

## Topic 1: AI Authorship & Intellectual Property Rights (IPR)

- GS Paper 3: Issues relating to Intellectual Property Rights; Awareness in the fields of IT, Computers, and Robotics.
- Syllabus Context: The intersection of emerging autonomous technology with statutory framework boundaries.

### 1. Core Context

The Indian Copyright Office rejected an application filed in 2022 by American computer scientist Stephen Thaler seeking to register his autonomous Artificial Intelligence (AI) system, DABUS (*Device for the Autonomous Bootstrapping of Unified Sentience*), as the "author" of the artwork titled 'A Recent Entrance to Paradise'. While the Office accepted that the artwork satisfied the requisite originality threshold for statutory protection, it held that an AI system cannot be recognized as an author under the Copyright Act, 1957.

### 2. Key Statutory Provisions & Judicial Tests

- Originality Standard: Under Section 13, copyright protection extends to *original* literary, dramatic, musical, and artistic works. The Act does not define "originality". The Copyright Office interprets this using the landmark Supreme Court ruling in *Eastern Book Company v. D.B. Modak*, which held that a work need not be novel or groundbreaking but must show a *minimum degree of creativity* and cannot be merely copied or mechanically reproduced.
- The Authorship Provision: Section 2(d)(vi) defines the author of a computer-generated work as "*the person who causes the work to be created*".
- First Ownership & Transfer: Under Section 17, the author is generally the first owner of the copyright. Sections 18 and 19 allow copyright to be legally assigned or transferred.

### 3. Key Observations & Findings of the Copyright Office

- Authorship as a Legal Status: The statutory architecture of the Copyright Act is explicitly built around "legal persons" (natural or juristic persons, such as corporations) who can hold, transfer, and legally enforce rights. An AI system does not possess legal personhood under Indian law.
- The Tool Test: To interpret who "causes" a computer-generated work to be created, the Office applied the "tool test" from American jurisprudence. It ruled that although DABUS generated the final image, it acted as an advanced tool within a system designed, initialized, and set in motion by Thaler. Thaler was thus identified as the statutory author.
- Administrative Limits: The Office held that the Register of Copyrights cannot be used to indirectly confer legal status on an AI system. Extending personhood or

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authorship to autonomous AI is a policy decision strictly reserved for Parliament and cannot be introduced via administrative reinterpretation.

#### 4. Critical Challenges to Fitting AI into Copyright Law

- Human Contribution Measurement: A registrar cannot distinguish whether a generating prompt involved genuine creative choices or a single automated instruction.
  - *The Fix*: Mandate a structured disclosure of AI involvement and specify the human contribution during registration.
- Unresolved Training Data: AI models are trained on protected works without licenses.
  - *The Fix*: Legislate a statutory text and data mining exception with a mandatory transparency obligation on training corpora.
- Competing Ownership Claims: Treating the person who "causes" creation as the author leaves model developers, platforms, and end-users with overlapping claims.
  - *The Fix*: Make the allocation of rights in computer-generated output a default statutory rule that contracts may vary, rather than relying solely on platform terms of service.
- Unanchored Terms of Protection: Copyright duration is tied to the author's lifetime, which is impossible to calculate for an AI system.
  - *The Fix*: Set a fixed, limited term (e.g., 50 years, as in the United Kingdom) measured from the date of creation for works without a human author.
- Liability and Enforcement: Infringing outputs (e.g., an AI-generated image replicating a protected character) lack an accountable entity under current laws.
  - *The Fix*: Attach statutory responsibility for infringing output directly to the person who deployed the generating system.

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## Topic 2: Cyber-Physical Systems (CPS) & National Mission

- GS Paper 3: Awareness in the fields of IT, Computers, Robotics, and Nano-technology.
- Syllabus Context: Deepening domestic research capacity, infrastructure, and skill development in emerging technology front-lines.

#### 1. Core Concept

Cyber-Physical Systems (CPS) are multidimensional systems that integrate computation, networking, and physical processes. In a CPS, software algorithms control physical machinery through closely integrated feedback loops of sensors and actuators.

