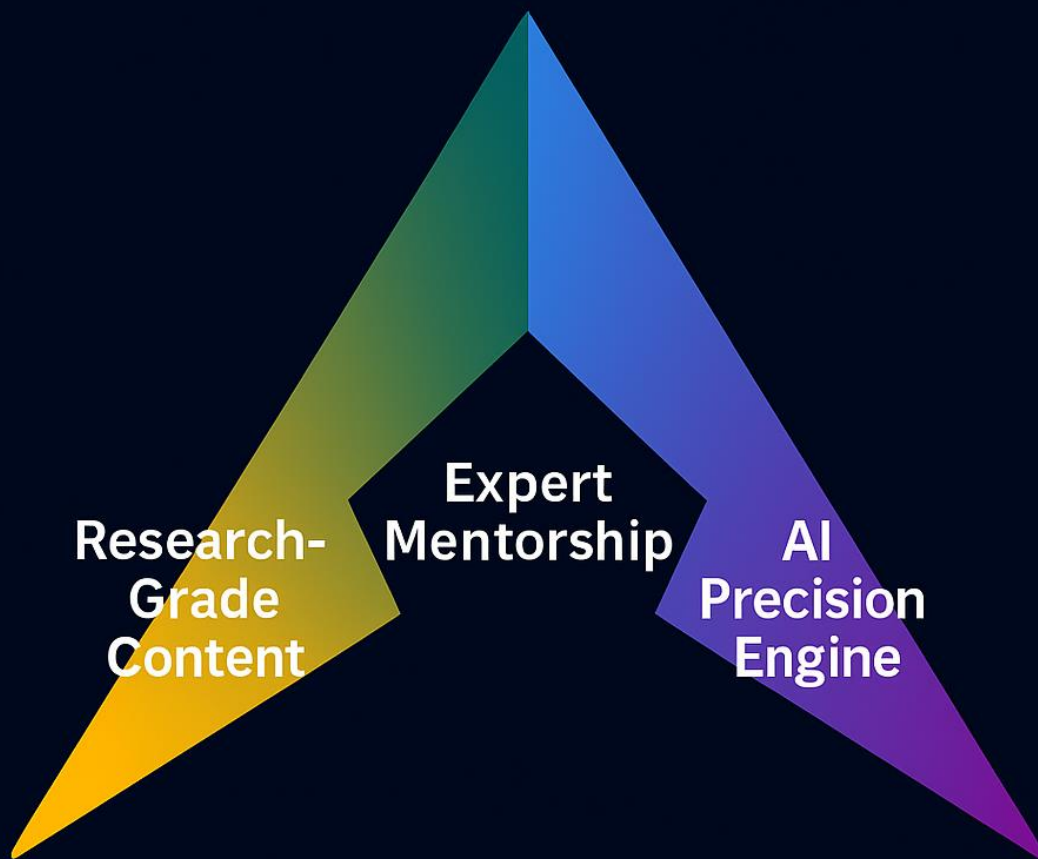


PrepAlpine

The Next-Generation UPSC Institution

Where Research Meets Mentorship & Precision



Preparation Meets Precision

A Next-Generation Learning Institution

Copyright © 2025 PrepAlpine

All Rights Reserved

No part of this publication may be reproduced, distributed, or transmitted in any form or by any means—whether photocopying, recording, or other electronic or mechanical methods—without the prior written permission of the publisher, except in the case of brief quotations embodied in critical reviews and certain non-commercial uses permitted by copyright law.

For permission requests, please write to:

PrepAlpine

Email: PrepAlpine2025@gmail.com

Website: PrepAlpine.com

Disclaimer

The information contained in this book has been prepared solely for educational purposes. While every effort has been made to ensure accuracy, PrepAlpine makes no representations or warranties of any kind and accepts no liability for any errors or omissions. The use of any content is solely at the reader's discretion and risk.

First Edition: November 2025

Printed and published by PrepAlpine

PrepAlpine — Where Research-Grade Content Meets Mentorship, and AI Makes It Personal

PrepAlpine is India's next-generation UPSC institution — built by educationists, retired bureaucrats, IITians, and experienced educators, and powered by a 500+-member technology firm specialising in AI-driven education infrastructure.

We're not another coaching platform — we're a complete preparation ecosystem that unites:

- **Research-Grade Content:**

Every content is crafted and reviewed by civil servants, educators, and scholars, and follows UPSC's Intro–Body–Conclusion format. Content is built from official reports, verified data, and visual pedagogy — flowcharts, frameworks, maps, and comparative tables.

