Topic 1: India–New Zealand Conclude FTA Negotiations, Aim to Expand Trade

Why is it in News?

India and New Zealand have successfully concluded negotiations on a Free Trade Agreement (FTA) on Monday.
The negotiations were completed in approximately **nine months (March–December 2025)**, making it one of the **fastest FTAs negotiated by India** in recent years.
The proposed FTA is expected to:

- Grant **tariff-free access** to Indian goods in the New Zealand market
- Facilitate **USD 20 billion worth of investments over 15 years**
- **Double bilateral trade** to nearly **USD 5 billion within five years**
  The formal signing of the agreement is targeted for the **first half of 2026**.

Relevance

GS II – International Relations

- Bilateral economic diplomacy
- Indo-Pacific engagement and strategy

GS III – Economy

- Trade policy and Free Trade Agreements
- Agriculture protection, services exports, and investment flows

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India–New Zealand Economic Background

New Zealand's economy is characterised by:

- Nominal GDP of approximately **USD 250 billion**
- Per capita income close to **USD 49,000**
- Strong export orientation with a heavy reliance on agriculture

Prior to the FTA:

- Bilateral trade stood at around **USD 2.5–2.7 billion**
- Trade balance remained broadly even
- Indian diaspora in New Zealand numbers around **300,000 persons of Indian origin**, forming nearly **5% of New Zealand's population**, creating a strong socio-economic linkage

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Core Trade Architecture of the FTA

A. Tariff Liberalisation

Around **95% of New Zealand's exports to India** will see tariffs either removed or substantially reduced.
These include:

- Timber
- Apples and kiwifruit
- Wine
- Wool
- Forestry-based products

India, in return, secures **tariff-free access** for:

- Pharmaceuticals
- Textiles and apparel
- Engineering goods
- IT and business services
- Generic medicines

B. Protection of Sensitive Sectors (India's Non-Negotiables)

India has not extended market access in sectors considered politically and livelihood-sensitive, including:

- Dairy products
- Rice and wheat
- Sugar
- Onions
- Spices
- Edible oils
- Rubber
- Soya products

This approach reflects **selective and calibrated liberalisation rather than blanket trade opening**.
Union Commerce Minister **Piyush Goyal** explicitly clarified that **farmer and dairy interests remain fully safeguarded**.

Mobility and Services: A Strategic Advantage

The agreement introduces **temporary employment visas** for Indian professionals:

- Annual quota: **5,000 professionals**
- Duration: **Up to three years**

- Coverage: Skilled occupations

Significance:

- Strengthens India's **Mode-4 (movement of natural persons)** interests
- Reinforces India's advantage in **human capital exports**
- Supports remittance inflows and skill upgradation

Investment Dimension: USD 20 Billion Over 15 Years

Expected investments are likely to flow into:

- Renewable energy
- Agri-processing and food logistics
- Dairy technology (without product import liberalisation)
- Education and vocational training
- Digital services and fintech

Strategic significance lies in the inflow of **long-term patient capital**, rather than volatile portfolio investments, supporting both **manufacturing and services ecosystems**.

Strategic and Geoeconomic Significance

A. Indo-Pacific and Oceania Engagement

The FTA enhances India's economic presence in the **Pacific–Oceania region**, complementing:

- Act East Policy
- Indo-Pacific Oceans Initiative (IPOI)

It also reduces over-dependence on:

- China-centric supply chains
- Traditional Western export markets

B. Continuity in Trade Diplomacy

The agreement follows a clear trajectory:

- India–EFTA TEPA (2024)
- India–UK CETA (2025)
- India–Oman CEPA (2025)

This signals India's shift from a defensive trade stance towards **selective openness with safeguards**, emphasising **speed with protection**.