#### 2. Institutional Framework: NM-ICPS

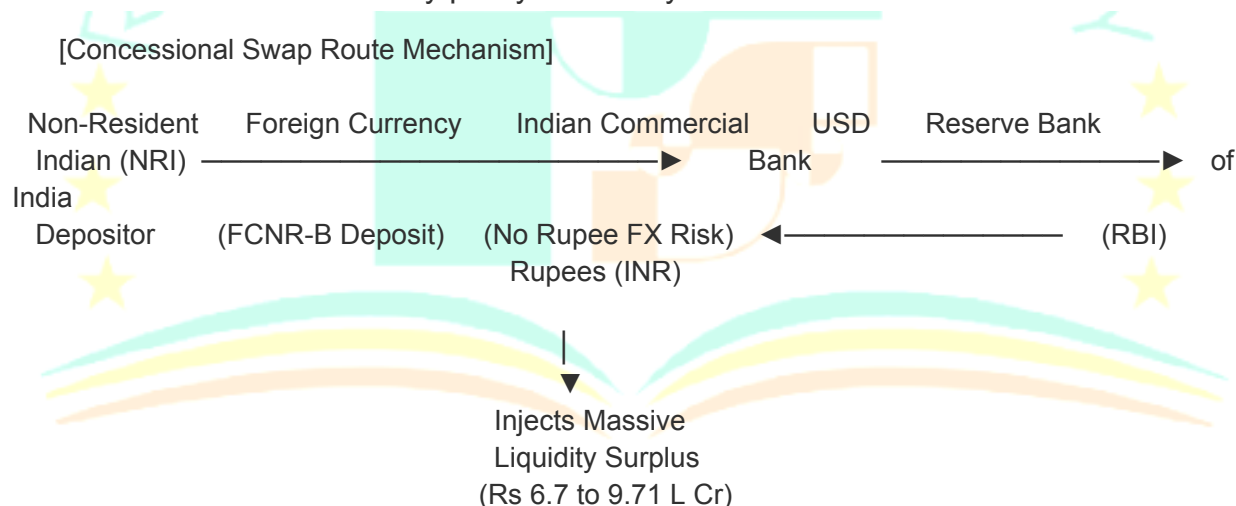
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- Implementing Nodal Agency: The Department of Science and Technology (DST) under the Ministry of Science and Technology.
- Approval & Outlay: Approved in 2018 with an outlay of approximately Rs 3,660 crore over a five-year implementation period.
- Implementation Model: Operates through a decentralized hub-and-spoke model consisting of 25 Technology Innovation Hubs (TIHs) established at leading national academic institutions, including the Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc).
- Technological Domain: Artificial Intelligence, the Internet of Things (IoT), robotics, and machine learning.
- Key Sectors of Application: Smart manufacturing, autonomous navigation systems, advanced healthcare diagnostics, and national defence.

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### Topic 3: Capital Flows, FCNR(B) Swap Route & Monetary Complications

- GS Paper 3: Indian Economy and issues relating to planning, mobilization of resources, growth, and development.
- Syllabus Context: The trade-offs between external exchange rate stabilization and domestic monetary policy autonomy.



#### 1. Core Context

Inflows through the Reserve Bank of India's (RBI) forex swap facility reached \$136.3 billion by August 31. Opened in June as part of external sector stabilization measures, the facility successfully pushed India's foreign exchange reserves to a historic high of \$729 billion (as of August 21) and stabilized the rupee (which reached a two-month high of Rs 94.60 to the dollar on September 3). However, this massive capital inflow has

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simultaneously created an unprecedented domestic banking system liquidity surplus of Rs 6.7 lakh crore (rising to Rs 9.71 lakh crore by September 2 according to independent estimates), complicating domestic inflation management.

### 2. The FCNR(B) and Swap Route Mechanism

- **FCNR(B) Deposits:** Term deposits placed by Non-Resident Indians (NRIs) in foreign currency with Indian commercial banks. The bank repays both the principal and interest in the *same* foreign currency, meaning the depositor carries no rupee exchange rate risk.
- **The Swap Operation:** Commercial banks sell these mobilized foreign currency dollars to the RBI in exchange for rupees, with a binding agreement to reverse the transaction at a pre-agreed forward rate on a fixed future date.
- **Concessional Element:** The RBI absorbs a portion of the forward hedging cost on its own books. This subsidy lifts the effective return banks can offer to depositors without forcing the banks to carry the underlying currency depreciation risk.
- **Parallel Channels:** The inflows were dominated by FCNR(B) deposits (\$127 billion), with the remaining balance arriving via External Commercial Borrowings (ECBs) and Overseas Foreign Currency Borrowings (OFCBs).

### 3. The Monetary Trilemma & Policy Complications

- **Liquidity Overhang:** Swapping \$136.3 billion in foreign currency directly injects trillions of rupees into the domestic banking system, pushing the liquidity surplus to Rs 9.71 lakh crore—well above the RBI's preferred operational level of Rs 2.7 lakh crore.
- **Policy Stance Conflict:** Domestic inflation is edging upward, signaling that the Monetary Policy Committee (MPC) may need to tighten rates. However, the massive liquidity surplus drives short-term market rates down in the opposite direction, undermining the transmission of a tighter policy stance.
- **High Sterilization Costs:** Draining this surplus via Variable Rate Reverse Repo (VRRR) auctions requires the RBI to pay substantial interest to commercial banks, directly eroding the central bank's operational income.

### 4. Structural Vulnerabilities of Debt-Type Capital Inflows

- **Current Account Deficit (CAD) Financing:** India runs an annual structural current account deficit, which requires long-term, stable, non-debt capital financing. FCNR(B) inflows are debt liabilities rather than stable equity (FDI/FPI).
- **The Redemption Cliff:** Deposits are dated money that must be repaid on maturity. Because a massive volume of capital was raised during a single narrow window, it creates a highly concentrated future redemption cliff for the central bank.
  - *Historical Precedent:* The \$26 billion raised through the 2013 FCNR(B) swap window matured together in 2016, requiring complex forward market operations by the RBI to prevent a sharp liquidity shock.

### 5. Policy Way Forward & Fixes

- **Maturity Staggering:** Stagger maturities across varying tenors (e.g., 1, 3, and 5 years) at the point of mobilization to avoid concentrated redemption cliffs.
- **Fiscal and Balance Sheet Transparency:** Publish the exact balance sheet cost of the concessional forward subsidy alongside the headline inflow numbers so the instrument is judged on a net-benefit basis.
- **Long-Term Sterilization:** Transition from short-term VRRRs to longer-term sterilization instruments, including open market sales of government securities, to align the liquidity drain with the maturity of the underlying inflows.

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## Topic 4: Environmental-Economic Accounting for Marine Fisheries

- GS Paper 3: Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment.
- Syllabus Context: Transitioning from extraction-volume metrics to natural capital valuation in the Blue Economy.