- **Two-Tier Mentorship:**

Interview-qualified mentors and Subject-Matter Experts provide structured strategy, accountability, doubt-solving, and exam-aligned depth — bridging the gap between preparation and performance.

- **AI Precision Engine:**

Developed with our 500+-member AI & EdTech partner firm, the PrepAlpine AI system integrates Retrieval-Augmented Generation (RAG), adaptive MCQ engines, AI-based answer evaluation, and intelligent revision tracking. It continuously identifies each learner's strengths, weaknesses, and learning patterns — ensuring preparation evolves dynamically with every step.

This fusion of research-grade content + expert mentorship + enterprise-grade AI technology has created a credible, scalable, and aspirant-first platform.

Every PrepAlpine module is built not just to inform, but to transform — converting effort into precision and hard work into predictable progress.

We're reimagining UPSC preparation as a research-led, mentor-guided, AI-personalised journey that adapts to every aspirant.

PrepAlpine — From Aspirant to Authority. Lead the State, Not the Struggle.

DAILY CURRENT AFFAIRS DATED 16.11.2025

GS Paper II: Current Affairs

1. Rare-Earth-Free Electric Motors in India's Electric Vehicle Sector

a. Introduction

Electric vehicles across the world have traditionally depended on motors that use rare-earth magnets. These minerals are mined and processed in only a few countries, with China holding overwhelming dominance. As China tightens export rules, Indian manufacturers face both supply risks and rising costs. This has accelerated the push towards electric motors that use fewer rare-earth materials or none at all. The shift improves technological autonomy and strengthens the long-term resilience of India's electric mobility transition.

b. Why Rare Earths Matter in Electric Motors

Permanent Magnet Synchronous Motors (PMSM)

- Most electric vehicles use PMSMs, which rely on powerful magnets made from elements such as neodymium, praseodymium, dysprosium and terbium.
- These magnets deliver high torque and high efficiency while keeping the motor compact.
- India currently produces almost none of these magnets and depends heavily on imports.
- This creates a strategic vulnerability, especially as electric vehicle adoption accelerates.



c. China's Export Restrictions and Their Impact

i. Nature of Restrictions

- In 2024, China imposed new export controls on several heavy rare-earth elements, including holmium.
- These rules created concerns about future supply shortages and unpredictable price movements.

ii. Implications for India

- Indian manufacturers feared delays in motor production and disruptions in EV supply chains.
- The uncertainties encouraged domestic firms to explore secure alternatives that could reduce or remove dependence on imported rare earths.

d. India's Technological Response

i. Optimised Permanent-Magnet Motors

- Some companies, such as Simple Energy, continue to use permanent-magnet motors but employ alternative compounds not covered by China's restrictions.
- These substitutes can be sourced domestically and deliver near-identical performance with only a marginal drop in efficiency.
- This approach preserves the compactness and responsiveness of PMSMs while reducing import dependence.

ii. Synchronous Reluctance Motors (SynRM) Without Magnets

- A second path, led by companies such as Chara Technologies, uses motors that do not require magnets at all.
- Torque is generated through the natural tendency of magnetic fields to align with the path of least resistance inside the motor.
- Advanced control algorithms regulate magnetic flux, heat and speed variations.
- These motors are slightly larger but provide reliable performance and remove rare-earth dependence entirely.
- They are already proven in industrial and agricultural applications, and EV-ready versions are now available.

e. Significance for India

i. Strengthening Supply Chain Security

- Reducing rare-earth dependence protects India from external shocks and geopolitical disruptions.
- It aligns with national goals of indigenisation and technological self-reliance.

ii. Economic and Industrial Advantages

- As magnet-free and optimised motors mature, production costs are likely to decline.
- India can become a competitive supplier of affordable, indigenous motor technologies in global markets.
- These innovations stimulate domestic research, engineering skills and advanced manufacturing capabilities.



f. Challenges

i. Technical and Design Constraints

- Magnet-free motors are generally bulkier, requiring careful integration into EV designs.
- Performance must remain consistent across India's varied climatic and road conditions.

ii. Industrial Scale-Up

- Domestic production facilities must expand to meet future demand.
- Automobile companies require robust testing data to trust new motor architectures for long-term use.

iii. Research and Skill Gaps

- Advanced control algorithms and high-efficiency motor designs need specialised skills.
- Universities and research institutions must strengthen programmes in motor engineering and power electronics.

g. Way Forward

i. Boosting Research and Development

- Targeted incentives and grants can accelerate innovation in magnet-free and optimised motor technologies.
- Support for power electronics, advanced materials and algorithm design is essential.

ii. Building Domestic Mineral and Magnet Capabilities

- Even as India diversifies away from rare earths, improving domestic processing capacity strengthens long-term resilience.
- Strategic stockpiles may be considered for critical minerals.

iii. Scaling Through Public-Private Partnerships

- PPP models can help bring laboratory innovations into commercial production.
- Pilot deployments across varied terrains will test performance and build industry confidence.

iv. Setting Standards and Certification Frameworks

- Clear guidelines for motor performance, safety and efficiency will help automobile companies adopt new technologies without hesitation.
- Standardisation also supports interoperability and manufacturing consistency.