Risks and Challenges

- Non-tariff barriers such as SPS standards and quality norms
- Mutual recognition of standards
- Domestic adjustment pressures for select agricultural exports
- Global risks including commodity price volatility and logistics disruptions

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Overall Assessment

The India–New Zealand FTA is:

- Trade-expanding yet politically cautious
- Investment-focused rather than tariff-centric
- Strong on services and mobility

It reflects India's evolving FTA template:

- Protection of core livelihoods
- Leveraging market access and talent mobility
- Anchoring long-term strategic partnerships

Conclusion

The agreement represents a **fast and carefully calibrated FTA** that deepens India's Pacific engagement while safeguarding farmers and leveraging India's strengths in services, skills, and scale.

Topic 2: Forest Land Cannot Be Diverted for Non-Forestry Use — Supreme Court

Why is it in News?

The Supreme Court of India ruled that **forest land cannot be diverted for non-forestry purposes**, including agriculture, without **prior statutory approval**.
The ruling arose while cancelling cultivation permissions granted by district authorities in Gujarat to a cooperative farming society over **134 acres of forest land**.

Relevance

GS II – Polity & Governance

- Federalism
- Rule of law
- Judicial review of executive actions

GS III – Environment

- Forest conservation

- Environmental legislation
- Sustainable development

Legal Background: Forest Conservation Framework

The governing legislation is the **Forest (Conservation) Act, 1980**.
Section 2 of the Act:

- Prohibits de-reservation of forests
- Prohibits use of forest land for non-forest purposes
- Allows diversion only with **prior Central Government approval**

"Non-forest purpose" explicitly includes:

- Agriculture
- Mining
- Industry
- Infrastructure projects
- Commercial plantations (excluding permitted forestry activities)

Supreme Court's Ruling

The Court held that **Central approval is a jurisdictional prerequisite**, not a mere procedural formality.
District collectors or state authorities:

- Possess no independent authority to permit non-forest use
- Cannot bypass or dilute Section 2 safeguards

Cultivation on forest land—even if:

- Cooperative-led
- Livelihood-oriented
- Administratively approved

—remains illegal without central clearance.

Constitutional and Jurisprudential Principles Reinforced

A. Environmental Rule of Law

- Statutory environmental protections override administrative discretion
- Administrative convenience does not equate to legal authority

B. Public Trust Doctrine

- Forests are held in trust by the State for present and future generations
- Cannot be casually alienated or repurposed

C. Sustainable Development

- Economic activities must operate within ecological limits
- Agriculture is not environmentally benign if it leads to forest degradation

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Federal Dimension

Forests fall under the **Concurrent List** following the **42nd Constitutional Amendment**. Central oversight ensures:

- Uniform national ecological standards
- Prevention of competitive forest diversion by states

The judgment reaffirms **central supremacy** in forest diversion approvals.

Administrative Lapses Highlighted

District authorities:

- Granted permissions without legal competence
- Ignored mandatory statutory clearances

Reflects:

- Weak legal awareness at district level
- Pressure to post-facto regularise encroachments
- Tension between short-term livelihood demands and long-term ecology

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Implications

Governance

- Strengthens forest law enforcement
- Curtails misuse of revenue and land records
- Signals zero tolerance for administrative regularisation of illegality

Environmental

- Prevents gradual agricultural encroachment
- Reduces fragmentation and biodiversity loss
- Reinforces India's carbon sink commitments

Social and Livelihood

- Raises concerns for forest-dependent communities
- Livelihood solutions must emerge through:
    - Forest Rights Act, 2006
    - Agro-forestry policies
    - Rehabilitation and alternative land allocation

Interface with Forest Rights Act, 2006

The ruling does not dilute FRA protections.
Distinction clarified:

- Recognised rights under FRA → legally protected
- Executive cultivation permissions without FRA process → invalid

Reinforces need for **Gram Sabha-led legal recognition**, not shortcuts.

Conclusion

The Supreme Court has unequivocally clarified that forests are ecological assets governed by statutory law, not revenue land open to administrative discretion—even for agricultural use.