### 1. Core Context

The Ministry of Statistics and Programme Implementation (MoSPI) issued a landmark concept paper proposing to put a monetary value on India's marine fish stocks and record them as a national asset. This shift aligns with the United Nations' System of Environmental Economic Accounting (SEEA) framework.

### 2. Limitations of Existing Fisheries Metrics

- **Incomplete Tonnage Metrics:** India is the world's second-largest fish-producing nation, accounting for 8 percent of global production. Marine fish production rose to 46.15 lakh tonnes in FY25 (up from 34.43 lakh tonnes in FY14). However, aggregate landing tonnage merely records extraction volumes; it does not indicate whether commercially important stocks can biologically sustain such intensive extraction in the future.
- **Masked Regional Depletion:** National tonnage averages hide regional stock collapses, ecological shifts, and the changing value of individual target species.
- **No Blue GDP Series:** Unlike agriculture or manufacturing, India lacks a regular, integrated economic database to compute the true, long-term contribution of the blue economy. This makes it difficult to model the economic costs of climate change and habitat degradation.

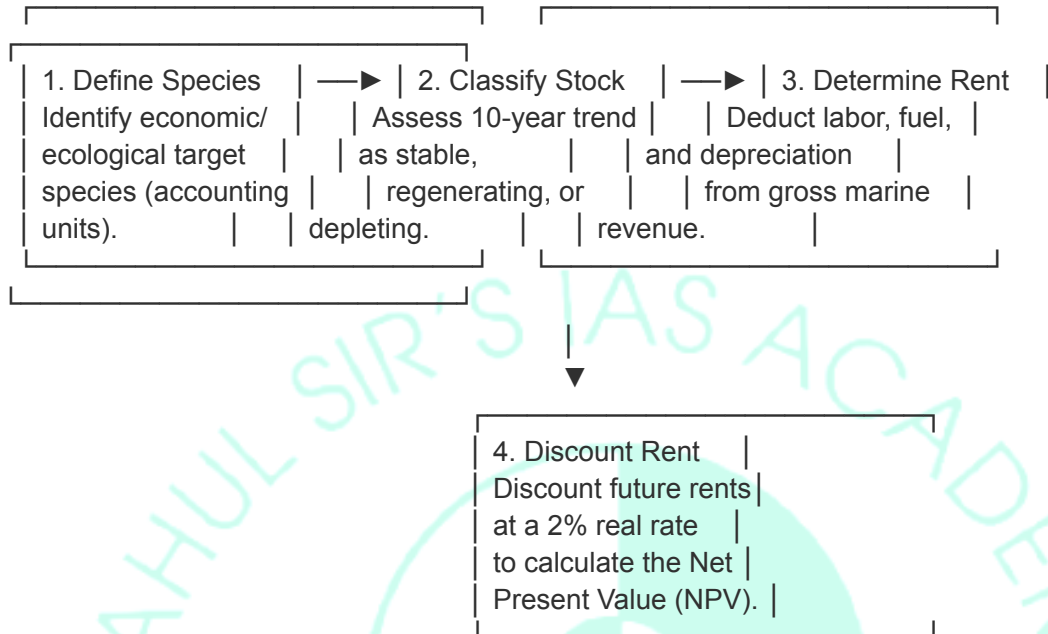
### 3. Framework of the United Nations SEEA

The SEEA is an international statistical framework that records a country's natural resources inside the same accounting structure used for its national economy. It treats natural resources as capital assets, classifying annual extractions as a flow of economic

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benefit from that asset. Since 2018, India has compiled environmental accounts under the EnviStats India program, which currently covers land, water, forests, minerals, and pollination.

[SEEA Marine Fish Asset Valuation Process]



#### 4. Methodological Challenges & Solutions

- **Biological Mobility**: Unlike forests or mineral deposits, living marine fish stocks change in size and location continuously (e.g., Kerala oil sardine landings collapsed in the 2010s before partially recovering).
  - *The Fix*: Anchor the asset account to periodic scientific biomass surveys conducted by the Central Marine Fisheries Research Institute (CMFRI) rather than relying solely on landing data.
- **Effort vs. Abundance**: Landing volumes often reflect fleet mechanization and longer voyages rather than biological abundance.
  - *The Fix*: Report effort-adjusted Catch Per Unit Effort (CPUE) alongside raw landing figures to isolate rising extraction pressure from actual stock expansion.
- **Discount Rate Sensitivity**: Present-value calculations are highly sensitive to the discount rate used. A high rate values a stock based almost entirely on short-term yields, making long-term depletion appear artificially cheap.
  - *The Fix*: Publish the accounts across a range of discount rates to make the underlying valuation assumptions fully transparent to policymakers.

## Topic 5: GDP Base Year Revisions and National Income Estimation

- GS Paper 3: Indian Economy and issues relating to planning, mobilization of resources, growth, and development.
- Syllabus Context: Methodological accuracy and the statistical credibility of macroeconomic indicators.

### 1. Core Context

MoSPI released output data for the first quarter of 2026-27, showing GDP growth of 7.8 percent in real terms and 10.3 percent in nominal terms under the newly introduced 2022-23 base year series. Former policymakers disputed these figures, claiming nominal growth was only 2.6 percent by dividing a numerator from the new 2022-23 base series by a denominator from the discontinued 2011-12 base series.

