

# TNPSC Group I — Geography

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## A. Quick Revision Notes

### Physical geography of India

Area 3.28 million sq km (7th largest country). Extent: 8°4'N to 37°6'N latitude, 68°7'E to 97°25'E longitude. The Tropic of Cancer (23.5°N) passes through 8 states, roughly bisecting India. Standard Meridian 82.5°E (near Mirzapur) fixes IST. Physiographic divisions: the Himalayas (young fold mountains — Greater/Himadri, Lesser/Himachal, Shiwaliks), the Northern Plains (alluvial), the Peninsular Plateau (oldest, includes the Deccan), the Thar Desert, the Coastal Plains, and the Islands (Andaman & Nicobar volcanic — Barren Island is the only active volcano; Lakshadweep coral). K2 is the highest peak in India.

### Climate & monsoon

India has a tropical monsoon climate. The South-West Monsoon (June–September) delivers about 75% of annual rainfall through two branches — Arabian Sea and Bay of Bengal; Mawsynram/Cherrapunji (Meghalaya) is the wettest. The retreating or North-East Monsoon (October–December) brings rain to Tamil Nadu and the Coromandel coast, so TN receives most of its rain in this season. Four seasons: winter (Dec–Feb), summer (Mar–May, with hot 'loo' winds), south-west monsoon, and retreating monsoon. El Nino tends to weaken the monsoon; Western Disturbances bring winter rain to north-west India.

### Rivers & drainage

Himalayan rivers are perennial (snow-fed); Peninsular rivers are seasonal (rain-fed). Himalayan: Indus (tributaries Jhelum, Chenab, Ravi, Beas, Sutlej — Indus Waters Treaty 1960), Ganga (longest in India, from Gangotri), Brahmaputra (Tsangpo). East-flowing Peninsular rivers reach the Bay of Bengal: Godavari ('Dakshina Ganga', longest peninsular river), Krishna, Kaveri/Cauvery ('Ganga of the South', lifeline of Tamil Nadu), Mahanadi. West-flowing Narmada and Tapi run through rift valleys into the Arabian Sea and form estuaries. Major TN rivers: Cauvery, Vaigai, Thamirabarani, Palar.

### Soils & agriculture

Major soil types: Alluvial (most fertile, northern plains and deltas — wheat, rice), Black/Regur (Deccan lava region, moisture-retentive 'cotton soil'), Red (iron-rich, peninsular), Laterite (heavy-rain areas — tea, coffee, cashew), Arid/Desert, and Mountain/Forest soils. The Green Revolution (1960s, associated with M.S. Swaminathan) raised wheat and rice output using high-yielding seeds, chiefly in Punjab, Haryana and western UP. Cropping seasons: Kharif (monsoon-sown — rice, cotton, maize), Rabi (winter — wheat, gram, mustard) and Zaid. Tamil Nadu grows rice, sugarcane, groundnut and cotton.

### Natural resources & minerals

The Chota Nagpur Plateau (Jharkhand) is India's mineral storehouse. Coal is chiefly Gondwana coal from the Damodar valley (Jharia, Raniganj). Iron ore is mined in Odisha, Chhattisgarh, Jharkhand and Karnataka (Kudremukh). Other minerals: bauxite (for aluminium), manganese, and mica (India a leading producer, in Jharkhand/Andhra). Petroleum comes from Mumbai High, Assam (Digboi — oldest refinery) and Gujarat. Energy is classified as conventional (coal, oil, hydro) and non-conventional (solar, wind). Tamil Nadu has lignite (Neyveli), and nuclear plants at Kalpakkam and Kudankulam.

### Industries

Iron and steel: TISCO at Jamshedpur (1907, first modern plant) and SAIL plants (Bhilai, Bokaro, Rourkela, Durgapur). Cotton textiles centre on Mumbai, Ahmedabad and Coimbatore ('Manchester of South India'). Information technology hubs are Bengaluru ('Silicon Valley of India'), Chennai and Hyderabad. Chennai is the 'Detroit of India' for automobiles. Public sector units include BHEL (Tiruchirappalli) and the Integral Coach Factory (Chennai). Tamil Nadu leads in leather (Vellore, Ranipet) and knitwear (Tiruppur). Sugar is concentrated in Uttar Pradesh and Maharashtra. Small industry is supported through the MSME sector.

### Transport & communication

Roads form India's largest transport network; National Highways are managed by the NHAI. The Golden Quadrilateral links Delhi, Mumbai, Chennai and Kolkata; NH-44 (Srinagar to Kanyakumari) is the longest highway. Indian Railways, introduced 1853 (Bombay–Thane), is among the largest networks in the world; Chennai is the Southern Railway headquarters. India has major ports on both coasts — Mumbai (with JNPT, largest container port), Chennai, Thoothukudi/Tuticorin and Ennore (TN). Airports are run by the Airports Authority of India; inland waterways by the IWAI.

