

Solutions

DATE : (1st Dec- 6th Dec)

1) `Answer

(d) Artificial General Intelligence (AGI)

Explanation

Conceptual Framework of AI Stages

- **Artificial Narrow Intelligence (ANI):** Task-specific, also called **Weak AI**
- **Artificial General Intelligence (AGI):** Human-level, general cognitive ability (**hypothetical**)
- **Artificial Superintelligence (ASI):** Intelligence surpassing human capabilities (**theoretical**)

Evaluation of Options

- **Option (a) ✗** ASI refers to **superhuman intelligence**, not human-level intelligence.
- **Option (b) ✗** “Weak AI” is a term associated with ANI, not AGI.
- **Option (c) ✗** ANI is limited to **narrow, task-specific functions**.
- **Option (d) □** AGI represents **hypothetical human-level general intelligence**, which **does not yet exist**.

2) Answer (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation

About the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

- **Statement-I □** The treaty aims at **conservation, sustainable use of plant genetic resources, and equitable benefit sharing** to ensure **global food security**.
- **Statement-II □** The treaty was **adopted in 2001** by the FAO Conference and **entered into force in 2004**, providing the legal foundation for its objectives.
- **Linkage:** The **historical adoption and enforcement** (Statement-II) explains the **institutional basis** for achieving the objectives mentioned in Statement-I.

3) Answer (a) III only

Explanation

Burtele Foot Fossils and Australopithecus deyiremeda

- **Statement (I) ✗** The Burtele Foot exhibits a **mosaic of ape-like and human-like traits**, not exclusively human-like features.
- **Statement (II) ✗** *Australopithecus deyiremeda* lived in **Africa**, not outside the continent.
- **Statement (III) □** *Australopithecus deyiremeda* is **closely related to Australopithecus afarensis**, indicating **coexistence and diversity** of early hominins in the Pliocene epoch.

4) Answer (c) I, II and III only

Explanation

SIM Binding Regulation in India

- **Statement (I) □** Messaging platforms must ensure **account-SIM linkage** as per DoT guidelines.
- **Statement (II) □** SIM binding requires platforms to verify that the **registered SIM remains active**.
- **Statement (III) □** Services must be **stopped if the SIM is removed or becomes inactive**.
- **Statement (IV) ✗** This statement contradicts the regulation, which mandates **service discontinuation** if the SIM becomes inactive.

5) Answer (b) I, II and III only

Explanation

An Institute for Civil Services

Animal Welfare Board of India (AWBI)

- **Statement (I)** AWBI is a **statutory advisory body**.
- **Statement (II)** It was established in **1962 under the Prevention of Cruelty to Animals Act, 1960**.
- **Statement (III)** **Smt. Rukmini Devi Arundale** was the founder of AWBI.
- **Statement (IV)** AWBI was **not established under the Wildlife Protection Act, 1972**.

6) Answer (b) I only

Explanation

Scheduled Tribe (ST) Classification in Assam – Constitutional & Administrative Aspects

Statement (I)

Correct

- The **Lokur Committee (1965)** laid down **practical criteria** for identification of Scheduled Tribes such as:
 - **Primitive traits**
 - **Distinctive culture**
 - **Geographical isolation**
 - **Shyness of contact**
 - **Backwardness**
- Though **not constitutionally binding**, these criteria are **widely used by governments** for ST classification.

Statement (II) Incorrect

- In **Assam**, reservation is:
 - **ST (Plains): 10%**
 - **ST (Hills): 5%**
- Hence, ST (Plains) do **not have lower reservation** than ST (Hills).

Statement (III) Incorrect

- The **Constitution does NOT prescribe criteria** for ST identification.
- **Article 342** empowers the **President** to notify STs.
- **Article 366(25)** only defines STs by reference, not by characteristics.

7) Answer (d) I, II and III

Explanation

Bhagavad Gita – Philosophical, Cultural & Global Significance

Statement (I) Correct

- The Gita advocates **Nishkam Karma** — performing duty **without attachment to outcomes**, a core ethical principle influencing governance and leadership.

