

12th February 2026: DSC

Below is the complete paraphrased content in the same structured, UPSC-oriented format. Word volume, headings, and structure have been preserved.

Centre Mandates Label for Photorealistic AI Content

Source: The Hindu

Why is it in News?

Recent Regulatory Development

The Union Government has notified the IT (Intermediary Guidelines & Digital Media Ethics Code) Amendment Rules, 2026, requiring clear labelling of photorealistic AI-generated content and prescribing 2–3 hour timelines for removal of unlawful material.

The Rules came into effect on 20 February 2026, substantially strengthening compliance requirements for platforms amid the rise of AI deepfakes, misinformation, and non-consensual synthetic media, particularly affecting elections, women’s safety, and public order.

Relevance

GS 2 (Polity & Governance)

IT Act, intermediary liability, safe harbour doctrine, free speech versus regulation, privacy rights, digital governance, executive regulatory authority, comparative global tech regulation.

GS 3 (Science & Technology / Internal Security)

AI governance, misinformation, cybersecurity, influence operations, technology policy, platform accountability.

Practice Question

“Regulating AI-generated content requires balancing free speech, privacy, and platform accountability.” Examine in the context of India’s intermediary liability framework. (250 words)

Basics & Conceptual Foundation

What are Intermediary Rules?

Rules framed under the Information Technology Act, 2000 (Section 79) prescribe due diligence requirements for intermediaries, including content moderation standards, grievance redressal systems, and conditions for safe harbour protection.

Intermediaries encompass social media platforms, search engines, and hosting services that function as conduits for user-generated content rather than traditional publishers.

What is Synthetic / AI-Generated Content?

It refers to audio, visual, or audiovisual material artificially created or altered through computational methods to appear genuine or indistinguishable from real individuals or events.

Examples include deepfakes, AI-generated explicit imagery, voice cloning, and fabricated event manipulation, raising issues of consent, privacy, misinformation, and reputational harm.

Key Provisions of Amendment

Mandatory Labelling

Platforms are required to prominently label photorealistic AI-generated content so users can differentiate synthetic media from authentic material, thereby promoting transparency and informed digital engagement.

An exemption exists for routine smartphone editing and basic image enhancement, preventing excessive regulation of everyday photography.

Takedown Timelines

Content declared unlawful by courts or the government must be removed within 3 hours, compared to the earlier 24–36 hour window, indicating significantly accelerated compliance expectations.

Non-consensual explicit content and deepfakes must be removed within 2 hours, prioritising protection of victims, particularly women and minors, against psychological and reputational harm.

Safe Harbour Implications

Failure to comply may result in loss of safe harbour protection under Section 79, making platforms directly liable for user-generated content and increasing legal and financial exposure.

Constitutional / Legal Dimension

Rights Implicated

The amendment seeks to balance Article 19(1)(a) freedom of speech with reasonable restrictions under Article 19(2) concerning defamation, public order, and decency.

It also safeguards Article 21 rights to privacy and dignity, especially in cases involving deepfake harassment and identity misuse.

Judicial Context

In *Shreya Singhal v. Union of India*, the Supreme Court upheld safe harbour protections but required takedown actions based on court or government directives, shaping India's intermediary liability framework.

Governance / Administrative Dimension

Platform Responsibility

The amendment marks a shift from pure self-regulation to co-regulatory oversight, positioning platforms as proactive gatekeepers against AI-related harms.

This necessitates advanced AI detection tools, human moderators, and strengthened grievance redressal mechanisms, raising operational compliance costs.

Digital Governance Trend

The measure aligns with global regulatory trends targeting Big Tech, comparable to the Digital Services Act and evolving AI governance frameworks in the European Union.

Social / Ethical Dimension

Citizen Protection

Deepfakes disproportionately target women, public figures, and political actors, leading to harassment, blackmail, and misinformation.

Mandatory labelling promotes media literacy and reduces viral spread of manipulated content.

Ethical AI Deployment

The framework encourages responsible AI use, consent-based content creation, and accountability for misuse.

Security Dimension

Information Integrity

Deepfakes possess the capacity to influence elections, disrupt communal harmony, and threaten national security, making swift removal essential for safeguarding informational integrity.

