

TNPSC Group II / IIA — 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. India's geomorphology includes four major physical divisions. Which of the following correctly lists all four?

- (A) Himalayan Mountains, Indo-Gangetic Plain, Peninsular Plateau, Coastal Plains and Islands
- (B) Himalayan Mountains, Thar Desert, Deccan Plateau, Eastern Ghats
- (C) Northern Mountains, Ganga Plain, Western Ghats, Southern Plateau
- (D) Shivalik Range, Terai, Deccan, Coromandel Coast

2. The Godavari river is often called the 'Ganga of the South'. It originates from:

- (A) Western Ghats near Mahabaleshwar, Maharashtra
- (B) Nashik, Maharashtra (Trimbak hills near Brahmagiri)
- (C) Chhattisgarh plateau
- (D) Deccan Trap near Pune

3. The South-West Monsoon in India is primarily caused by:

- (A) Westerly winds from the Atlantic Ocean
- (B) Low pressure over the Thar Desert and heating of the Indian landmass drawing in moisture-laden winds from the Indian Ocean
- (C) Cold Siberian winds from the north
- (D) Cyclonic activity in the Bay of Bengal

- 4. The Eastern Ghats are characterised by which feature that distinguishes them from the Western Ghats?**
- (A) They are higher and more continuous than the Western Ghats
 - (B) They are discontinuous, lower, and cut through by rivers draining into the Bay of Bengal
 - (C) They receive higher rainfall than the Western Ghats
 - (D) They form the boundary between two countries
- 5. Which of the following is correctly matched — TN District and its significance?**
- (A) Tirunelveli — Steel production
 - (B) Cuddalore — Textile mills
 - (C) Sivakasi — Fireworks, matches, and printing industry
 - (D) Erode — Software parks
- 6. The Konkan coast forms the western coastal plain between:**
- (A) Gujarat and Goa
 - (B) Goa and Kerala
 - (C) Maharashtra (north of Goa) and Goa
 - (D) Gujarat and Kerala (entire west coast)
- 7. The Nilgiri Biosphere Reserve — India's first biosphere reserve — was established in:**
- (A) 1975
 - (B) 1986
 - (C) 1992
 - (D) 2000
- 8. The Tungabhadra river, a major tributary of the Krishna, flows through which two states?**
- (A) Maharashtra and Andhra Pradesh
 - (B) Karnataka and Andhra Pradesh/Telangana
 - (C) Tamil Nadu and Karnataka
 - (D) Goa and Karnataka
- 9. 'Laterite soil' found in Tamil Nadu is characterised by:**
- (A) High fertility, rich in calcium and phosphorus
 - (B) Reddish colour, formed by leaching in high rainfall areas, low in nutrients, acidic
 - (C) Black colour with high moisture retention
 - (D) Sandy texture, found in coastal areas
- 10. The Indian Ocean Dipole (IOD) affects rainfall in India. A positive IOD event means:**
- (A) Western Indian Ocean is cooler than eastern, reducing Indian rainfall
 - (B) Western Indian Ocean is warmer than eastern, enhancing Indian monsoon rainfall
 - (C) Equal temperature across the Indian Ocean, causing neutral monsoon
 - (D) Arabian Sea cyclones increase significantly
- 11. The Sundarbans mangrove forest, the world's largest, is shared between India and:**
- (A) Myanmar
 - (B) Bangladesh
 - (C) Sri Lanka
 - (D) Maldives
- 12. The Tropic of Cancer passes through how many Indian states?**
- (A) 6
 - (B) 8
 - (C) 9
 - (D) 10
- 13. Which of the following cities of Tamil Nadu is known as the 'Manchester of South India' for its textile industry?**
- (A) Chennai
 - (B) Tirunelveli
 - (C) Coimbatore
 - (D) Salem