Statement (II) Correct

- The **Bhagavad Gita** is:
 - A part of the **Mahabharata**
 - Composed in **Sanskrit**
 - Presented as a dialogue between **Krishna and Arjuna**

Statement (III) Correct

- The **Bhagavad Gita** has been inscribed in **UNESCO's Memory of the World International Register**, recognizing its **universal philosophical value**.

8) Answer (b) I only

Explanation

Police Modernisation in India

Statement (I) Correct

- The **Whole of the Government Approach** includes:
 - **Law enforcement**
 - **Prevention**
 - **Rehabilitation**
 - **Community-level interventions**
- It reflects a **holistic policing model** aligned with democratic governance.

Statement (II) Incorrect

- **CCTNS (Crime and Criminal Tracking Network & Systems):**
 - Is a **separate Mission Mode Project**
 - Was launched **much before BNSS, 2023**
 - Not subsumed under BNSS

Statement (III) Incorrect

- Universities and institutions are **encouraged**, not discouraged, to:
 - Undertake **forensic research**
 - Support **capacity building**
 - Strengthen **evidence-based policing**

9) Answer (a) Only two

Explanation

Geographical Features of Guinea-Bissau and West Africa

Pair (1): Bijagós Archipelago – Atlantic Ocean Incorrect

- While located in the **Atlantic Ocean**, the archipelago is **territorially part of Guinea-Bissau**, not merely associated with the ocean.

Pair (2): Fouta Djallon Plateau – Senegal Incorrect

- The **Fouta Djallon Plateau** lies **primarily in Guinea**, not Senegal or Guinea-Bissau.

Pair (3): Boé Hills – Guinea-Bissau

Correct

- The **Boé Hills** are located within **Guinea-Bissau**, extending from the Fouta Djallon slopes.

Pair (4): Corubal Basin – Guinea-Bissau

Correct

- The **Corubal Basin** lies within **Guinea-Bissau**, associated with the Corubal River system.

Pair (5): Gabú Plain – Guinea

Incorrect

- The **Gabú Plain** is situated in **northeastern Guinea-Bissau**, not Guinea.

10) Answer (d) All four

Explanation

International Agreements & Programmes – Objectives

Pair (1): World Cultural and Natural Heritage Convention

- Correct** Aims to **identify, protect, and preserve** cultural and natural heritage of **outstanding universal value**.

Pair (2): Universal Copyright Convention

- Correct** Facilitates **international copyright protection** and harmonization across countries.

Pair (3): Man and the Biosphere (MAB) Programme

- Correct** UNESCO initiative focusing on:
 - **Biodiversity conservation**
 - **Sustainable use of resources**
 - **Biosphere reserves**

Pair (4): ITPGRFA

- Correct** Focuses on:
 - **Conservation of crop genetic diversity**
 - **Sustainable use**
 - **Equitable benefit sharing** for global food security

11) Answer (d) Report suspected fraud communications and track/block lost mobile phones

Explanation

Sanchar Saathi Mobile App – Consumer Protection in Telecom

- **Option (a)** Spectrum allocation is a **regulatory function** of DoT/TRAI, not a user-facing service of the app.
- **Option (b)** The app does **not** primarily handle tariff complaints; those fall under telecom grievance mechanisms.
- **Option (c)** **SIM registration** is not enabled through Sanchar Saathi.
- **Option (d)** Sanchar Saathi enables:
 - **Reporting suspected fraud communications (Chakshu)**
 - **Tracking and blocking lost/stolen mobile phones via IMEI**
 - **Verification of handset genuineness**
 - **Reporting international calls masked as domestic**

12) Answer (b) It is a two-stage supersonic cruise missile with a range of up to 290 km, capable of land-attack and anti-ship roles

Explanation

BrahMos Missile – Features & Capabilities

- **Option (a)** BrahMos is **not** an air-to-air missile for dogfights.
- **Option (b)** Correct features include:
 - **Two-stage propulsion** (solid booster + liquid ramjet)
 - **Supersonic speed**
 - **Range up to ~290 km**
 - **Land-attack and anti-ship roles**
 - **High precision and low terminal altitude**
- **Option (c)** It is **not** an intercontinental ballistic missile and is **conventionally armed**.
- **Option (d)** BrahMos is **supersonic**, not hypersonic (does not exceed Mach 10).