Globally, misinformation campaigns increasingly deploy synthetic media in influence operations.

Data & Evidence

Global Trends

Deepfake incidents worldwide have multiplied since 2019, with finance, politics, and entertainment sectors most affected, as indicated in industry cybersecurity reports.

India, being among the largest social media markets, is particularly vulnerable to large-scale AI-driven misinformation.

Challenges / Criticisms

Implementation Issues

Accurate detection of AI-generated content remains technologically complex, and false positives may affect legitimate satire, artistic expression, and journalism.

Stringent timelines may incentivise over-censorship by platforms to avoid liability.

Federal & Legal Risks

Broad executive powers in issuing removal orders may raise concerns regarding overreach and chilling effects on speech.

Way Forward

Regulatory Strengthening

Establish clear Standard Operating Procedures and appeal mechanisms to protect legitimate expression while addressing harms.

Invest in AI watermarking, provenance verification tools, and detection technologies.

Capacity Enhancement

Promote digital literacy initiatives, especially among youth, to identify manipulated media.

Encourage international cooperation in setting AI governance standards and cross-border enforcement.

What Explains SpaceX and Blue Origin Stepping Up Their Moon Plans?

Source: The Hindu

Why is it in News?

Strategic Shift by Private Space Firms

SpaceX and Blue Origin have redirected focus toward lunar missions, prioritising the Moon over Mars. This aligns with NASA's Artemis programme, intensifying geopolitical competition with China and targeting nearer-term technological and commercial milestones.

SpaceX aims for an uncrewed lunar landing by 2027, while Blue Origin has suspended suborbital tourism operations for two years to accelerate development of a human-rated lunar lander for NASA.

Relevance

GS 3 (Science & Technology)

Space technology, role of private sector, commercialisation of space, dual-use technologies, innovation ecosystems.

Practice Question

Private space enterprises are reshaping global space exploration. Analyse opportunities and risks for states. (250 words)

Basics & Conceptual Foundation

New Space versus Old Space

“New Space” refers to private-sector-led space activity driven by commercial innovation and reusable launch systems, contrasting with state-dominated Cold War-era “Old Space” programmes.

Private entities now undertake launch services, satellite deployment, crewed missions, and lunar lander development, reducing costs and increasing mission frequency.

Moon versus Mars — Technical Distinctions

The Moon lies approximately 384,400 km away and is reachable within 3–7 days, allowing near-real-time communication and frequent launch windows (around three per month).

Mars missions require 26-month launch windows, prolonged travel durations, and higher fuel requirements, increasing risk and financial exposure.

Global Space Governance Framework

Legal Structure

The Outer Space Treaty prohibits national appropriation of celestial bodies, mandates peaceful use, and holds states accountable for private space activities.

The Artemis Accords promote norms for lunar exploration, transparency, and resource utilisation under U.S. leadership.

Strategic & Geopolitical Dimension

Moon as Strategic Arena

Renewed lunar competition reflects U.S.–China rivalry. China’s Chang’e missions and International Lunar Research Station (ILRS) plans seek permanent lunar presence by the 2030s.

Lunar capability symbolises technological leadership and strategic signalling, reminiscent of Cold War space rivalry.

NASA’s Moon-First Strategy

NASA’s Artemis programme aims for sustained lunar presence, the Gateway station, and eventual Mars missions, positioning the Moon as a stepping-stone for deep-space exploration.

Economic Dimension

Commercial Incentives

Lunar missions attract government contracts, partnerships, and technological funding, offering clearer revenue prospects than long-term Mars colonisation.

The global space economy, valued at over \$450 billion, is projected to surpass \$1 trillion by 2040, driven by private-sector participation.

Investor Considerations

SpaceX's anticipated IPO increases emphasis on near-term deliverables. Investors prefer predictable Artemis-linked contracts and shorter innovation cycles.

Science & Technology Dimension

Technological Advancement

Lunar missions enable testing of life-support systems, in-situ resource utilisation (ISRU), radiation shielding, and reusable launch systems needed for deeper space travel.

The lunar environment acts as a testing platform for Mars-bound technologies.

Governance / Policy Dimension

Public–Private Partnerships

NASA increasingly utilises fixed-price commercial contracts, leveraging private innovation while reducing public expenditure.