### 2. Why the "Cross-Base" Comparison is Methodologically Invalid

- Numerator-Denominator Mismatch: Comparing a numerator from a new base series with a denominator from an old base series violates basic statistical principles.
- The Symmetrical Fallacy: If this mixed-base methodology is applied to real GDP series, it implies an absurd, statistically impossible quarterly growth rate of nearly 70 percent.
- Chronological Sequence: The new 2022-23 base series was officially unveiled on February 27, 2026, which was *before* the first quarter of 2026-27 had even commenced. Nominal GDP for Q1 of 2025-26 was adjusted downward from Rs 86.1 trillion to Rs 80.3 trillion at the time the base was changed, ruling out any post-facto "reverse engineering" of the previous year's base to flatter current performance.
- Long-Run Growth Consistency: Over the multi-year period from 2022-23 to 2025-26, nominal GDP grew by 32.8 percent under the old series and 32.3 percent under the new series, demonstrating that the structural growth trajectory remains highly consistent across both bases.

### 3. Functional Purpose of Base Year Revisions

- Price Anchoring: A base year serves as a constant price reference point to strip inflation out of output data, allowing real GDP to measure physical volume changes rather than price fluctuations.
- Methodological Upgrades: Revisions provide a routine opportunity to integrate new, higher-quality data sources, capture structural changes in the modern economy, and update price deflators. Revisions are typically conducted once every five years.

### 4. Key Challenges & Deficiencies in India's National Accounting

- Informality Estimation: A substantial portion of India's economic output originates from unregistered, informal units. Their output is inferred from indirect indicators and proxies rather than direct enumeration.
  - *The Fix:* Link informal enterprise sample surveys directly to the Goods and Services Tax (GST) and Udyam registration databases to build a live, dynamic sampling frame.
- Deflator Overstatement (Single vs. Double Deflation): Historically, "single deflation" (applying a single price index to output without separately deflating input costs) was used. This meant that when raw material input costs rose and squeezed corporate profit margins, the system recorded it as artificial growth in manufacturing GVA.
  - *The Fix:* The new 2022-23 base series has officially abolished single deflation, introducing Producer Price Indices (PPI) that must be extended to cover the services sector.
- Absence of an Accompanying Back Series: Launching a new base series without an immediate, recomputed historical back series prevents researchers from making long-term comparative analyses.
  - *The Fix:* Mandate the simultaneous release of a recomputed historical back series alongside any new base year.

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## Topic 6: 'Raksha' Strategic Framework and Defence Diplomacy

- GS Paper 2: Bilateral, regional, and global groupings and agreements involving India and/or affecting India's interests.
- Syllabus Context: Transitioning from ad-hoc security cooperation to a structured, long-term projection of regional influence.

### 1. Core Context

The Defence Minister released Raksha, a comprehensive, ten-year strategic roadmap designed to integrate India's domestic industrial base with its geopolitical foreign policy and global defence partnerships.

### 2. Five Core Pillars of the Raksha Framework

1. Bilateral & Multilateral Partnerships: Deepening strategic alliances with individual states and within regional security groupings.
2. Joint Military Exercises: Expanding both the physical scale and tactical complexity of joint exercises with friendly forces.
3. Capacity Building: Providing structured training, technical assistance, and capacity-building support to partner militaries.

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4. Indigenous Defence Exports: Promoting the export of complete, indigenously developed platforms under *Make in India*. This establishes defence sales as long-term diplomatic partnerships rather than simple commercial transactions.
  5. Regional Maritime Security: Focusing on the Indian Ocean Region (IOR) as the primary theater for regional security cooperation.
3. The Net Security Provider & First Responder Role
- Definition: A net security provider is a state that supplies security to others in its region through active presence, capacity building, and maritime assistance, rather than focusing solely on securing its own borders.
  - The First Responder Obligation: The framework commits India to act as a first responder in the IOR, requiring the standing operational capacity to intervene and assist before a partner state formally requests help.
  - Implementation Vehicles: Executed through the SAGAR (*Security and Growth for All in the Region*) vision, the Indian Ocean Naval Symposium (IONS), and India-built coastal radar networks in partner nations.

[‘Raksha’ Defence Diplomacy Challenges & Fixes]

### CRITICAL CHALLENGES

### PROPOSED REFORMS & FIXES

Exports are concentrated in low-value components and subsystems [33]. —————> Set platform-level export targets, reported separately from raw totals [33].

Commitments outrun physical training capacity at staff colleges [37]. —————> Fund dedicated foreign trainee capacity outside standard service budgets [37].

First responder assets are divided across overlapping duties [37]. —————> Ring-fence a standing HADR task group with pre-positioned regional stores [37].

Export promotion collides with sensitive partner rivalries [37]. —————> Publish a transparent political clearance process to let industry price risks [37].

### Topic 7: Goan Temple Archaeology & Saptakoteshwar Temple Relics

- GS Paper 1: Salient aspects of Art Forms, Literature, and Architecture from ancient to modern times.
- Syllabus Context: Archaeological evidence of dynastic patronage, regional architectural styles, and the challenges of conserving living heritage.

#### 1. Core Context

Structural restoration work at the ancient site of the Saptakoteshwar temple on Divar Island, Goa, unearthed stone architectural relics dating from the 14th to 16th centuries.