13) Answer (b) An annual bilateral joint military exercise between the Indian Army and the Maldives National Defence Force

Explanation

Exercise Ekuverin – Defence Cooperation

- **Option (a)** Not a counter-insurgency operation in the Andaman Islands.
- **Option (b)** Exercise Ekuverin:
 - Is **annual and bilateral**
 - Involves the **Indian Army** and **MNDF**
 - Alternates between **India and Maldives**
 - Focuses on **interoperability, HADR, and counter-terrorism**
- **Option (c)** Not an air force programme for ASEAN nations.
- **Option (d)** Not a trilateral exercise involving Sri Lanka.

14) Answer (b) Development Monitoring and Evaluation Office (DMEO), NITI Aayog

Explanation

Global Indices for Reforms and Growth (GIRG)

- **Option (a)** This body does not coordinate GIRG.
- **Option (b)** **DMEQ, NITI Aayog:**
 - Coordinates **data quality checks**
 - Reviews **methodologies**
 - Guides **evidence-based reforms**
 - Oversees tracking across **26 global indices**
- **Option (c)** Not assigned this role under GIRG.
- **Option (d)** Not the nodal coordinating office.

15) Answer (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation

Masala Bonds – External Borrowing & Currency Risk

Statement-I **Correct**

- **Currency risk is borne by overseas investors**, insulating Indian issuers from exchange rate volatility.

Statement-II **Correct**

- Masala Bonds are **rupee-denominated bonds issued to overseas investors**, which structurally explains why the currency risk shifts away from Indian issuers.

Linkage The **definition and structure** in Statement-II **directly explain** the risk allocation stated in Statement-I.

16) Answer (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I

Explanation

India's HIV/AIDS Control Framework

Statement-I

Correct

- India's **HIV prevalence is ~0.20%**, which is **significantly lower than the global average (~0.7%)**.
- This outcome reflects **long-term prevention, awareness, targeted interventions, and ART scale-up**, not compulsion.

Statement-II

Correct

- **NACP Phase-V aims to end AIDS as a public health threat by 2030**, aligning with **UNAIDS global targets (95-95-95)**.

Causality Check

- **✗Statement-II does not explain Statement-I.**
- The **current low prevalence** is the result of **past and ongoing interventions**, while **NACP Phase-V** is a **forward-looking goal**.

17) Answer (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation

GPS Spoofing – Cybersecurity Threat

Statement-I **Correct**

- GPS spoofing can cause **incorrect location and timing data**, disrupting **navigation, aviation, maritime operations, and critical infrastructure**.

Statement-II **Correct**

- GPS spoofing involves **broadcasting false or manipulated GPS signals** to mislead receivers.

Causality Check

- **Statement-II explains Statement-I** by describing **how** spoofing leads to erroneous outputs and systemic risks.

18) Answer (a) I only

Explanation

Heron Mark II UAV – Defence & Surveillance

Statement (I)

Correct

- Heron Mark II is a **MALE (Medium Altitude Long Endurance) UAV**.
- Capabilities include **~45 hours endurance, high-altitude operations, and long-range ISR**.

Statement (II)

Incorrect

- The Heron Mark II **does have satellite communication (SATCOM) and advanced sensors enabling beyond line-of-sight operations**.
- Hence, the claim that MALE drones from IAI lack SATCOM is **factually incorrect**.

19) Answer (c) Only three

Explanation

Government Schemes & Implementing Ministries

Pair (1): Digital India – MeitY

Correct

- Implemented by the **Ministry of Electronics and Information Technology (MeitY)**.

Pair (2): PMJDY – Ministry of Finance

Correct

- A flagship **financial inclusion** scheme under the **Ministry of Finance**.

Pair (3): JAM Trinity – Ministry of Rural Development

Incorrect

- **JAM Trinity** is a **cross-cutting digital infrastructure concept** (Jan Dhan–Aadhaar–Mobile), **not a scheme** of the Ministry of Rural Development.