Private companies must meet stringent human-rating and safety standards, intensifying oversight.

Social & Ethical Dimension

Ethical Considerations

Space exploration raises questions regarding environmental protection, equitable access, and commercial exploitation of extraterrestrial resources.

Debates persist on whether lunar resources constitute global commons or commercial assets.

Security Dimension

Dual-Use Implications

Space technologies overlap with military applications in navigation, surveillance, and communications, making lunar presence strategically sensitive.

Militarisation risks increase with expansion of cislunar capabilities.

Way Forward

Strengthening Norms

Modernise global governance on space resource utilisation, debris mitigation, and conflict prevention.

Encourage multilateral collaboration in lunar exploration.

Indian Relevance

India's Chandrayaan programme and participation in Artemis partnerships position it as an emerging lunar stakeholder.

IN-SPACe reforms should encourage private participation in the global lunar economy.

Continuation with full structural and word preservation:

Global Warming and Pollution Are Stripping Vibrant Colours from Nature

Source: The Hindu

Why is it in News?

Emerging Scientific Findings

Recent scientific research indicates that oceans are becoming greener, forests are browning earlier, insects and birds are exhibiting pigmentation changes, and coral bleaching is expanding—directly linking colour transformations to climate warming, pollution, and habitat disturbance.

In 2025, coral bleaching events were reported in the Gulf of Mannar, Palk Bay, Lakshadweep, Andaman & Nicobar Islands, and Gulf of Kachchh, underscoring regional ecological vulnerability and stress.

Relevance

GS 3 (Environment)

Climate change impacts, biodiversity decline, coral bleaching, ecosystem stress indicators, pollution-related ecological effects.

Practice Question

How does climate change-induced ecological discolouration signal deeper biodiversity stress? Discuss with illustrations. (250 words)

Basics & Conceptual Foundation

What is Ecological Discolouration?

Ecological discolouration refers to visible alterations in the colour of ecosystems or organisms caused by climate change, pollution, and land-use changes affecting pigments, species composition, and ecological relationships.

Natural colours serve functions such as camouflage, mate attraction, UV protection, and thermoregulation; therefore, pigment alterations indicate broader ecological and evolutionary stress.

Scientific Basis

Role of Pigments

Melanin pigments (eumelanin producing darker shades and pheomelanin yielding yellow-red hues) regulate heat absorption, UV protection, and coloration. Reduced melanin often results in lighter body tones in warmer climates.

Carotenoids in plants generate red, yellow, and orange hues that attract pollinators. Pollution and urbanisation reduce carotenoid synthesis, indirectly disrupting pollination networks and food webs.

Ecogeographical Rules

Bogert's Rule states that cold-blooded animals tend to be darker in colder climates and lighter in warmer regions for thermoregulation.

Gloger's Rule posits that warm-blooded animals are darker in humid, warm areas and lighter in dry, cold regions due to microbial resistance and camouflage adaptations.

Evidence & Case Studies

Terrestrial Ecosystems

Deforestation in the Amazon has been associated with decline in brightly coloured butterfly species, with camouflaged species increasingly dominating disturbed habitats, indicating biodiversity simplification.

A 2024 *Ecology & Evolution* study reported that ladybirds and dragonflies in the Northern Hemisphere are becoming lighter due to recurrent heatwaves.

A 2024 *Molecular Ecology* study observed an increase in brown morph tawny owls in Europe, attributed to milder winters and UV protection advantages.

Urbanisation Effects

Research on 547 Chinese bird species (2024) found that urban birds tend to be darker and duller; heavy metals such as lead bind with melanin, intensifying plumage darkening.

Urban plants exhibit reduced carotenoid pigmentation and altered UV reflectance patterns, decreasing attractiveness to pollinators.

Marine Ecosystems

Coral bleaching occurs when heat-stressed corals expel symbiotic zooxanthellae algae, turning white and increasing vulnerability to starvation and disease.

Algal blooms driven by warming and nutrient runoff cause oceans to appear greener, reduce light penetration, and generate hypoxic zones harmful to marine life.

Environmental & Ecological Implications

Biodiversity Effects

Colour shifts affect predator-prey interactions, mating success, and inter-species dynamics, potentially lowering reproductive success and accelerating biodiversity decline.