Topic 3: India Tops Global Doping Violations for the Third Consecutive Year

Why is it in News?

The **World Anti-Doping Agency (WADA)** released its **2024 Anti-Doping Testing Figures Report**, which revealed that **India recorded the highest number of doping offenders globally for the third consecutive year**.
This finding assumes heightened significance as India:

- Is preparing to host the **2030 Commonwealth Games**
- Has expressed aspirations to host the **2036 Olympic Games**

Relevance

GS II – Governance

- Institutional accountability
- Global regulatory compliance

GS III – Sports

- Integrity in sports
- Public policy and youth development

Understanding Doping

Doping refers to the **use of prohibited substances or methods** to artificially enhance athletic performance.
Globally, it is governed by:

- **World Anti-Doping Code**
- **Prohibited List** (updated annually)

Violations include:

- Presence of banned substances
- Refusal or evasion of sample collection
- Sample tampering
- Trafficking or administration of prohibited substances

India's Doping Statistics: Key Data (2024)

A. Absolute Numbers

- Total samples tested: **7,113**
- Positive cases detected: **260**
- Global rank: **1st (highest number of violations)**

B. Positivity Rate

- India: **3.6%**
- Norway: **1.75%**
- USA: **1.15%**
- No other country exceeded **1.75%**

➞ India's positivity rate is **more than double** the next highest country.

Global Comparison: Why India Stands Out

A. Absolute Violations (2024)

Country	Violations
India	260
France	91
Italy	85
USA	76
Russia	76

Country	Violations
Germany	54
China	43

➞ India recorded nearly **three times more violations** than the second-highest country.

B. Testing Volume vs Violations

- **China**: Over **24,000 tests**, **43 violations**
- **India**: **7,113 tests**, **260 violations**

➞ Despite conducting **three times fewer tests**, India reported **six times more violations** than China.

Inference:
India's issue is not under-testing alone, but **high prevalence of doping practices**.

Sport-wise Distribution in India (2024)

Sport	Positive Cases
Athletics	76
Weightlifting	43
Wrestling	29
Boxing	17
Powerlifting	17
Kabaddi	10

Pattern Observed

- Strength and endurance sports dominate violations
- Indicates:
    - Performance pressure
    - Weak sports science support
    - Normalisation of substance use at grassroots levels

Elite and Grassroots Signals

A. Elite-Level Evidence

- **Reetika Hooda**, Under-23 world champion and Paris Olympics quarter-finalist, tested positive and was provisionally suspended in July 2025

- Indicates doping is **not limited to fringe athletes**

B. Grassroots-Level Evidence

- During **University Games 2025**, several athletes reportedly withdrew after the arrival of anti-doping officials
- Suggests:
    - Fear of testing
    - Weak deterrence credibility
    - Poor awareness of prohibited substances

Institutional Response and Assessment

A. National Anti-Doping Agency (NADA)

NADA argues:

- Higher violation numbers reflect **stronger detection**
- Improved intelligence-led testing and enforcement

B. Critical Assessment

- Argument partially valid
- However:
    - Countries with much higher testing volumes show lower positivity rates
    - Indicates a **structural doping culture**, not merely detection bias

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International and Domestic Pressure

A. International Olympic Committee (IOC)

- Expressed concern over widespread doping in India
- Urged authorities to **"set their house in order"**

B. Indian Olympic Association (IOA)

- Constituted a new anti-doping panel in **August 2025**

Legal and Policy Response

The **National Anti-Doping (Amendment) Bill, 2025**, recently passed by Parliament:

- Aligns Indian law with WADA compliance
- Explicitly criminalises doping
- Institutionalises testing and enforcement

- Establishes adjudication and appeal mechanisms

Objective:
Restore international credibility and prevent compliance downgrades.