Pair (4): PAHAL – Ministry of Petroleum & Natural Gas

Correct

- **Direct Benefit Transfer (DBT) of LPG** under **MoPNG**.

20) Answer (b) Only two

Explanation

Cybersecurity Institutions in India

Pair (1): Samanvaya Platform – Telecom Logistics

Incorrect

- **Samanvaya** is a **joint analytics and MIS platform** for **cybercrime linkages across states**, **not** for telecom logistics.

Pair (2): Cyber Fraud Mitigation Centre (CFMC) – I4C

Correct

- **CFMC operates under I4C**, enabling **real-time coordination** among banks, payment intermediaries, and telecom service providers to curb fraud.

Pair (3): Indian Cyber Crime Coordination Centre (I4C) – Nodal Agency

Correct

- **I4C**, under **Ministry of Home Affairs**, is the **nodal coordination centre** for all types of cybercrimes in India.

21) Answer (c)

Explanation

Bioremediation – Sustainability & Applicability in India

Statement-I

Correct

- **Bioremediation** is increasingly adopted in India due to:
 - **Eco-friendly nature**
 - **Minimal ecosystem disturbance**
 - **Applicability in oil spills, sewage treatment, and soil detoxification**
- Aligns with **sustainable development goals (SDGs)** and green remediation practices.

Statement-II

Incorrect

- The statement is flawed because:
 - Bioremediation is generally **less expensive** and **less energy-intensive** than conventional physical or chemical methods.
 - While it acknowledges India's success, the **cost-energy assertion is factually incorrect**.

Logical Relationship

- Statement-II does **not correctly explain** Statement-I due to incorrect assumptions.

22) Answer (b) Ministry of Petroleum and Natural Gas

Explanation

Numaligarh Refinery Limited (NRL) – Administrative Control

- **Option (a) ✗**
Not under this ministry.
- **Option (b)**
NRL operates under the Ministry of Petroleum and Natural Gas.
 - Established in **1993**
 - Recently accorded **Navratna status**
 - Enhances operational and financial autonomy
- **Option (c) ✗**
NRL is **not a mining CPSE**.
- **Option (d) ✗**
Incorrect administrative ministry.

23) Answer (c) Victims coerced into carrying out online scams and cyber frauds

Explanation

Cyber Slavery – Emerging Form of Human Trafficking

- **Option (a) ✗**
Cyber slavery is **distinct from traditional trafficking models**.
- **Option (b) ✗**
Not related to child labour per se.

- **Option (c)**
 - Defining features include:
 - Victims **lured with fake job offers**
 - **Confiscation of documents**
 - Forced participation in **online scams, phishing, romance frauds**
 - Concentrated in parts of **Southeast Asia**
- **Option (d)**
 - Traditional forced labour does not capture the **digital coercion dimension**.

24) Answer (a) Founding the Ahom Kingdom in Assam

Explanation

Swargadeo Chaolung Sukapha – Historical Significance

- **Option (a)**
 - Founded the **Ahom Kingdom in 1228**
 - Unified the **Brahmaputra Valley**
 - Laid foundations of **Assamese identity and statehood**
- **Option (b)** No association with the **Bhakti movement**.
- **Option (c)** Not his primary historical contribution.
- **Option (d)** Unrelated to Sukapha's legacy.

25) Answer (b) II only

Explanation

Domestic Systemically Important Banks (D-SIBs)

Statement (I)

Incorrect

- D-SIBs are identified based on:
 - **Size**
 - **Interconnectedness**
 - **Complexity**
 - **Systemic importance**
- **Profitability alone is not the criterion.**

Statement (II)

Correct

- RBI mandates D-SIBs to maintain **additional Common Equity Tier-1 (CET1) capital**:
 - Enhances **shock absorption capacity**
 - Reduces **systemic risk**
- Current D-SIBs include **SBI, HDFC Bank, and ICICI Bank**.