Conclusion

The shift toward rare-earth-free electric motors marks an important technological and strategic transition for India's electric vehicle sector. By reducing reliance on concentrated global mineral supply chains, India strengthens its energy security and advances its broader goal of indigenisation. Although challenges remain—particularly around scalability, testing and infrastructure—the progress made by domestic companies demonstrates strong potential. With coordinated policy support and continued innovation, India can emerge as a global hub for affordable, efficient and independent electric-motor technologies.

GS Paper III: Economics

2. India's Approach to WTO Reforms and Related Trade Issues

a. Introduction

India has emerged as one of the strongest advocates for an inclusive and development-oriented reform of the World Trade Organization. As a leading voice of the Global South, India argues that the multilateral trade system must address the needs of developing and least-developed countries, not only the priorities of advanced economies. With the upcoming Ministerial Conference in Cameroon expected to revive key reform debates, India is preparing to push for a fair, predictable and development-friendly global trading order.

b. Why WTO Reforms Have Become Necessary

i. Weakening of the Multilateral System

- The WTO's dispute settlement system has stalled due to the absence of a functioning appellate body.
- Countries increasingly resort to unilateral tariffs and domestic industrial policies that reduce predictability.

ii. Slow Progress on Key Negotiations

- Talks on agriculture, fisheries and services have moved slowly despite being long-pending mandates.
- Emerging areas—such as e-commerce, environmental rules and supply-chain resilience—require updated and clearer norms.

iii. Need for Restoring Confidence in Multilateralism

- Without credible reform, global trade risks fragmentation into competing regional blocs.

India's Four Pillars of WTO Reform

Development & Consensus First • Protect policy space • Inclusive decision-making	Permanent PSH Solution • Food security • Inflation-proof subsidy rules
Restore Dispute Settlement • Two-tier system • Functional appellate body	Protect S&DT + Global South Role • Flexibilities for developing nations • Resist dilution of S&DT

- Developing countries, in particular, need a strong multilateral framework to safeguard their interests.

c. India's Core Priorities for WTO Reform

i. Commitment to Consensus and Development Orientation

- India maintains that reforms must be inclusive and based on consensus, not pushed by a small group of advanced economies.
- Reforms must protect the policy space required for developing countries to address poverty, employment and structural transformation.

ii. Permanent Solution for Public Stockholding (PSH)

- India's food-security programmes—such as the National Food Security Act and the Public Distribution System—depend on large-scale procurement.
- Under current rules, these programmes risk breaching subsidy limits when international prices fluctuate.
- India seeks a permanent legal solution to ensure uninterrupted operation of its food-security system.

iii. Restoring a Credible Dispute Settlement Mechanism

- India supports a two-tier, rule-based mechanism with a functional appellate body.
- For developing economies, this remains the only reliable safeguard against unilateral measures by larger powers.

iv. Safeguarding Special and Differential Treatment (S&DT)

- S&DT provisions allow developing members flexibility in tariffs, subsidies and policy design.
- India opposes attempts to narrow these provisions, arguing that unequal developmental levels require differentiated responsibilities.

v. Advocacy for the Global South

- India emphasises that reform must reflect diverse development needs.
- Rules framed without adequate representation from developing countries can constrain long-term economic priorities.

d. India-Canada Trade Engagement: Possibility of Resumption

Background and Current Developments

- Negotiations for a free trade agreement were paused in 2023 following diplomatic tensions.
- Recent senior-level interactions have reopened dialogue channels.
- Both sides have expressed interest in reviving talks on trade, investment and strategic collaboration.
- India has clarified that progress depends on improvements in the overall political atmosphere.

e. Reforms Being Considered for Special Economic Zones (SEZs)

i. Issues in the Current SEZ Framework

- Domestic buyers often find imports cheaper than purchasing from SEZs due to duty structures.
- SEZ units face restrictions when selling in the domestic tariff area, limiting their ability to use surplus capacity.
- Procedural delays reduce operational flexibility and dent export competitiveness.

ii. Proposed Reforms

- Greater freedom for domestic sales under rationalised duty structures.
- Reduced compliance burdens and faster clearances.
- Alignment with the upcoming Development of Enterprise and Service Hubs (DESH) framework.
- Overall goal: revive SEZs as engines of export-led growth.