#### 2. Archaeological and Historical Value of the Relics

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- The Kirtimukh Motif: A carved stone representation of a fierce, swallowing face (translating to the "face of glory"). In classical Indian temple design, the Kirtimukh is placed over doorways, deity niches, and at the apex of arches as a guardian of the threshold. Its presence at Divar Island indicates a formal, constructed temple entrance gateway rather than an open-air, unbuilt shrine.
- Pillar Capital: A carved structural load-bearing capital of a temple column was recovered. Found together along an ancient pathway running between Koti Tirth (a sacred water body) and Madhavachi Talli, these elements indicate a larger, integrated processional temple complex rather than a single, isolated shrine.
- Redrawing Historical Extents: The discoveries prove that the pre-Portuguese temple landscape of Divar Island was significantly larger and more architecturally complex than previously assumed.

### 3. Historical Trajectory of the Saptakoteshwar Temple

- Kadamba Patronage: Saptakoteshwar (a form of Shiva) was the tutelary deity of the Goa Kadamba dynasty, and the deity's name was struck on their sovereign coinage.
- Portuguese-Era Displacement: The original temple on Divar Island was destroyed by Portuguese authorities in the 16th century. The deity was secretly moved off the island to Narve in Bicholim, which lay outside Portuguese jurisdiction at the time.
- Shivaji Maharaj's Reconstruction: In 1668, Chhatrapati Shivaji Maharaj rebuilt the temple at Narve, restoring continuous active worship.

### 4. Gaps in Safeguarding Living Heritage Sites

- Restoration vs. Controlled Excavation: Surfacing artifacts during routine temple repairs means lifting them without the rigorous, layer-by-layer stratigraphic recording needed for precise dating.
  - *The Fix*: Mandate licensed archaeological supervision for any ground-disturbing conservation work at historic temple sites.
- The Protection Gap: Only a small fraction of India's historic sites are protected under the federal AMASR Act, 1958 or State equivalents, leaving most sites dependent on local custody.
  - *The Fix*: Fast-track the statutory notification of newly evidenced heritage sites on State protection lists as soon as dated materials are found.
- Community Repairs of Living Shrines: Working temples undergo frequent, uncoordinated repairs (using cement, plaster, and modern tiles), which often covers or damages older stone elements.
  - *The Fix*: Complete measured architectural drawings and comprehensive photographic documentation of a living temple before releasing public restoration grants.

### Topic 8: Grassroots Healthcare & Home-Based Newborn Care (HBNC)

- GS Paper 2: Issues relating to the development and management of Social Sector/Services relating to Health.
- Syllabus Context: Decentralizing public health delivery to resolve overloading and infrastructure crises at secondary and tertiary levels.

#### 1. The Institutional Overload Crisis

Under the push for maternal health, institutional deliveries in India surged from 39 percent in 2005-06 to 90 percent in 2023-24. However, this successful transition has severely overloaded public Special Newborn Care Units (SNCUs). Admissions to secondary-level public SNCUs rose 28 percent in just two years, from 11.3 lakh in 2021-22 to 14.45 lakh in 2023-24. This extreme overcrowding has caused:

- Clustered Neonatal Deaths: Tragically recurring infant deaths in public hospitals (e.g., Gorakhpur, Amravati, Bhandara, Bhopal, Jhansi) due to hospital-acquired infections, inadequate nurse-to-baby ratios, and infrastructure failures like fires and oxygen interruptions.
- Sicker Case Mix: Tertiary units are forced to handle highly vulnerable, premature, and low-birth-weight infants alongside normal deliveries.

#### 2. The Case for Home-Based Newborn Care (HBNC)

- The SEARCH Trial Evidence: During the 1990s, the *Society for Education, Action and Research in Community Health* (SEARCH) conducted a landmark field trial in rural Gadchiroli, Maharashtra. The trial demonstrated that trained community health workers could successfully identify and manage neonatal infections, support breastfeeding, and manage preterm infants at home. This approach reduced regional neonatal mortality by 62.2 percent.
- National Adoption: In 2011, the Ministry of Health and Family Welfare integrated this model into the public healthcare system, training approximately 8,00,000 Accredited Social Health Activists (ASHAs).
- Delineation of Care: The HBNC package does not replace clinical intensive care. Severely premature infants or those suffering from respiratory distress, shock, or severe sepsis must still be immediately referred to a clinical facility.

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### [Three-Part Neonatal Reform Strategy]

|                                                                                                                     |                                                                                                                                    |                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. Decongest Units   Strengthen home-based ASHA care so stable, growing infants do not block scarce SNCU beds [50]. | 2. Staff and Equip   Enforce strict nurse-to-baby ratios, secure reliable oxygen with backup, and implement infection audits [50]. | 3. Intrinsic Safety   Mandate fire suppression, safe electrical layouts, and independent safety audits [50]. |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|

#### 3. Operational Gaps in the HBNC Program

- **ASHA Volunteer Status:** ASHAs are classified as honorary volunteers paid via task-linked incentives (with a routine base of Rs 2,000), meaning they lack a contractual obligation to perform expanded clinical duties.
  - *The Fix:* Create a semi-formal cadre under the National Health Mission (NHM) with fixed salaries, insurance, and retirement benefits tied directly to their newborn care duties.
- **Diluted Supervision:** Auxiliary Nurse Midwives (ANMs) are responsible for supervising ASHAs but are overloaded with immunizations and reporting duties at sub-centers.
  - *The Fix:* Fund a dedicated, specialized supervisory post per cluster of community workers with a fixed monthly schedule of observed home visits.
- **Referral Network Gaps:** Home-based care fails if an infant deteriorates and emergency transport or hospital beds are unavailable.
  - *The Fix:* Link every ASHA to a live, real-time bed-availability dashboard for her referral unit and establish a guaranteed transport response window.
- **The Urban Exclusion:** HBNC was designed for and remains focused on rural areas. Urban slum populations sit largely outside structured HBNC deployment norms.
  - *The Fix:* Extend the program through Urban Primary Health Centres (UPHCs) with standardized urban deployment norms and a defined household list.