26) Answer (a) I, II and III

Explanation

Biological Weapons Convention (BWC)

Statement (I)

Correct

- The **BWC** comprehensively **prohibits development, production, stockpiling, transfer, and use of**:
 - **Biological weapons**
 - **Toxin weapons**
- It is the **first multilateral disarmament treaty** banning an entire category of weapons of mass destruction.

Statement (II)

An Institute for Civil Services

Correct

- The Convention is **administered by the United Nations Office for Disarmament Affairs (UNODA)**.
- UNODA's disarmament support functions related to BWC are coordinated from **Geneva**.

Statement (III)

Correct

- The BWC has **189 State Parties**, including **India**.
- Despite wide membership, the treaty faces challenges due to the **absence of a formal verification mechanism**.

27) Answer (c) I, II and III only

Explanation

RBI Integrated Ombudsman Scheme (RB-IOS), 2021

Statement (I)

Correct

- RB-IOS covers complaints related to:
 - **Banks**
 - **NBFCs**
 - **Non-bank prepaid payment system participants**
- All are **RBI-regulated entities**.

Statement (II) Correct

- The scheme **merged three earlier ombudsman schemes**:
 - Banking Ombudsman Scheme
 - NBFC Ombudsman Scheme
 - Digital Transactions Ombudsman Scheme

Statement (III) Correct

- RB-IOS embodies the principle of "**One Nation, One Ombudsman**", ensuring:
 - Uniform grievance redressal
 - Simplified and transparent processes

Statement (IV) Incorrect

- The **maximum compensation** under RB-IOS is **₹20 lakh**, not ₹10 lakh.

28) Answer (a) I, II and IV only

Explanation

Hornbill Festival – Nagaland

Statement (I) Correct

- The **Hornbill bird** holds deep **cultural and symbolic significance** in Naga traditions.

Statement (II) Correct

- The festival promotes:
 - **Inter-tribal unity**
 - **Preservation of Naga cultural heritage**
 - **Tourism and cultural diplomacy**

Statement (III) Incorrect

- The Hornbill Festival is **pan-Naga**, involving **all Naga tribes**, not restricted to the **Ao tribe**.

Statement (IV) Correct

- It is held at the **Naga Heritage Village, Kisama**, the permanent and traditional venue.

29) Answer (b) I only

Explanation

Drug Price Regulation in India

Statement (I) Correct

- The **National List of Essential Medicines (NLEM)** forms the **basis for price control** under the **Drugs (Prices Control) Order, 2013**.

Statement (II) Incorrect

- **Only NLEM-listed medicines** are subject to **statutory price control**.
- **Non-scheduled drugs** are not price-controlled, though NPPA may monitor prices.

Statement (III) Incorrect

- **NPPA is not a statutory body**.
- It functions under the **Ministry of Chemicals and Fertilizers**, not the Ministry of Health.

30) Answer (b) II only

Explanation

Refugee Protection Framework in India

Statement (I) Incorrect

- Refugee status in India is **not governed by a specific law**.
- Determination is based on **executive and administrative decisions**, not legislation.

Statement (II) Correct

- India follows the principle of **non-refoulement** as part of **customary international law**, despite not being a treaty signatory.

Statement (III) Incorrect

- India is **not a signatory** to:
 - The **1951 Refugee Convention**
 - The **1967 Refugee Protocol**

31) Answer (d) A GIS-integrated urban land parcel survey using aerial and field techniques

Explanation

NAKSHA Initiative – Urban Land Records Modernisation

- **Option (a)** Blockchain-based rural tenure systems are **not the focus** of NAKSHA, which is **urban and geospatial** in nature.
- **Option (b)** NAKSHA is **not limited to industrial property registration**.
- **Option (c)** Rural agricultural land surveys fall outside the **urban mandate** of NAKSHA.
- **Option (d)** NAKSHA:
 - Stands for **National Geospatial Knowledge-based Land Survey of Urban Habitations**
 - Uses **GIS, aerial surveys, and field verification**
 - Replaces **hand-drawn sketches** with **digital, spatially-referenced maps**
 - Supports **transparent property registration, planning, and dispute resolution**

32) Answer (c) Plastic particles less than 10 micrometres in size

Explanation

Inhalable Microplastics (iMPs)

- **Option (a)** ✗ Incorrectly denies systemic penetration; iMPs **can enter the bloodstream**.
- **Option (b)** ✗ Describes **general microplastics (<5 mm)**, not inhalable ones.
- **Option (c)** iMPs are:
 - **<10 micrometres**
 - Small enough to be **inhaled deep into lungs**
 - Potentially enter **bloodstream and organs**
- **Option (d)** ✗ iMPs are found in **urban air**, not confined to marine environments.