### Population & census

India is the world's second most populous country; the 2011 Census (the last completed) recorded about 1.21 billion people. The census has been decennial since 1881, conducted by the Registrar General of India. 2011 figures: density 382 per sq km, sex ratio 943 females per 1000 males, literacy 74%. Uttar Pradesh is the most populous state; Kerala has the highest literacy and sex ratio (1084). Tamil Nadu, about 72 million, is highly urbanised with literacy near 80% and a favourable sex ratio (996). India enjoys a 'demographic dividend' of a young population.

### Geography of Tamil Nadu

Tamil Nadu is the 11th largest state; capital Chennai. It is bounded by Kerala (west), Karnataka and Andhra Pradesh (north), the Bay of Bengal (east) and the Indian Ocean (south). The Eastern and Western Ghats meet at the Nilgiris, whose Doddabetta (2637 m) is the highest peak. Main rivers: Cauvery, Vaigai, Thamirabarani and Palar. The east-facing Coromandel coast gets most rain from the North-East monsoon. Notable areas: Point Calimere and the Gulf of Mannar biosphere. Hill stations include Ooty and Kodaikanal; the state has 38 districts.

### Environment & ecology

An ecosystem has biotic and abiotic components linked by food chains and webs across trophic levels (the 10% energy transfer rule). India's biodiversity hotspots are the Western Ghats, the Eastern Himalaya, Indo-Burma and Sundaland (Nicobar). Conservation is in-situ (national parks, sanctuaries, biosphere reserves; Project Tiger 1973) and ex-situ (zoos, seed banks). The Nilgiri Biosphere Reserve was India's first (1986); the Gulf of Mannar is another in TN. The Environment (Protection) Act 1986 followed the 1984 Bhopal disaster. Ramsar sites protect wetlands.

### Disaster management

The Disaster Management Act 2005 created the National Disaster Management Authority (NDMA), chaired by the Prime Minister, and the National Disaster Response Force (NDRF) for response; the NIDM handles training. Natural disasters include earthquakes (India's seismic zones II–V, the Himalaya being high-risk zone V), floods, cyclones (frequent on the Bay of Bengal/TN east coast; the 2004 Indian Ocean tsunami struck the TN coast), droughts and landslides. The disaster cycle covers mitigation, preparedness, response and recovery. India follows the Sendai Framework for disaster risk reduction.

## B. Practice MCQs (25)

### 1. The Deccan Traps are significant geological features because they:

- (A) Are underwater volcanic ridges in the Bay of Bengal
- (B) Form the source of the Kaveri and Krishna rivers
- (C) Represent massive flood basalt formations caused by volcanic eruptions around 65 million years ago
- (D) Are the oldest mountain ranges in India

### 2. The Indian Ocean Dipole (IOD) affects India's monsoon rainfall because:

- (A) A positive IOD (warmer western Indian Ocean) typically enhances Indian summer monsoon rainfall
- (B) It determines the strength of the Himalayas as a barrier to cold winds
- (C) It controls the timing of cyclones in the Arabian Sea only
- (D) It is unrelated to monsoon and only affects winter temperatures

### 3. The Strait of Malacca is strategically important to India because:

- (A) It forms India's maritime boundary with Pakistan
- (B) It is controlled by India as part of the Andaman Sea defence zone
- (C) It connects the Red Sea and Mediterranean Sea
- (D) It is the narrow passage through which over 80% of India's imported oil tankers pass

**4. Which of the following is correctly matched — river and its origin?**

- (A) Kaveri — Brahmagiri Hills, Maharashtra
- (B) Indus — Mansarovar Lake area, Tibet
- (C) Brahmaputra — Gangotri glacier, Uttarakhand
- (D) Ganga — Yamunotri glacier, Uttarakhand

**5. The 'Ring of Fire' in the Pacific Ocean is associated with:**

- (A) High concentration of oil and gas reserves
- (B) The Pacific Ocean's warm surface current that drives El Niño
- (C) A coral reef system stretching across the Pacific
- (D) A zone of intense seismic and volcanic activity around the Pacific Ocean margins

**6. Which river forms the boundary between Maharashtra and Karnataka for a significant stretch?**

- (A) Krishna
- (B) Godavari
- (C) Tungabhadra
- (D) Bhima

**7. The Mannar Basin and Krishna-Godavari Basin are significant to India because they:**

- (A) Are major coal reserves supporting thermal power plants
- (B) Are offshore sedimentary basins with significant natural gas discoveries
- (C) Supply freshwater through underground aquifers to coastal Tamil Nadu
- (D) Host India's largest offshore wind energy farms