Coral reef degradation threatens ecosystems supporting nearly 25% of marine species, despite reefs covering less than 1% of ocean floor.

Ecosystem Functioning

Loss of vivid pollinator-attracting signals may disrupt plant–pollinator networks, affecting food security and ecological resilience.

Social & Economic Relevance

Livelihood Impacts

Coral reef deterioration affects fisheries, tourism, and coastal protection, influencing millions reliant on reef ecosystems.

FAO estimates suggest approximately 500 million people globally depend on coral reefs for food, income, and storm protection.

Challenges

Research Constraints

Significant knowledge gaps exist in tropical and Southern Hemisphere regions, limiting comprehensive global assessments.

Colour change processes are often gradual and subtle, necessitating long-term monitoring.

Way Forward

Climate Mitigation & Conservation

Reduce greenhouse gas emissions in line with Paris Agreement commitments to limit warming and ecological stress.

Preserve microhabitats such as shaded zones and vegetative cover to assist species thermoregulation.

Enhance coral reef protection through coastal regulation, pollution control, and ecosystem stress monitoring.

Research & Monitoring

Expand pigment and biodiversity monitoring programmes across climatic zones.

Integrate colour-based indicators into ecosystem health assessments.

Get the Rocket Ready

Source: The Hindu

Why is it in News?

Artemis II Testing Update

NASA recently identified a hydrogen leak during a wet dress rehearsal of the Artemis II mission, underscoring the importance of pre-launch testing in ensuring crew safety and mission reliability.

Artemis II represents NASA's first crewed lunar mission since the Apollo era, making testing milestones globally significant for space governance and human deep-space exploration.

Relevance

GS 3 (Science & Technology)

Cryogenic propulsion, human spaceflight safety, mission reliability, aerospace engineering fundamentals.

Practice Question

Human spaceflight demands near-zero tolerance for failure. Discuss the role of pre-launch testing in ensuring mission reliability. (250 words)

Basics & Conceptual Foundation

What is a Dress Rehearsal in Rocketry?

A dress rehearsal is a comprehensive simulation of launch-day operations, validating coordination among hardware, software, personnel, timelines, and safety protocols prior to actual launch.

It integrates vehicle systems, ground support infrastructure, mission control, and safety agencies to ensure operational readiness and risk mitigation.

Types of Dress Rehearsals

Dry Dress Rehearsal

Conducted without cryogenic propellant loading, focusing on countdown procedures, communication checks, sensor simulations, and decision-making coordination among engineering and launch teams.

This approach helps detect procedural errors without fuel-related hazards, reducing risk during early testing phases.

Wet Dress Rehearsal

Involves actual fueling with cryogenic propellants such as liquid oxygen (LOX) and liquid hydrogen (LH₂), closely replicating real launch conditions.

Teams cool propellant lines, fill tanks, pressurise systems, inspect leaks, and conduct countdown sequences near ignition before safely draining propellants.

Only wet rehearsals reveal cryogenic-specific challenges such as seal contraction, material stress, and hydrogen leakage.

Scientific & Technical Dimension

Cryogenic Propellants

Cryogenic fuels stored at extremely low temperatures (LH2 at -253°C and LOX at -183°C) provide high efficiency but require sophisticated insulation and handling systems.

Boil-off losses and thermal stress necessitate precise monitoring, reinforcing the importance of rehearsal testing.

Hydrogen Challenges

Hydrogen molecules are extremely small and prone to leakage through minor seal imperfections, posing fire and explosion hazards.

Hydrogen leaks have historically contributed to launch delays and accidents in global space programmes.

Strategic & Governance Dimension

Human Spaceflight Safety

Crewed missions require stringent safety margins; rehearsals reduce catastrophic risk, safeguarding astronauts and national prestige.

NASA adheres to the “test-as-you-fly” principle—validating systems under realistic conditions prior to human missions.

International Relevance

The Artemis programme influences global lunar governance under the Artemis Accords, making mission success strategically and diplomatically significant.

Economic Dimension

Cost Considerations

Launch failures can result in losses of hundreds of millions of dollars, making preventive testing economically rational.