Structural Causes Behind India's Doping Crisis

- Early specialisation and medal pressure
- Low penetration of sports science
- Unregulated supplements and gym culture
- Coaches acting as informal medical advisors
- Weak athlete education at state and university levels
- Incentive-heavy reward structures without ethical safeguards

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Implications for India

A. Sporting Credibility

- Threatens India's image as a clean sporting nation
- Risks hosting ambitions (CWG 2030, Olympics 2036)

B. Athletes

- Career-ending bans
- Loss of sponsorships
- Psychological stress and stigma

C. Governance

- Risk of enhanced WADA scrutiny
- Greater international monitoring

Way Forward

- Mandatory anti-doping education from junior levels
- Coach certification linked to compliance
- Regulation of supplements and gyms
- Independent testing at state and university competitions
- Shift from medal-centric to athlete-welfare-centric sports governance

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Conclusion

India's doping crisis is **not an anomaly of detection**, but a **systemic failure of integrity**, directly threatening its sporting credibility and global aspirations unless deep structural reform follows legal tightening.

Topic 4: On the Right to a Healthy Environment

Why is it in News?

Recurring **winter smog episodes in Delhi–NCR**, with Air Quality Index (AQI) levels frequently reaching **"Severe" and "Severe+" categories**, have revived debate on whether the **right to a clean and healthy environment should be explicitly recognised as a Fundamental Right**.
Currently, environmental protection largely rests on **judicial interpretation of Article 21**, rather than explicit constitutional enumeration.

Relevance

GS II – Polity & Governance

- Expansion of Article 21
- Judicial activism
- Fundamental Rights vs Directive Principles

GS III – Environment

- Air pollution
- Environmental governance
- Climate change law

Air Pollution as a Rights Issue

A. Delhi–NCR Air Quality Reality

- Winter AQI frequently exceeds **401–500**
- PM2.5 levels often reach **150–300 µg/m³**
- WHO guideline: **5 µg/m³ (annual mean)**

Health Impacts

- Stroke
- Ischemic heart disease
- Lung cancer
- COPD
- Children disproportionately affected

B. Major Pollution Sources

- Fossil fuel combustion
- Transport emissions
- Construction dust
- Waste burning
- Industrial emissions
- Crop residue burning

➞ **Particulate Matter (PM)** is the most lethal pollutant.

Scientific Basis: Particulate Matter

Type	Size	Impact
PM10	≤10 µm	Respiratory tract
PM2.5	≤2.5 µm	Bloodstream penetration
Diesel PM	<1 µm	Neuro-cardiac damage

No scientifically established safe threshold exists.

Regulatory Response

The **Commission for Air Quality Management (CAQM)** amended GRAP:

- Mandatory school closures under Phases III & IV
- Removal of state discretion
- Staggered office timings

Signifies recognition of pollution as a **public health emergency**.

Constitutional Evolution of Environmental Rights

- No explicit provision in original Constitution
- Judicial expansion via Article 21:
    - *Rural Litigation Case*
    - *M.C. Mehta v. Union of India*
    - *Subhash Kumar Case*

Articles:

- **48A** (DPSP): State duty
- **51A(g)**: Citizen duty

Neither is directly enforceable.

Judiciary as Environmental Regulator

Through PILs under Articles 32 and 226, courts have acted as:

- Rule-makers
- Enforcers
- Adjudicators

Key doctrines:

- Absolute Liability
- Precautionary Principle
- Polluter Pays Principle
- Public Trust Doctrine

Climate Change and Fundamental Rights

M.K. Ranjitsinh v. Union of India recognised:

- Right against adverse climate impacts
- Linked to Articles 21 and 14

Why Judicial Recognition Is Insufficient

- Rights not directly claimable
- State compliance remains reactive
- Governance becomes court-centric

Case for Explicit Constitutional Right

- Makes clean air and water justiciable
- Aligns with UN recognition (2021)
- Enhances accountability

Conclusion

India's environmental protection framework relies heavily on judicial creativity; explicit constitutional recognition of the right to a healthy environment is now essential for enforceability, accountability, and ecological survival.