**8. The Western Ghats run parallel to India's west coast for approximately:**

- (A) 2,500 km
- (B) 1,600 km
- (C) 500 km
- (D) 1,000 km

**9. The Thar Desert in Rajasthan is arid primarily because:**

- (A) It lies in the path of the Arabian Sea monsoon branch but the Aravalli Mountains run parallel to the monsoon, providing no orographic barrier
- (B) High altitude prevents cloud formation over the region
- (C) It lies in the rain shadow of the Western Ghats
- (D) It is too far inland for any monsoon moisture to reach

**10. The Palk Strait and Palk Bay separate:**

- (A) India and Bangladesh
- (B) India (Tamil Nadu) and Sri Lanka
- (C) India and Maldives
- (D) Andaman Islands and Nicobar Islands

**11. Tamil Nadu's Nilgiri Hills are part of which broader mountain complex?**

- (A) The junction of Western and Eastern Ghats — the Nilgiri block
- (B) A separate independent mountain chain unconnected to either Ghat
- (C) The Eastern Ghats
- (D) The Vindhya Range

**12. Which of the following countries does NOT share a land border with India?**

- (A) Myanmar
- (B) Bhutan
- (C) Maldives
- (D) Nepal

**13. The phenomenon of 'orographic rainfall' occurs when:**

- (A) Monsoon winds enter India from the north and cool as they descend
- (B) Low pressure systems cause rainfall inland
- (C) Sea breezes penetrate 500 km inland during summer
- (D) Moisture-laden winds are forced up a mountain slope, cool adiabatically, and release precipitation

**14. The Sundarbans mangrove forest, shared between India and Bangladesh, is ecologically important because:**

- (A) It is where the Ganga river originates
- (B) It is the world's largest mangrove delta and critical tiger habitat (Bengal Tiger)
- (C) It is the only habitat for the one-horned rhinoceros
- (D) It is a UNESCO World Heritage Site for its ancient temples

**15. India's exclusive economic zone (EEZ) extends how far from the coastline?**

- (A) 24 nautical miles
- (B) 12 nautical miles
- (C) 200 nautical miles
- (D) 350 nautical miles

**16. The Kaveri river dispute between Karnataka and Tamil Nadu relates primarily to:**

- (A) Pollution of the river by industries in Karnataka
- (B) Allocation of river water for irrigation and drinking needs between the two states
- (C) Location of hydroelectric dams on the river
- (D) Ownership of the source of the river

**17. The Gulf of Mannar Marine National Park (Tamil Nadu) is important because:**

- (A) It is one of the world's richest coastal marine ecosystems with coral reefs, seagrasses, and dugongs
- (B) It is the starting point of the Adam's Bridge road project
- (C) It houses India's largest naval base
- (D) It is India's first offshore oil drilling zone

**18. The Tropic of Cancer passes through which Tamil Nadu district?**

- (A) Madurai
- (B) Chennai
- (C) Dharmapuri
- (D) Tamil Nadu lies entirely south of the Tropic of Cancer

**19. What distinguishes the Eastern Ghats from the Western Ghats geographically?**

- (A) Eastern Ghats are taller and continuous; Western Ghats are lower and discontinuous
- (B) Eastern Ghats are discontinuous and lower; Western Ghats are taller, continuous, and receive heavy orographic rainfall
- (C) Eastern Ghats receive more rainfall due to Bay of Bengal cyclones
- (D) Both are equally tall with the same average height

**20. India's longest national highway (by distance) is:**

- (A) NH-16 from Hazira to Paradip
- (B) NH-44 (formerly NH-7) from Srinagar to Kanyakumari
- (C) NH-48 from Delhi to Chennai
- (D) NH-27 from Porbandar to Silchar

**21. Which of the following mountain ranges forms the western boundary of the Deccan Plateau?**

- (A) Aravalli Range
- (B) Eastern Ghats
- (C) Satpura Range
- (D) Western Ghats

**22. The retreating monsoon season in India is primarily associated with which of the following regions experiencing significant rainfall?**

- (A) North-Western India
- (B) Coromandel Coast
- (C) Eastern Himalayas
- (D) Thar Desert

**23. Which of the following rivers is known as the 'Ganga of the South' due to its length, sanctity, and importance to the region?**

- (A) Mahanadi
- (B) Cauvery
- (C) Krishna
- (D) Godavari

**24. Black soils are primarily formed from which type of rocks and are best suited for the cultivation of which crop?**

- (A) Lateritic rocks; Tea
- (B) Basaltic rocks; Cotton
- (C) Alluvial deposits; Rice
- (D) Granitic rocks; Wheat