The Artemis programme involves expenditure in the tens of billions of dollars, demanding high reliability.

Environmental & Safety Dimension

Risk Management

Cryogenic propellant spills pose fire and environmental risks, necessitating controlled procedures and safety perimeters.

Spaceports operate under strict safety and environmental compliance standards.

Challenges

Technical Complexity

Multiple subsystems must synchronise flawlessly; even minor valve or seal issues can delay missions.

Weather conditions introduce additional unpredictability during fueling operations.

Way Forward

Technological Upgradation

Develop improved seal materials and advanced leak-detection sensors.

Integrate automation and AI-based diagnostics for real-time anomaly detection.

Indian Context

ISRO's Gaganyaan programme similarly emphasises abort testing and integrated rehearsals to ensure crew safety.

Strengthening indigenous cryogenic expertise enhances strategic autonomy.

Continuation with full structural preservation and UPSC-oriented formal paraphrasing:

For First Time, Indians Invest More in Gold ETFs than Equity MFs

Source: The Indian Express

Why is it in News?

Historic Shift in Investment Pattern

For the first time, inflows into gold Exchange-Traded Funds (ETFs) surpassed inflows into equity mutual funds in January 2026, indicating a shift by investors toward safe-haven assets amid global uncertainty and elevated gold prices.

Data released by the Association of Mutual Funds in India (AMFI) shows gold ETF inflows at approximately ₹24,040 crore in January 2026, more than doubling compared to December and marking a record monthly high.

Relevance

GS 3 (Economy)

Financial markets, investor behaviour, safe-haven assets, capital market dynamics, household savings trends, macro-financial stability.

Practice Question

Why do investors gravitate toward gold during periods of uncertainty? Analyse the macroeconomic implications. (250 words)

Basics & Conceptual Foundation

What are Gold ETFs?

Gold ETFs are exchange-traded investment funds backed by physical gold, enabling investors to gain exposure to gold prices without holding physical bullion, thereby eliminating storage and purity risks.

Each ETF unit generally represents approximately one gram of gold (depending on the fund) and is traded on stock exchanges, offering liquidity and price transparency.

Equity Mutual Funds

Equity mutual funds primarily invest in shares and equity-linked instruments, aiming for long-term capital appreciation but subject to higher volatility linked to market fluctuations.

Data & Evidence

Recent Developments

Gold ETF Assets Under Management (AUM) reached approximately ₹1.84 lakh crore. Silver ETFs also recorded significant inflows (around ₹9,463 crore), reflecting increased demand for precious metals.

Equity mutual fund inflows declined to roughly ₹24,029 crore in January, representing a 14% drop from December, signalling moderation in equity sentiment.

Systematic Investment Plan (SIP) inflows remained relatively stable at approximately ₹31,002 crore, while the number of SIP accounts rose to around 10.29 crore, indicating sustained retail participation.

Economic Dimension

Safe-Haven Behaviour

Gold traditionally serves as an inflation hedge and safe-haven asset during currency depreciation, geopolitical tensions, and stock market corrections.

Since 2022, global central banks have been net purchasers of gold, supporting price stability and reinforcing investor confidence.

Portfolio Diversification

Financial advisors generally recommend allocating 5–10% of investment portfolios to gold to hedge against equity volatility and diversify risk exposure.

Global & Macro Context

International Factors

A weakening US dollar, geopolitical instability, and trade uncertainties have enhanced gold's attractiveness globally.

Foreign Portfolio Investor (FPI) outflows from Indian equities (approximately \$4 billion in January) coincided with increased domestic gold investment.

Governance / Regulatory Dimension

Role of SEBI & AMFI

Securities and Exchange Board of India regulates ETFs and mutual funds to ensure disclosure norms, transparency, and investor protection.

Association of Mutual Funds in India publishes industry flow data, influencing market sentiment and analysis.

Social Dimension

Cultural Preference

Gold holds deep cultural and financial significance in India, traditionally functioning as a store of value and inflation hedge, particularly among households.

Financialisation through ETFs shifts demand from physical gold toward digital instruments, potentially reducing import-related macroeconomic pressures.

Environmental Dimension

Gold Mining Concerns

Gold extraction is associated with deforestation, mercury contamination, and high carbon emissions, making recycled gold and financial instruments comparatively more sustainable alternatives.