f. Significance of These Developments

i. Strengthening Multilateral Leadership

- India positions itself as a responsible supporter of rules-based global trade.
- It amplifies the concerns of developing nations within the WTO.

ii. Preserving Domestic Policy Flexibility

- India can safeguard food security programmes and industrial policy tools.
- SEZ reforms improve domestic competitiveness and export capacity.

iii. Expanding Strategic Trade Partnerships

- Resuming negotiations with countries like Canada supports long-term integration into global value chains.
- These engagements allow India to shape beneficial trade norms.



g. Way Forward

i. Strengthening Developing-Country Coalitions

- India must coordinate closely with developing and least-developed countries to present united reform proposals.

ii. Restoring Dispute Settlement Mechanisms

- India should continue pressing for a functional appellate body backed by predictable timelines.

iii. Securing a Permanent PSH Solution

- Building consensus through evidence, diplomacy and coalition support will be essential.

iv. Modernising SEZ Policies

- Implementing a coherent incentive framework under the DESH model can enhance exports and industrial competitiveness.

v. Balanced Bilateral Engagement

- Trade talks with partners such as Canada can be pursued once the political environment stabilises.

Conclusion

India's approach to WTO reforms is anchored in the principles of fairness, inclusiveness and development orientation. Its priorities—from restoring dispute settlement to protecting food-security programmes—reflect both domestic needs and the broader concerns of the Global South. By modernising Special Economic Zones and pursuing balanced trade partnerships, India is laying the groundwork for a competitive and resilient external sector. Ultimately, India's strategy aims to

strengthen the multilateral trading system while preserving the policy flexibility required for sustainable development.

GS Paper III: Security

3. Women's Induction into the Territorial Army (Home and Hearth Battalions)

a. Introduction

The decision to induct women soldiers into the Territorial Army's Home and Hearth Infantry Battalions marks a major step in broadening gender roles within India's defence framework. Although the Armed Forces have gradually opened more avenues for women, frontline infantry tasks have largely remained inaccessible. This move therefore represents both symbolic advancement and practical strengthening of India's internal security efforts, particularly in sensitive regions.

b. Understanding the Territorial Army

i. Nature and Structure of the Territorial Army

- The Territorial Army (TA) is a volunteer citizen force established to support the regular Army during emergencies, internal disturbances and natural disasters.
- It functions on a part-time model, allowing civilians to serve periodically while continuing their regular professions.
- TA units are of two types: departmental units linked to organisations such as Railways and ONGC, and non-departmental units that primarily include infantry battalions.



ii. Home and Hearth Battalions

- These battalions were raised mainly in Jammu and Kashmir and parts of the North-East.
- They recruit local youth, giving them intimate knowledge of terrain, language and socio-cultural dynamics.
- Their duties include patrolling, area domination, intelligence gathering, road security and assisting regular Army formations in counter-insurgency operations.
- During natural disasters, their localised presence allows rapid mobilisation and effective relief work.

c. What Has Changed: Induction of Women Soldiers

i. New Recruitment Policy

- For the first time, women will be inducted into selected Home and Hearth Battalions.
- Each chosen battalion will initially enrol a section of about ten women.
- Recruitment for the 2025–26 cycle includes dedicated vacancies for women candidates.

ii. Scale and Phased Implementation

- Each battalion typically has seven hundred and fifty to one thousand soldiers, making the initial intake modest but path-breaking.
- A controlled deployment phase will test training, operational integration and logistical requirements before the programme expands.

d. Why This Decision Matters

i. Breaking Long-Standing Gender Barriers

- Infantry, mechanised infantry and armoured roles in the regular Army are still closed to women.
- Their induction into Home and Hearth Battalions becomes the first structured opportunity to undertake infantry-like duties.
- This marks gradual but genuine progress in redefining gender roles within the defence services.

ii. Enhancing Operational Effectiveness

- Women improve engagement with local women in conflict-affected areas, a crucial aspect of community outreach.
- They add value in search operations, humanitarian tasks and relief work.
- In regions like Jammu and Kashmir, their presence strengthens trust-building and communication with local populations.

iii. Alignment with Global Military Trends

- Countries such as the United States, United Kingdom, Canada and Israel already deploy women in combat or near-combat roles.
- India follows a phased and pragmatic approach, with this induction representing a carefully calibrated step forward.

e. Challenges Ahead

i. Training and Deployment Requirements

- Training standards must remain gender-neutral, ensuring equal physical and tactical preparedness.
- Women soldiers must be equipped to operate in high-risk environments typical of Home and Hearth Battalions.