33) Answer (a) Rangarajan Commission

Explanation

National Statistical Commission (NSC)

- **Option (a)** The **Rangarajan Commission (2000)** explicitly recommended the creation of an **apex statistical body**, leading to the establishment of the **NSC in 2005**.
- **Option (b)** ✗ Sarkaria Commission focused on **Centre-State relations**.
- **Option (c)** ✗ Punchhi Commission also dealt with **federal relations**, not statistics.
- **Option (d)** ✗ Gadgil Commission concerned **environmental planning (Western Ghats)**.

34) Answer (d) A bacterial infection

Explanation

Leprosy (Hansen's Disease)

- **Option (a)** ✗ Leprosy is **not fungal**.
- **Option (b)** ✗ It is **not genetic**.
- **Option (c)** ✗ It is **not viral**.
- **Option (d)** Leprosy is caused by **Mycobacterium leprae**, a **bacterium**:
 - Affects **skin, nerves, eyes**
 - India achieved **national elimination (2005)** under **NLEP**
 - Social and legal discrimination **still persists**

35) Answer (b) Lantana camara

Explanation

Invasive Alien Species (IAS) in India

- **Option (a)** ✗ *Azadirachta indica (Neem)* is **native to India**.
- **Option (b)** *Lantana camara*:
 - Origin: **Central & South America**
 - Major **invasive alien species in India**
 - Invades **forests, grasslands, Western Ghats**
 - Suppresses **native flora** and degrades habitats
- **Option (c)** ✗ *Saccharum spontaneum* is a **native grass**.
- **Option (d)** ✗ *Ficus religiosa (Peepal)* is **indigenous to India**.

36) Answer (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation

Antarctic Ozone Hole - Scientific Basis

Statement-I

Correct

- The **Antarctic ozone hole** reaches its **maximum extent during Southern Hemisphere spring (August–November)**.
- This timing coincides with **unique polar meteorological conditions** and the seasonal return of sunlight after the polar night.

Statement-II

An Institute for Civil Services

Correct

- After the **polar night**, returning **sunlight triggers photochemical reactions**.
- **Chlorine and bromine atoms** (released from **CFCs, halons, HCFCs**) catalytically destroy ozone in the **stratosphere**.

Causal Link

Statement-II explains Statement-I by identifying the **sunlight-driven chemical mechanism** responsible for the springtime peak in ozone depletion.

37) Answer (c) Statement-I is correct, but Statement-II is incorrect

Explanation

Indian Rupee Depreciation – Macroeconomic Effects

Statement-I Correct

- A **weaker rupee** increases the **rupee value of remittances** sent in foreign currency, benefiting recipients in India.

Statement-II Incorrect

- Currency depreciation generally makes **imports more expensive**, which can **widen the trade deficit**, not reduce it—especially for import-dependent economies.

38) Answer (a) I, II and III only

Explanation

Central Drugs Standard Control Organization (CDSCO)

Statement (I) Correct

- CDSCO regulates **import, approval, and quality** of drugs and medical devices.

Statement (II) Correct

- It functions as a **statutory authority** under the **Drugs and Cosmetics Act, 1940**.

Statement (III) Correct

- Operates under the **Ministry of Health and Family Welfare**.

Statement (IV) Incorrect

- CDSCO **does not regulate environmental aspects** of pharmaceuticals.

39) Answer (d) I and III only

Explanation

India's Legal & Institutional Measures Against Fake News

Statement (I) Correct

- The **Bharatiya Nyaya Sanhita (BNS)** criminalizes **harmful false information** that threatens public order and safety.