Challenges / Risks

Excessive Gold Allocation

A substantial shift toward gold may divert capital from equities and productive sectors, potentially affecting corporate growth and economic expansion.

Unlike equities, gold does not generate productive returns or dividend income.

Way Forward

Balanced Asset Allocation

Promote financial literacy regarding diversification and discourage herd behaviour across asset classes.

Encourage sustained SIP-based equity investments for long-term wealth creation.

Strengthen gold monetisation schemes and digital gold frameworks to reduce import dependency.

Soot at Sight: Black Carbon Spewing from Marine Traffic Ensnares the Arctic

Source: The Indian Express

Why is it in News?

Growing Concern over Arctic Shipping Emissions

Recent reports highlight that black carbon emissions from marine traffic are accelerating Arctic warming, while global regulatory response remains limited due to geopolitical and commercial considerations.

Debate intensified following proposals within the International Maritime Organization (IMO) to regulate heavy fuel oil use and black carbon emissions in polar waters.

Relevance

GS 1 (Geography)

Arctic geography, cryosphere, albedo effect, polar regions.

GS 3 (Environment)

Climate change, Short-Lived Climate Pollutants (SLCPs), pollution, maritime emissions, climate feedback mechanisms.

Practice Question

Explain how black carbon emissions accelerate Arctic warming. Why does this have global significance? (250 words)

Basics & Conceptual Foundation

What is Black Carbon?

Black carbon is a Short-Lived Climate Pollutant produced from incomplete combustion of fossil fuels, biomass, and biofuels. It strongly absorbs solar radiation, thereby contributing to atmospheric warming.

Although it remains in the atmosphere for only days to weeks (unlike CO₂), it has a disproportionately high warming potential.

Why is Black Carbon Particularly Harmful in the Arctic?

When deposited on snow and ice, black carbon reduces surface albedo (reflectivity), causing greater absorption of heat and accelerating melting.

The Arctic is warming approximately four times faster than the global average (Arctic amplification), increasing sensitivity to such pollutants.

Scientific Dimension

Albedo Effect

Fresh snow reflects 80–90% of incoming sunlight. Deposition of black carbon darkens the surface, enhancing heat absorption and accelerating glacier and sea-ice melt.

This initiates further warming through positive feedback mechanisms.

Climate Feedback Loops

Melting ice exposes darker ocean waters, further decreasing reflectivity and intensifying warming—creating a reinforcing feedback cycle.

Shipping & Emissions

Marine Fuel Concerns

Ships frequently use Heavy Fuel Oil (HFO), a residual fuel high in sulphur and particulate matter emissions, leading to substantial black carbon production.

Arctic shipping has increased as receding sea ice opens shorter trade routes such as the Northern Sea Route.

Magnitude of Impact

Shipping emissions in the Arctic have risen significantly over the past decade as navigable periods extend.

Even relatively small emission volumes have pronounced effects due to direct deposition on ice surfaces.

Governance & Legal Dimension

International Framework

The IMO regulates maritime emissions under the MARPOL Convention and Polar Code.

Discussions are ongoing regarding phased bans on HFO use in the Arctic, though exemptions and enforcement challenges persist.

Geopolitical Constraints

Arctic nations must balance economic interests in shipping and resource extraction with environmental protection, slowing regulatory consensus.

Russia's promotion of the Northern Sea Route further complicates multilateral alignment.

Environmental Dimension

Cryosphere Impacts

Accelerated ice melt contributes to global sea-level rise, threatening coastal regions worldwide.

Arctic ecosystems face disruption affecting polar species and indigenous communities.

Economic Dimension

Trade Route Advantages

Arctic routes can reduce Europe–Asia shipping distances by 30–40%, lowering fuel consumption and transit time.

However, environmental risks, including oil spills and ecosystem damage, remain significant.

Social Dimension

Indigenous Communities

Rapid Arctic warming disrupts traditional livelihoods, food security, and cultural systems of indigenous populations.

Challenges

Regulatory Gaps

Limited monitoring capacity and fragmented jurisdiction reduce compliance effectiveness.

Industry resistance persists due to higher costs of cleaner fuels.