## MCQs

UPSC Prelims Daily Practice MCQs: August–September 2026

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**Q1. With reference to the Copyright Act, 1957 in India and its application to artificial intelligence (AI) generated works, consider the following statements:**

1. Copyright registration is a mandatory statutory requirement under the Act, and copyright protection cannot arise automatically upon the mere creation of an original work.
2. Section 2(d)(vi) of the Act identifies the author of a computer-generated work as the person who causes the work to be created.
3. In *Eastern Book Company v. D.B. Modak*, the Supreme Court held that a work must show at least a minimum degree of creativity and cannot be mechanically reproduced, although it need not be novel or groundbreaking.

Which of the statements given above are correct? (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 3 only  
(d) 1, 2 and 3

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**Q2. With reference to the National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS), consider the following statements:**

1. The Department of Science and Technology (DST) is the nodal implementing department for this mission.
2. The mission operates through a decentralized hub model consisting of Technology Innovation Hubs (TIHs) established at leading national academic institutions.
3. Cyber-Physical Systems (CPS) are designed to completely isolate software computing controls from physical machine processes to ensure cybersecurity.

Which of the statements given above are correct? (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

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**Q3. With reference to the Hybrid Annuity Model (HAM) approved for railway freight corridors, consider the following statements:**

1. Under this model, the Ministry of Railways pays the construction cost entirely, while the private party is responsible only for operation and maintenance.
2. The commercial operations of the freight trains and the collection of freight revenues remain under the control of Indian Railways.
3. Under this HAM structure, the traffic and tariff risks are borne entirely by the private concessionaire, insulating the public exchequer from demand shortfalls.

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- Which of the statements given above is/are correct? (a) 1 and 3 only  
(b) 2 only  
(c) 2 and 3 only  
(d) 1, 2 and 3
- 

**Q4. With reference to Foreign Currency Non-Resident Bank [FCNR(B)] deposits and the Reserve Bank of India's (RBI) concessional swap route, consider the following statements:**

1. In an FCNR(B) deposit, the depositor bears the entire currency exchange rate risk as the principal and interest are repaid in Indian Rupees (INR).
2. Under the RBI's swap facility, a bank sells mobilised foreign currency dollars to the RBI and agrees to reverse the transaction at a pre-agreed rate on a fixed future date.
3. FCNR(B) deposits are classified as repayable debt liabilities rather than stable equity investments.

- Which of the statements given above are correct? (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 3 only  
(d) 1, 2 and 3
- 

**Q5. Consider the following statements regarding the System of Environmental Economic Accounting (SEEA) and India's marine fisheries:**

1. SEEA is an international statistical framework developed by the United Nations that integrates natural resources into the national economic accounting structure.
2. India compiles its environmental accounts through the EnviStats India programme administered by the Ministry of Statistics and Programme Implementation (MoSPI).
3. The aggregate annual marine fish production tonnage serves as a direct indicator of the biological sustainability of underlying fish stocks.

- Which of the statements given above are correct? (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3
- 

**Q6. Consider the following statements regarding the Exclusive Economic Zone (EEZ):**

1. The EEZ is established under the legal framework of the United Nations Convention on the Law of the Sea (UNCLOS), 1982.
2. It extends up to 100 nautical miles from the baseline from which the territorial sea is measured.
3. India's Exclusive Economic Zone covers over 2 million square kilometers, making it larger than its total land area.

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Which of the statements given above are correct? (a) 1 and 2 only

(b) 1 and 3 only

(c) 2 and 3 only

(d) 1, 2 and 3

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**Q7. With reference to national income estimation and Gross Domestic Product (GDP) base year calculations in India, consider the following statements:**

1. Real GDP growth measures the physical volume of output by utilizing the constant prices of a designated reference year (base year) to strip out inflation.
2. Nominal GDP is calculated at current prices, meaning a revision of the base year does not by itself explain a shift or drop in the nominal series.
3. Single deflation in GVA calculation separates the price indices of inputs and outputs, whereas double deflation applies a single price index to output without separately deflating inputs.

Which of the statements given above are correct? (a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

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**Q8. With reference to the Pradhan Mantri Fasal Bima Yojana (PMFBY), consider the following statements:**

1. Under this scheme, farmers are required to pay a uniform premium of two percent for any crop they cultivate in any season of the year.
2. Enrolment in the PMFBY has been made completely voluntary for all categories of farmers since the 2020 revamp of the scheme.
3. The scheme covers post-harvest losses arising out of localized risks such as hailstorms and landslides, as well as cyclones and unseasonal rains.

Which of the statements given above are correct? (a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

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**Q9. Consider the following pairs:**

Technology / System | Primary Application under PMFBY

1. YES-TECH | Yield Estimation System based on Technology using remote sensing and drones.
2. CROPIC | Collection of Real-time Observations and Photographs of Crops for verification.

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3. NCIP | National Crop Insurance Portal for digitizing enrolment, premium flow, and claims.