Statement (II) Incorrect

- The **IT Rules, 2021** do not explicitly define “fake news”.

Statement (III) Correct

- **PIB Fact Check Unit** actively counters misinformation related to government policies and schemes.

40) Answer (b) Only two

Explanation

Food Irradiation – Types of Radiation Used

Pair (1): Electron beams – Produced by splitting water molecules

✗Incorrect

- **Electron beams (e-beams)** are produced using **particle accelerators** that generate **high-energy electrons**.
- They are **not produced by splitting water molecules**.
- Splitting of water molecules refers to **radiolysis**, which is an **effect** of ionizing radiation, not a **source** of electron beams.

Pair (2): Gamma rays – Source is Cobalt-60

Correct

- **Gamma rays** used in food irradiation are commonly sourced from **radioactive isotopes**, especially **Cobalt-60**.
- This is a globally accepted and widely used method.

Pair (3): X-rays – Produced by bombarding a target with high-energy electrons

Correct

- **X-rays** are generated when **high-energy electrons strike a metal target**, converting kinetic energy into X-ray radiation suitable for irradiation.

41) Answer (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation

Carbon Capture, Usage and Storage (CCUS)

Statement-I

Correct

- **CCUS is critical** for emission reduction in **hard-to-abate sectors** such as:
 - **Cement**
 - **Steel**
 - **Chemicals**
- These sectors cannot be fully decarbonized through renewables alone.

Statement-II

Correct

- Policy roadmaps (including India's CCUS R&D roadmap) envisage **phased integration**:
 - **Phase I:** Retrofitting existing industries (end-of-pipe solutions)
 - **Phase II:** CCUS-compliant design in new plants
 - **Phase III:** Integrated low-emission manufacturing systems

Causal Link

Statement-II **explains how and why CCUS supports emission reduction**, validating Statement-I.

42) Answer (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation

Quantum Technology – Classification and Principles

Statement-I

Correct

- Quantum technology is classified into **four domains**:
 - **Quantum Computing**

- Quantum Communication
- Quantum Sensing & Metrology
- Quantum Materials

Statement-II

Correct

- These domains rely on core **quantum mechanical principles**:
 - Quantum superposition
 - Quantum entanglement
- These principles distinguish quantum technologies from classical systems.

Causal Link

Statement-II **explains the scientific basis** for the classification stated in Statement-I.

43) Answer (c) Anti-submarine and anti-surface warfare

Explanation

MH-60R Seahawk Helicopter – Operational Role

- **Option (a) ✗** Not designed for **aerial refuelling**.
- **Option (b) ✗** Maritime patrol and strike roles are handled by **fixed-wing aircraft**.
- **Option (c)** The **primary role** of the MH-60R includes:
 - Anti-Submarine Warfare (ASW)
 - Anti-Surface Warfare (ASuW)
- Equipped with:
 - Dipping sonar
 - Sonobuoys
 - Torpedoes
 - Advanced radar and avionics
- **Option (d) ✗** Air superiority is not its design objective.

44) Answer (c) It has 57 participating States from North America, Europe, and Asia

Explanation

Organization for Security and Cooperation in Europe (OSCE)

- **Option (a) ✗**
 - Headquarters is in **Vienna**, not Brussels.
 - OSCE is not an economic integration body.
- **Option (b) ✗**
 - **India is not a participating State** of OSCE.
- **Option (c)**
 - OSCE consists of **57 participating States** from:
 - Europe
 - North America
 - Central Asia
- **Option (d) ✗**
 - OSCE decisions are taken by **consensus**, not majority voting.

45) Answer (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation

Evergreening of Pharmaceutical Patents in India

Statement-I

Correct

An Institute for Civil Services

- India has **explicit legal safeguards** against patent evergreening to protect **public health and access to affordable medicines**.
- The **Patents Act, 1970**, especially **Section 3(d)**, plays a central role in preventing unjustified extension of patent monopolies.