Topic 5: How Are We Protecting Astronauts from Deadly Space Debris?

Why is it in News?

A **space debris impact cracked the window of China's crewed spacecraft Shenzhou-20**, rendering its **return capsule unusable for crew travel**.
The incident has drawn global attention to the escalating threat posed by **Micrometeoroids and Orbital Debris (MMOD)** to human spaceflight.

The development assumes added significance in the context of:

- Rapid proliferation of satellites and mega-constellations
- Anti-satellite (ASAT) weapon tests
- Expansion of crewed missions worldwide, including India's **Gaganyaan** programme

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Relevance

GS III – Science & Technology

- Human spaceflight safety
- Space technology and orbital mechanics

GS II – International Relations

- Governance of global commons
- International space law and cooperation

What is MMOD?

A. Micrometeoroids

- **Origin**:
  - About **80–90%** originate from asteroid belt collisions between Mars and Jupiter
  - Remaining fraction from cometary debris
- **Size**: Ranges from a few micrometres to approximately **2 mm**
- **Mass**: Each particle weighs less than a dried grape
- **Velocity**: Travels at **11–72 km/s**, far exceeding the speed of bullets
- **Nature**:
  - Natural
  - Ubiquitous in outer space
  - Practically **untrackable**

B. Orbital Debris (Space Junk)

- **Definition**: Human-made objects in Earth orbit that no longer serve any functional purpose
- **Sources**:
    - Exploded rocket stages
    - Defunct satellites
    - Accidental in-orbit collisions
    - Deliberate ASAT tests
- **Average velocity**: Around **10 km/s**
- **Risk factor**:
    - Even a **1 cm object** at orbital speed can disable a spacecraft or puncture pressurised modules

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Scale of the Problem: Global Data

Orbital Debris in Low Earth Orbit (LEO: 200–2,000 km)

- ~**34,000 objects** larger than 10 cm (trackable)
- ~**128 million objects** larger than 1 mm
- Hundreds of millions of fragments smaller than 1 mm
- Billions of micro-impacts occur annually on satellites and space stations

Spatial Distribution

- Orbital debris is concentrated in a dense **LEO shell**
- Micrometeoroids are present throughout space, slightly denser near Earth due to gravity

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Why Space Debris Is Extremely Dangerous

A. Kinetic Energy Reality

- Kinetic energy is proportional to the **square of velocity**
- At **10–70 km/s**, even microscopic particles can:
    - Penetrate metal
    - Shatter spacecraft windows
    - Disable avionics
    - Cause sudden cabin depressurisation

B. Directional Risk

- Highest threat occurs on the **forward-facing surface** of a spacecraft

- Relative velocity peaks in the direction of travel

The Kessler Syndrome: A Systemic Threat

Proposed by NASA scientist **Donald Kessler**.

Theory:

- Beyond a critical debris density, collisions trigger a cascading chain reaction
- Each collision generates more debris, increasing future collision probability
- Eventually renders Low Earth Orbit unusable for spaceflight

Risk Amplifiers:

- Mega-constellations
- ASAT tests
- Absence of binding international regulation

How Space Agencies Assess MMOD Risk

A. MMOD Flux Modelling

- MMOD flux estimates the expected number of debris impacts of a given size over a mission duration
- Inputs include:
    - Orbital altitude and inclination
    - Mission duration
    - Spacecraft orientation
- Uses:
    - Tracking catalogues
    - Statistical debris environment models

B. Vulnerability Analysis

- Specialised software calculates:
    - Probability of mission loss
    - Failure of critical components
- If risk exceeds safety thresholds:
    - **Physical shielding becomes mandatory**

How Are Spacecraft Physically Protected?