**25. India is one of the world's leading producers and exporters of which of the following minerals?**

- (A) Mica
- (B) Copper
- (C) Bauxite
- (D) Gold

### C. Answer Key & Explanations

1. **(C)** The Deccan Traps cover approximately 500,000 km<sup>2</sup> of peninsular India, formed by massive volcanic eruptions 65-66 million years ago (Cretaceous-Paleogene boundary).
2. **(A)** During positive IOD events, the western Indian Ocean is warmer than the east; this enhances evaporation, moisture transport, and consequently Indian monsoon rainfall.
3. **(D)** The Strait of Malacca (between Malaysia and Indonesia) is one of the world's most critical sea lanes — over 80,000 vessels annually, carrying 25-30% of global trade including India's energy imports.
4. **(B)** The Indus rises near Mansarovar Lake in the Tibetan Plateau (called Sengge Zangbo), flowing through Ladakh before entering Pakistan.
5. **(D)** The Ring of Fire is a 40,000 km horseshoe-shaped zone along Pacific tectonic plate boundaries where approximately 90% of the world's earthquakes and 75% of its volcanoes occur.
6. **(A)** The Krishna river and its tributaries (including the Bhima) form parts of the Maharashtra-Karnataka border; the river originates in Maharashtra (Mahabaleshwar).
7. **(B)** The Mannar Basin (Gulf of Mannar, off Tamil Nadu/Sri Lanka) and KG Basin (Bay of Bengal, off Andhra Pradesh) contain significant hydrocarbon reserves.
8. **(B)** The Western Ghats extend approximately 1,600 km from the Tapti River (Gujarat) in the north to Kanyakumari (Tamil Nadu) in the south, passing through Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.
9. **(A)** The Aravallis run NE-SW — parallel to the Arabian Sea branch of the monsoon, not perpendicular to it. Without an orographic barrier, the moisture-laden winds pass over without releasing rainfall.
10. **(B)** The Palk Strait (named after Governor Robert Palk) is the narrow sea channel between Tamil Nadu's Ramanathapuram district and Sri Lanka's Northern Province.
11. **(A)** The Nilgiris form the junction where the Western Ghats and Eastern Ghats meet — with peaks like Doddabetta (highest in Tamil Nadu, 2,637 m) and Ooty (Udhagamandalam) as hill station.
12. **(C)** Maldives is an island nation in the Indian Ocean with no land border with India; India shares land borders with Pakistan, China, Nepal, Bhutan, Bangladesh, and Myanmar.
13. **(D)** Orographic (relief) rainfall: when moist air hits a mountain range, it rises, cools, condensation occurs, and rain falls on the windward slope; the leeward slope receives little rain (rain shadow).
14. **(B)** The Sundarbans spans ~10,000 km<sup>2</sup> across West Bengal and Bangladesh — the world's largest contiguous mangrove ecosystem, home to Royal Bengal Tigers adapted to swimming.
15. **(C)** Under UNCLOS, the EEZ extends 200 nautical miles (about 370 km) from the baselines. Within the EEZ, a coastal state has sovereign rights for exploration and use of marine resources.
16. **(B)** The Kaveri Water Disputes Tribunal (1990) and the Supreme Court have repeatedly ruled on the sharing of Kaveri waters between Karnataka, Tamil Nadu, Kerala, and Puducherry.
17. **(A)** The Gulf of Mannar Marine National Park (1986) is one of the world's richest coastal biodiversity zones — 3,600+ species, coral reefs, dugongs (sea cows), sea turtles, dolphins, and over 400 fish species.

- 18. (D)** The Tropic of Cancer (23.5°N) passes through Gujarat, Rajasthan, MP, Chhattisgarh, Jharkhand, West Bengal, Tripura, and Mizoram. Tamil Nadu's northernmost point is around 13°N, well south of the Tropic.
- 19. (B)** Western Ghats: continuous, average height 1,000–1,500 m, steep western slope receiving 250–400 cm rainfall. Eastern Ghats: discontinuous ranges (cut by rivers), lower average height, drier.
- 20. (B)** NH-44 (the renumbered NH-7) runs approximately 3,745 km from Srinagar (J&K) to Kanyakumari (Tamil Nadu) — the longest national highway in India.
- 21. (D)** The Western Ghats form the western edge of the Deccan Plateau and run parallel to the Arabian Sea coast.
- 22. (B)** The Coromandel Coast, particularly Tamil Nadu, receives significant rainfall during the retreating monsoon season due to low-pressure systems forming over the Bay of Bengal.
- 23. (D)** The Godavari is the longest peninsular river and is often referred to as the 'Dakshin Ganga' or 'Ganga of the South'.
- 24. (B)** Black soils, also known as Regur soils, are derived from basaltic rocks and are highly suitable for cotton cultivation due to their moisture-retentive capacity.
- 25. (A)** India is one of the world's leading producers and exporters of mica.