Statement-II

Correct

- **Section 3(d)** mandates that **new forms of known substances** (salts, polymorphs, isomers, etc.) are **not patentable** unless they demonstrate **significantly enhanced therapeutic efficacy**.
- This **high threshold** directly blocks minor, cosmetic modifications from receiving new patents.

Causal Link

Statement-II clearly explains **Statement-I**, as Section 3(d) is the **specific legal mechanism** through which India curbs evergreening.

46) Answer (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I

Explanation

Infrastructure Investment Trusts (InvITs)

Statement-I

Correct

- **InvITs** allow **retail and institutional investors** to invest in **income-generating infrastructure assets**, enabling participation in long-term infrastructure growth.

Statement-II

Correct

- **SEBI** regulates InvITs under the **SEBI (InvITs) Regulations, 2014**, ensuring:
 - **Transparency**
 - **Investor protection**
 - **Disclosure and compliance standards**

Causal Link

Statement-II explains **Statement-I**, since **SEBI regulation** is what enables investor confidence and structured participation in InvITs.

47) Answer (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I

Explanation

Right to Disconnect – Human Rights Foundation

Statement-I

Correct

- The **Right to Disconnect** is rooted in **international labour and human rights principles**, advocating:
 - **Reasonable working hours**
 - **Rest and leisure**
 - **Work-life balance**

Statement-II

Correct

- **Article 24 of the UDHR** explicitly guarantees:
 - The **right to rest and leisure**

An Institute for Civil Services

- Reasonable limitation of working hours
- Periodic holidays with pay

Causality Check

✗ Statement-II does not fully explain Statement-I.

- While Article 24 supports the **philosophical basis**, the Right to Disconnect is a **modern legal evolution**, shaped by **digital-era work conditions** and not directly defined in the UDHR.

48) Answer (c) Ministry of Minority Affairs

Explanation

UMEED Portal – Governance of Waqf Properties

- **Option (a) ✗**
Ministry of Social Justice and Empowerment has **no mandate** over Waqf administration.
- **Option (b) ✗**
Ministry of Rural Development is **unrelated** to Waqf property governance.
- **Option (c) □**
The **Ministry of Minority Affairs**:
 - Oversees **Waqf property administration**
 - Implements the **UMEED Portal (Unified Waqf Management, Empowerment, Efficiency and Development)**
 - Ensures **digitization, transparency, geo-tagging, and monitoring** of Waqf assets
- **Option (d) ✗**
Ministry of Home Affairs does **not** manage Waqf properties.

49) Answer (a) Malaysia

Explanation

Exercise Harimau Shakti – Defence Diplomacy

- **Option (a) □**
 - **Exercise Harimau Shakti** is a **bilateral army exercise** between **India and Malaysia**.
 - Focuses on **sub-conventional operations** and **counter-terrorism** under **UN mandates**.
- **Option (b) ✗**
Thailand conducts **other defence engagements**, not Harimau Shakti.
- **Option (c) ✗**
Indonesia participates in **different joint exercises** with India.
- **Option (d) ✗**
India–Singapore conduct **SIMBEX**, not Harimau Shakti.

50) Answer (d) III and IV only

Explanation

Goldilocks Economy – Concept & Application

Statement (I)

✗ Incorrect

- A **Goldilocks economy** is characterized by:
 - **Low and stable inflation**
 - **Balanced and sustainable economic growth**
- It does **not** involve high inflation or overheating.

Statement (II)

✗ Incorrect

- Employment levels in a Goldilocks economy are **stable and near full employment**.
- **Sharp or frequent fluctuations** in employment contradict the concept.

An Institute for Civil Services

Statement (III)

Correct

- Recent Indian macroeconomic indicators such as:
 - **GDP growth ~7.3%**
 - **Inflation ~2%**
- Reflect **Goldilocks-like conditions**, offering space for calibrated monetary policy.

Statement (IV)

Correct

- The term **Goldilocks economy** denotes:
 - **Balanced growth**
 - **Low inflation**
 - **High or full employment**
- Neither an overheated nor a sluggish economy.

IQRA IAS

AN INSTITUTE FOR CIVIL SERVICES