Which of the pairs given above are correctly matched? (a) 1 and 2 only

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

**Q10. With reference to the "Raksha" strategic framework released by India's Defence Minister, consider the following statements:**

1. It outlines a strategic road map for India's defence diplomacy and global partnerships over a ten-year planning horizon.
2. Deepening bilateral/multilateral partnerships, joint exercises, capacity building, and indigenous defence exports are its core pillars.
3. It advocates expanding international cooperation primarily around licensed or assembled foreign platforms rather than indigenous defence technologies.

Which of the statements given above are correct? (a) 1 and 2 only

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

**Q11. With reference to India's strategic role as a "Net Security Provider" in the Indian Ocean Region (IOR), consider the following statements:**

1. The term refers to a state that supplies security to others in its region through presence, capability, and assistance, rather than only securing itself.
2. Under the "Raksha" framework, India's net security provider role requires first responder capacity to act only after a formal request for help is received from a partner state.
3. The SAGAR (Security and Growth for All in the Region) vision and the Indian Ocean Naval Symposium are active policy vehicles for implementing this role.

Which of the statements given above are correct? (a) 1 and 2 only

- (b) 2 and 3 only
  - (c) 1 and 3 only
  - (d) 1, 2 and 3
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**Q12. With reference to the Saptakoteshwar Temple and the historical heritage of Goa, consider the following statements:**

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1. The Saptakoteshwar deity is a form of Shiva, and the temple is recognized as one of Goa's principal Shaiva sites.
2. Saptakoteshwar was the tutelary deity of the Kadamba rulers of Goa, and its name appeared on their coinage.
3. The original temple on Divar Island was destroyed in the sixteenth century, and was subsequently rebuilt at Narve in Bicholim by Chhatrapati Shivaji Maharaj in 1668.

Which of the statements given above are correct? (a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

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Q13. With reference to Indian temple architecture, consider the following statements regarding the "Kirtimukh" motif:

1. It is a fierce swallowing face carved as an architectural motif, translating literally to the "face of glory".
2. In temple layouts, it is conventionally placed over doorways, deity niches, and at the apex of arches as a guardian of the threshold.
3. This motif is exclusive to Dravidian architecture in South India and is completely absent in Buddhist and Southeast Asian architecture.

Which of the statements given above are correct? (a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

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Q14. With reference to Home-Based Newborn Care (HBNC) in India, consider the following statements:

1. The model was adopted nationally by the Ministry of Health and Family Welfare in 2011, using modules developed from the landmark SEARCH trial in rural Gadchiroli.
2. Under national guidelines, the HBNC package is intended to completely replace facility-based intensive care for severely premature or septic babies.
3. The SEARCH trial in rural Gadchiroli demonstrated that trained community health workers could manage a large majority of low birth weight and preterm babies at home with low case fatality.

Which of the statements given above are correct? (a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

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Q15. With reference to maternal and child healthcare initiatives in India, consider the following statements:

1. Janani Suraksha Yojana (JSY) is a conditional cash transfer scheme launched under the National Rural Health Mission to promote institutional deliveries among poor pregnant women.
2. The India Newborn Action Plan (INAP) has set a national target of achieving a single-digit neonatal mortality rate by the year 2030.
3. Under the Janani Shishu Suraksha Karyakram (JSSK), free treatment and diagnostics are provided to sick infants up to five years of age in government institutions.

Which of the statements given above are correct? (a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

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Answer Key and Detailed Explanations

1. Answer: (b)

- Explanation:

- Statement 1 is incorrect: In India, copyright registration is optional. Copyright arises automatically upon the creation of the work, and registration serves as prima facie evidence rather than as the source of the right itself.
- Statement 2 is correct: Section 2(d)(vi) of the Copyright Act, 1957 defines the author of a computer-generated work as “the person who causes the work to be created”.
- Statement 3 is correct: The Indian Copyright Office interprets originality based on the Supreme Court's ruling in *Eastern Book Company v. D.B. Modak*. The Court held that a work need not be novel or groundbreaking, but must demonstrate a minimum degree of creativity and cannot be merely copied or mechanically reproduced.

2. Answer: (a)

- Explanation:

- Statement 1 is correct: The National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS) is implemented by the Department of Science and Technology (DST).
- Statement 2 is correct: The mission operates on a hub model and has set up 25 Technology Innovation Hubs (TIHs) at premier institutions like the IITs and IISc.
- Statement 3 is incorrect: Cyber-Physical Systems do not isolate computing from physical processes; rather, they *integrate* computation,

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networking, and physical processes, linking software control directly to physical machinery via sensors and actuators.

3. Answer: (b)

- Explanation:
  - Statement 1 is incorrect: The construction cost under the Hybrid Annuity Model (HAM) is split: Indian Railways pays 40 percent as a grant during construction, and the private party finances the remaining 60 percent (repaid later as annuities).
  - Statement 2 is correct: Under the railway HAM model, operations stay public: Indian Railways operates the trains and collects all freight revenue.
  - Statement 3 is incorrect: The Ministry of Railways bears the traffic and tariff risks under this structure, meaning the private party is completely insulated from demand shortfalls.

4. Answer: (b)

- Explanation:
  - Statement 1 is incorrect: In an FCNR(B) deposit, the deposit is a foreign currency liability where the bank repays principal and interest in the *same* foreign currency, meaning the depositor carries no rupee exchange risk.
  - Statement 2 is correct: Under the swap facility, the bank sells the mobilised dollars to the RBI for rupees, with an agreement to reverse the transaction at a pre-agreed rate on a fixed future date.
  - Statement 3 is correct: FCNR(B) deposits are repayable debt liabilities (dated money) rather than stable, non-debt equity investments like Foreign Direct Investment (FDI).