A. Whipple Shield (Primary Defence)

- Widely used in both robotic and human missions
- **Design**:
    - Outer “bumper”
    - Inner “rear wall”
    - Stand-off gap between them
- **Working Principle**:
    - Incoming debris shatters on the bumper
    - Fragment cloud disperses energy
    - Rear wall absorbs reduced impact
- **Analogy**:
    - Sea waves breaking against tetrapods

B. Operational Avoidance (For Large Debris)

- Objects larger than **10 cm** are actively tracked
- Space agencies maintain collision catalogues
- If collision probability rises:
    - **Debris Avoidance Manoeuvre (DAM)** is executed
    - Small thruster burns adjust spacecraft orbit
- Routinely used for:
    - International Space Station
    - Crewed capsules
    - High-value satellites

How Is India Protecting Gaganyaan Crew?

Mission-Specific Context

- Standalone mission without space station docking
- No external rescue capability
- Short duration: **less than 7 days**
- Low probability of collision with catalogued debris
- Residual risk from small, untrackable MMOD remains significant

Protection Strategy

- Based on international human-rating standards

- Uses:
    - Passive shielding (Whipple shields)
- Validation through:
    - High-velocity impact testing
    - Numerical simulations

Testing Infrastructure

- ISRO utilises specialised facilities
- **DRDO Terminal Ballistics Research Laboratory (TBRL)**:
    - Gas gun facility
    - Fires **7 mm projectiles** at speeds up to **5 km/s**
    - Validates shield survivability under near-orbital conditions

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Global Governance of Space Debris

A. Inter-Agency Space Debris Coordination Committee (IADC)

- Members include:
    - NASA
    - ESA
    - ISRO
    - JAXA
- Role:
    - Develops technical standards
    - Shares best practices for debris mitigation

B. United Nations Framework

- UNCOPUOS adopts space debris mitigation guidelines
- Nature:
    - **Soft law**
    - Voluntary
    - No binding enforcement mechanism

The Structural Gap

- Rapid expansion of:
    - Human spaceflight

  - Commercial satellite constellations
- Weaknesses:
  - No binding global debris-removal obligations
  - No liability for long-term orbital pollution
  - ASAT tests remain legally permissible

The Road Ahead: What Must Be Done

- Enforce **zero-debris-by-design** missions
- Mandatory post-mission disposal
- Development of active debris removal technologies
- Binding international treaties on:
  - ASAT testing
  - Orbital congestion
- Treat Earth's orbit as a **global commons**, not a free-for-all

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Conclusion

Human spaceflight has become as much a **governance challenge as an engineering one**. Without collective international action on space debris, Earth's orbit risks becoming **the most dangerous highway humanity has ever built**, threatening the future of safe and sustainable access to space.

24th December Daily MCQs

Q1. India–New Zealand Free Trade Agreement (FTA)

With reference to the India–New Zealand Free Trade Agreement concluded in 2025, consider the following statements:

1. India agreed to provide market access for New Zealand dairy products under tariff-rate quotas.
2. The agreement includes provisions for temporary movement of Indian professionals under Mode-4.
3. The FTA is expected to double bilateral trade to USD 5 billion within five years.
4. The negotiations were concluded in less than one year.

Which of the statements given above are correct?

A. 2, 3 and 4 only
B. 1, 2 and 3 only
C. 2 and 4 only
D. 1, 3 and 4 only

Answer: A

Explanation:

- Statement 1 ✗ Incorrect: Dairy was a red-line sector; no market access given.
- Statements 2, 3, 4 ✓ Correct: Mode-4 mobility included; trade target USD 5 bn; talks completed in ~9 months.

Q2. Forest (Conservation) Act and Supreme Court Ruling

Consider the following statements regarding the Supreme Court ruling on forest land use:

1. Forest land cannot be used for agriculture without prior approval of the Central Government.
2. District collectors are competent authorities to regularise cultivation on forest land for livelihood purposes.
3. The judgment dilutes the rights recognised under the Forest Rights Act, 2006.