Way Forward

Policy Measures

Phase out Heavy Fuel Oil in Arctic shipping.

Promote cleaner alternatives such as LNG, low-sulphur fuels, and electrification.

Strengthen cooperation within the Arctic Council and reinforce IMO enforcement mechanisms.

Technological Measures

Install particulate filters and adopt cleaner combustion technologies.

Enhance satellite-based emission monitoring systems.

12th February 2026: Daily MCQs

Q1. Consider the following statements regarding Newton's Law of Universal Gravitation:

1. The gravitational force is directly proportional to the product of the two masses involved.

2. The gravitational force decreases linearly as distance increases.
3. The same universal law accounts for both falling objects on Earth and planetary motion.

How many of the above statements are correct?

- A) Only one
- B) Only two
- C) All three
- D) None

Q1. (B)

Explanation:

Statement 1 — Correct:

According to Newton's law, gravitational force is proportional to the product of the interacting masses.

Statement 2 — Incorrect:

Gravitational force follows an inverse-square relationship ($1/r^2$), not a linear decrease with distance.

Statement 3 — Correct:

Newton's formulation unified terrestrial and celestial phenomena under a single law, marking a major scientific breakthrough.

Q2. Sea Lanes of Communication (SLOCs) are strategically significant because they:

1. Enable transportation of global energy supplies.
2. Facilitate international trade flows.
3. Are primarily intended for naval warfare operations.

Select the correct answer:

- A) 1 and 2 only
- B) 2 and 3 only
- C) 1 and 3 only
- D) 1, 2 and 3

Q2. (A)

Explanation:

Statement 1 — Correct:

Approximately 80% of global oil trade passes through critical SLOCs such as Hormuz, Malacca, and Bab-el-Mandeb.

Statement 2 — Correct:

Nearly 90% of global trade by volume is transported via sea routes, as per UNCTAD estimates.

Statement 3 — Incorrect:

While naval forces utilise SLOCs, their primary function is economic rather than military.

Q3. Which of the following states are major producers of cashew?

1. Kerala
2. Odisha
3. Punjab
4. Maharashtra

Select the correct answer:

- A) 1, 2 and 4 only
- B) 1 and 3 only
- C) 2 and 3 only
- D) 1, 2, 3 and 4

Q3. (A)

Explanation:

Kerala — A leading producer and processor of cashew.

Odisha — Possesses extensive cultivation area.

Maharashtra — The Konkan region is a significant production belt.

Punjab — Does not possess suitable agro-climatic conditions.

Cashew cultivation requires tropical coastal climates and lateritic soils.

Q4.

Assertion (A): Bonded labour is prohibited under the Indian Constitution.

Reason (R): Article 23 prohibits trafficking in human beings and forced labour.

- A) Both A and R are correct and R is the correct explanation of A
- B) Both A and R are correct but R is not the correct explanation of A
- C) A is correct but R is incorrect
- D) A is incorrect but R is correct

Q4. (A)

Explanation:

Article 23 provides the Right against Exploitation.

It explicitly prohibits begar, bonded labour, and other forms of forced labour.

Bonded labour constitutes both a constitutional violation and a statutory offence under the Bonded Labour System (Abolition) Act, 1976.

Q5. Island nations such as Seychelles are strategically important because:

1. They are located near critical Sea Lanes of Communication.
2. They contribute to Maritime Domain Awareness (MDA) networks.
3. They provide access to the Arctic region.

4. They assist in anti-piracy operations.

- A) 1, 2 and 4 only
- B) 1 and 3 only
- C) 2 and 3 only
- D) 1, 2, 3 and 4

Q5. (A)

Explanation:

Statement 1 — Correct: Seychelles lies close to key Indian Ocean SLOCs.

Statement 2 — Correct: Coastal radar and information-sharing systems enhance Maritime Domain Awareness.

Statement 3 — Incorrect: Arctic access is unrelated to Seychelles' strategic location.

Statement 4 — Correct: The Western Indian Ocean has experienced piracy incidents, where island states support maritime security efforts.

Island states function as strategic nodes in Indo-Pacific geopolitics.

Mains: Discuss the significance of island nations such as Seychelles in India's Indian Ocean strategy. (150 words)