ii. Infrastructure and Logistics

- Forward and semi-permanent bases require improved sanitation, privacy and accommodation facilities.
- Mixed-gender units need protocols that balance operational readiness with safety and comfort.

iii. Social and Institutional Adjustments

- Units accustomed to all-male environments must adapt to new professional dynamics.
- Leadership must handle integration sensitively to prevent biases and ensure cohesion.

f. Way Forward

i. Strengthening Training Frameworks

- Training programmes should ensure that women receive the same level of physical, tactical and field readiness instruction.
- Additional modules on operating in high-stress, high-risk zones may be required.

ii. Improving Infrastructure

- Accommodation, sanitation and privacy facilities need targeted upgrades to support mixed-gender deployment.
- Forward bases should be redesigned to ensure safety without reducing operational agility.

iii. Phased Expansion and Evaluation

- Continue small-scale induction, review outcomes, and expand based on operational learning.
- Deploy women in roles that maximise their comparative strengths, including community engagement and intelligence support.

iv. Supporting Culture and Leadership

- Gender-sensitisation programmes for all personnel will help build a healthy professional environment.
- Officers require training to manage mixed-gender units effectively and respectfully.

Conclusion

The induction of women into the Territorial Army's Home and Hearth Battalions represents a carefully planned but far-reaching reform in India's defence landscape. It opens a pathway to infantry-related duties, enhances operational effectiveness in sensitive areas and strengthens the Army's engagement with local communities. If supported with robust training, thoughtful infrastructure planning and strong institutional backing, this step can lay the foundation for broader gender inclusion across the Armed Forces in the years ahead.

Reader's Note — About This Current Affairs Compilation

Dear Aspirant,

This document is part of the PrepAlpine Current Affairs Series — designed to bring clarity, structure, and precision to your daily UPSC learning.

While every effort has been made to balance depth with brevity, please keep the following in mind:

1. Orientation & Purpose

This compilation is curated primarily from the UPSC Mains perspective — with emphasis on conceptual clarity, analytical depth, and interlinkages across GS papers.

However, the PrepAlpine team is simultaneously developing a dedicated Prelims-focused Current Affairs Series, designed for:

- factual coverage
- data recall
- Prelims-style MCQs
- objective pattern analysis

This Prelims Edition will be released separately as a standalone publication.

2. Content Length

Some sections may feel shorter or longer depending on topic relevance and news density. To fit your personal preference, you may freely resize or summarize sections using any LLM tool (ChatGPT, Gemini, Claude, etc.) at your convenience.

3. Format Flexibility

The formatting combines:

- paragraphs
- lists
- tables
- visual cues

—all optimised for retention.

If you prefer a specific style (lists → paras, paras → tables, etc.), feel free to convert using any free LLM.

4. Monthly Current Affairs Release

The complete Monthly Current Affairs Module will be released soon, optimized to a compact 100–150 pages — comprehensive yet concise, exam-ready, and revision-efficient.

5. Join the PrepAlpine Discord Community

Be part of India's Smartest UPSC Peer Ecosystem → <https://discord.gg/ycrDpXxv>

What You'll Experience

- **Peer-to-Peer Discussions**
Subject-wise channels for GS papers, Ethics, Economics, Polity, Geography, Environment, and Optional subjects.

- **Focused Study Circles**
Deep-dive groups for Optionals (PSIR, Sociology, Geography, Anthropology, etc.) and critical GS themes.
- **Insight Threads**
Collaborative micro-notes, doubt resolutions, PYQ-linked discussions, and peer-reviewed clarity.
- **Community Sessions**
Weekly “Open Mic” sharing sessions where learners discuss strategies, mistakes, breakthroughs, and lessons from their UPSC journey.
- **An Evolving Learning Culture**
A serious, supportive, and intelligent peer environment — no noise, no clutter.
Learning grows here through interaction, reflection, and structured peer collaboration.

“From Isolation to Interaction — Learn the UPSC Way, the Smart Way.”

6. Suggest Topics for Coverage

If you feel any important theme is missing or under-covered, simply post it in the “Suggestions” channel on our Discord server.

Our content team regularly reviews inputs and includes relevant suggestions in upcoming Monthly Current Affairs Modules.

Beyond daily updates, the PrepAlpine Discord functions as a complete UPSC learning ecosystem — offering free peer mentorship, structured discussions, practice threads, AI-powered micro-learning tools, and a community of serious aspirants working together.

Together, these resources embody the PrepAlpine vision:

Better Content. Smarter Mentorship. Intelligent Preparation.

PrepAlpine