Which of the statements given above is/are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: A

Explanation:

- Statement 1 ✓ Correct: Section 2 approval mandatory.
- Statement 2 ✗ Incorrect: District authorities lack such power.
- Statement 3 ✗ Incorrect: FRA rights remain unaffected.

Q3. India and Global Doping Trends

With reference to India's doping record as per WADA's 2024 report, consider the following:

1. India recorded the highest number of doping violations globally.
2. India's positivity rate was higher than all other reporting countries.
3. China recorded fewer violations despite conducting significantly more tests.

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

Answer: D

Explanation:

- India ranked first in absolute violations.
- Positivity rate (~3.6%) exceeded all others.
- China tested >24,000 samples but had far fewer violations.

Q4. Right to a Healthy Environment

Which of the following have been judicially linked to Article 21 of the Constitution of India?

1. Right to pollution-free air and water
2. Right against adverse impacts of climate change
3. Right to clean environment as an explicit Fundamental Right

Select the correct answer using the code below:

A. 1 and 2 only
B. 1 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: A

Explanation:

- Statements 1 and 2 ✅ Judicially recognised.
- Statement 3 ❌ Not explicitly enumerated as a Fundamental Right.

Q5. Environmental Constitutional Provisions

Consider the following provisions:

1. Article 48A
2. Article 51A(g)
3. Article 21

Which of the above are **directly enforceable in a court of law**?

A. 3 only
B. 1 and 3 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: A

Explanation:

- Article 21 is enforceable.

- Articles 48A and 51A(g) are DPSP and Fundamental Duty respectively.

Q6. Micrometeoroids vs Orbital Debris

Which of the following correctly distinguishes micrometeoroids from orbital debris?

1. Micrometeoroids are natural, while orbital debris is human-made.
2. Micrometeoroids are easier to track than orbital debris.
3. Both can cause catastrophic damage due to extremely high velocity.

Select the correct answer:

A. 1 and 3 only
B. 1 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: A

Explanation:

- Statement 1 ✅ Correct.
- Statement 2 ❌ Micrometeoroids are untrackable.
- Statement 3 ✅ Correct.

Q7. Kessler Syndrome

The Kessler Syndrome refers to:

A. Gradual depletion of atmospheric ozone due to space launches
B. A cascading chain reaction of orbital debris collisions
C. Collapse of satellite communication due to solar flares
D. Failure of space treaties to regulate military satellites

Answer: B

Explanation:

- It describes self-sustaining debris collision cascades in orbit.

Q8. Gaganyaan Mission and Space Debris

Which of the following are used by ISRO to protect Gaganyaan astronauts from space debris?

1. Whipple shielding
2. Debris Avoidance Manoeuvres
3. High-velocity impact testing using gas guns

Select the correct answer:

A. 1 and 3 only
B. 2 and 3 only
C. 1, 2 and 3
D. 1 only

Answer: A

Explanation:

- DAMs require tracking large debris; Gaganyaan mainly relies on passive shielding and testing.

Q9. Space Debris Governance

Which of the following statements is correct?

A. UNCOPUOS guidelines on space debris are legally binding.
B. ASAT tests are prohibited under international space law.
C. IADC develops technical standards but lacks enforcement powers.
D. Liability for long-term orbital pollution is clearly defined globally.

Answer: C

Explanation:

- UNCOPUOS norms are soft law; ASAT tests not banned; liability regime is weak.

Q10. Integrated Governance Perspective

Which of the following best explains why courts play a central role in India's environmental governance?

A. Environmental laws are absent
B. Environmental rights are explicitly listed as Fundamental Rights
C. Executive enforcement is often weak and fragmented
D. India lacks environmental regulatory institutions

Answer: C

Explanation:

- Laws exist, but enforcement gaps push judiciary into regulatory roles.

Mains: Should the right to a clean and healthy environment be explicitly recognised as a Fundamental Right in the Constitution of India? Critically evaluate. 150 Words.