)

• **Deepfakes and India's AI regulation**

Body: MeitY / CERT-In

Detail: A deepfake is AI-generated synthetic media (deep learning plus fake), typically produced using GANs where a generator and a discriminator compete; risks include election misinformation, voice-clone fraud, non-consensual imagery, national-security disinformation and the 'liar's dividend'

Exam hook: India's response rests on the IT Act 2000 and IT Rules 2021 (platform due diligence, prompt takedown, grievance officers, safe harbour as a condition), the BNS, the DPDP Act 2023 and the IndiaAI Mission's Safe and Trusted AI pillar

Infra (3)

- **India's national power grid and transmission**

Body: Ministry of Power / Grid-India / POWERGRID

Detail: Power flows generation to a step-up transformer, transmission at 220, 400 or 765 kV, then step-down to 11 kV distribution and 230 V at the household; high voltage reduces current and therefore I-squared-R losses; transformers require AC, while HVDC suits very long bulk links

Exam hook: India's five regional grids were unified into one synchronous grid on 31 December 2013 — 'One Nation, One Grid, One Frequency' at 50 Hz — operated by Grid-India (formerly POSOCO) through the NLDC and RLDCs

- **Khelo India and India's sports policy**

Body: Ministry of Youth Affairs & Sports

Detail: Khelo India (2018) covers grassroots talent identification, sports infrastructure and the Khelo India Youth, University, Winter and Para Games; the Target Olympic Podium Scheme supports elite medal prospects through the Mission Olympic Cell; the Sports Authority of India (1984) implements training; National Sports Federations run individual sports

Exam hook: The Cabinet approved Rs 36,441 crore for Khelo India and assistance to NSFs for 2026-31; the IOA sends India's contingent to the Games

- **India's first Multi-Lane Free Flow tolling on NH-48**

Body: NHAI / Ministry of Road Transport & Highways

Detail: Barrier-free tolling launched at the Chorayasi plaza on the Surat-Bharuch section of NH-48, Gujarat, with about 41,500 vehicles crossing on day one and a rollout planned at roughly 25 fee plazas; it combines ANPR cameras front and rear with high-performance RFID readers authenticating the passive, battery-free FASTag, so vehicles pay without stopping

Exam hook: Tolling ladder runs cash to FASTag ETC (mandatory 2021) to MLFF to GNSS satellite tolling by distance; NHAI Act 1988 (operational 1995); NH-44 longest; odd-numbered highways run north-south, even east-west