5. Answer: (a)

- Explanation:
  - Statement 1 is correct: The System of Environmental Economic Accounting (SEEA) is a United Nations statistical framework that records a country's natural resources inside the same economic accounting structure.
  - Statement 2 is correct: India compiles environmental accounts through MoSPI's EnviStats India programme (since 2018).
  - Statement 3 is incorrect: Aggregate annual marine fish production tonnage records how much was landed (output) but says nothing about the biological health or sustainability of the underlying stocks.

6. Answer: (b)

- Explanation:

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- Statement 1 is correct: The Exclusive Economic Zone (EEZ) is established by the United Nations Convention on the Law of the Sea (UNCLOS), 1982.
- Statement 2 is incorrect: The EEZ reaches up to 200 nautical miles from the baseline of the territorial sea, not 100 nautical miles.
- Statement 3 is correct: India's exclusive economic zone covers over 2 million square kilometers, which is larger than its total land area.

7. Answer: (a)

- Explanation:

- Statement 1 is correct: A base year anchors price comparisons and is used to strip inflation out of output so that real GDP measures constant volume.
- Statement 2 is correct: Nominal GDP is calculated at current prices, so a change of base year does not by itself explain a shift or drop in the nominal series.
- Statement 3 is incorrect: This statement defines the two terms in reverse. Single deflation applies a single price index to output without separately deflating inputs. Double deflation separately deflates the price of inputs and outputs.

8. Answer: (b)

- Explanation:

- Statement 1 is incorrect: Farmers do not pay a uniform premium of two percent for any crop. Under PMFBY, the premium is 2 percent for Kharif, 1.5 percent for Rabi, and 5 percent for commercial/horticultural crops.
- Statement 2 is correct: Enrolment became voluntary for all farmers from the 2020 revamp (it was earlier compulsory for loanee farmers).
- Statement 3 is correct: The scheme covers localized risks (hailstorms, landslides) as well as post-harvest losses from cyclones and unseasonal rains.

9. Answer: (d)

- Explanation:

- All pairs are correctly matched: YES-TECH stands for Yield Estimation System based on Technology using remote sensing and drones. CROPIC is the Collection of Real-time Observations and Photographs of Crops for photograph-based verification. NCIP is the National Crop Insurance Portal that digitizes enrolment, premium flow, and claims.

10. Answer: (a)

- Explanation:

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- Statement 1 is correct: The "Raksha" strategic framework sets out India's roadmap for defence diplomacy and partnerships over the next ten years.
- Statement 2 is correct: Its primary pillars include bilateral/multilateral partnerships, joint exercises, capacity building, and indigenous defence exports.
- Statement 3 is incorrect: The framework explicitly states that international cooperation is to be expanded around indigenously developed defence technologies under Make in India, rather than around licensed or assembled platforms.

11. Answer: (c)

- Explanation:

- Statement 1 is correct: A "Net Security Provider" refers to a state that supplies security to others in its region through presence, capability, and assistance.
- Statement 2 is incorrect: India's net security provider role in the Indian Ocean Region commits it to be a first responder, requiring the capacity to act *before* a partner state formally requests help.
- Statement 3 is correct: SAGAR (Security and Growth for All in the Region) and the Indian Ocean Naval Symposium are core policy vehicles for this regional security role.

12. Answer: (d)

- Explanation:

- ★ ○ Statement 1 is correct: Saptakoteshwar is a principal Shaiva site in Goa and its deity is a form of Shiva.
- ★ ○ Statement 2 is correct: Saptakoteshwar was the tutelary deity of the Kadamba rulers of Goa, and its name was struck on their coinage.
- ★ ○ Statement 3 is correct: The original temple on Divar Island was destroyed by the Portuguese in the 16th century, moved to Narve (outside Portuguese control), and rebuilt there in 1668 by Chhatrapati Shivaji Maharaj.

13. Answer: (a)

- Explanation:

- Statement 1 is correct: Kirtimukh is a fierce swallowing face carved as an architectural motif, meaning the "face of glory".
- Statement 2 is correct: It is set above doors, deity niches, and at the apex of arches as a threshold guardian.
- Statement 3 is incorrect: The motif is not exclusive to Dravidian architecture; it runs across Hindu and Buddhist architecture in India and extensively into Southeast Asia.

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14. Answer: (c)

- Explanation:

- Statement 1 is correct: HBNC was adopted nationally in 2011, leveraging ASHA workers trained on modules developed from the Gadchiroli experience.
- Statement 2 is incorrect: HBNC does not replace intensive care; babies suffering from severe prematurity, respiratory distress, shock, or severe sepsis require immediate facility-based treatment.
- Statement 3 is correct: In the rural Gadchiroli field trials (1996–2003), 97 percent of stable low birth weight and preterm babies were successfully managed at home with very low fatality rates.

15. Answer: (a)

- Explanation:

- Statement 1 is correct: Janani Suraksha Yojana (JSY) is a conditional cash transfer scheme launched in 2005 under the NRHM to promote institutional deliveries.
- Statement 2 is correct: The India Newborn Action Plan (2014) targets achieving a single-digit neonatal mortality rate by 2030.
- Statement 3 is incorrect: Under the Janani Shishu Suraksha Karyakram (JSSK), free treatment, drugs, diagnostics, and transport are provided to sick *infants up to one year of age* in government institutions, not five years.