14. The Himalayan river system differs from the Peninsular river system mainly because:

- (A) Himalayan rivers are shorter; Peninsular rivers are longer
- (B) Himalayan rivers are perennial (fed by snow/glaciers and monsoon); Peninsular rivers are mostly seasonal (rain-fed)
- (C) Himalayan rivers flow westward; Peninsular rivers flow eastward
- (D) Himalayan rivers have narrow valleys; Peninsular rivers have gorges

15. Which of the following is the correct classification of Coimbatore's climate?

- (A) Tropical wet (Am) — heavy monsoon rainfall
- (B) Tropical wet and dry (Aw) — rainy and dry seasons
- (C) Semi-arid (BSh) — moderate temperatures, low rainfall in rain shadow
- (D) Humid subtropical (Cfa) — year-round rainfall

16. The Indira Gandhi (Rajasthan) Canal, one of India's longest canals, carries water from which river?

- (A) Yamuna
- (B) Beas (via Harike Barrage, combining Sutlej and Beas)
- (C) Chenab
- (D) Indus

17. The term 'Kal Baisakhi' refers to:

- (A) Cold waves in Rajasthan in winter
- (B) Pre-monsoon thunderstorms in eastern India (Bengal, Assam, Jharkhand)
- (C) Cyclonic storms hitting the Coromandel Coast
- (D) Dust storms in the Gangetic plain

18. Which of the following dam-river combinations in Tamil Nadu is CORRECT?

- (A) Bhavani Sagar Dam — Cauvery river
- (B) Papanasam Dam — Tamiraparani river
- (C) Vaigai Dam — Bhavani river
- (D) Krishnagiri Dam — Palar river

19. What are 'mangroves' and in which coastal areas of Tamil Nadu are they found?

- (A) Freshwater marshes found in the Nilgiri hills
- (B) Salt-tolerant coastal forests found in tidal zones; in TN found in Pichavaram and Muthupet
- (C) Deciduous forests along river banks in the Deccan plateau
- (D) Coral reef ecosystems in Rameswaram

20. India's 'Exclusive Economic Zone' (EEZ) extends up to how many nautical miles from its coast?

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

21. 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

22. 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

23. 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

24. 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

25. 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

C. Answer Key & Explanations

1. **(A)** India's physical geography is divided into four major regions: (1) The Himalayan Mountains, (2) the Indo-Gangetic Plains, (3) the Peninsular Plateau (Deccan), and (4) the Coastal Plains and Islands.
2. **(B)** The Godavari originates at Trimbakeshwar near Nashik, Maharashtra, from the Brahmagiri hill in the Western Ghats, and flows eastward across Maharashtra, Telangana, and Andhra Pradesh to the Bay of Bengal.
3. **(B)** The South-West Monsoon (June–September) is driven by differential heating: the Indian landmass heats up intensely in summer, creating a strong low-pressure system that draws moisture-laden winds from the Indian Ocean.
4. **(B)** The Eastern Ghats are discontinuous ranges of eroded hills, lower in elevation, cut through by major east-flowing rivers (Mahanadi, Godavari, Krishna, Cauvery) that drain into the Bay of Bengal.
5. **(C)** Sivakasi (Virudhunagar district) is famous as the hub of India's fireworks, safety matches, and printing industries, earning it the nickname 'Little Japan'. It accounts for over 90% of India's fireworks production.
6. **(C)** The Konkan coast stretches roughly from Daman/Gujarat border in the north to Goa in the south, along Maharashtra's coastline. South of Goa is the Canara coast; further south is the Malabar coast (Kerala).
7. **(B)** The Nilgiri Biosphere Reserve was established in 1986 as India's first biosphere reserve under the UNESCO Man and Biosphere Programme, covering parts of Tamil Nadu, Kerala, and Karnataka.
8. **(B)** The Tungabhadra river (formed by the confluence of Tunga and Bhadra rivers in Karnataka) flows through Karnataka and then forms the boundary between Karnataka and Andhra Pradesh/Telangana before joining the Krishna.
9. **(B)** Laterite soils form in areas of high temperature and heavy rainfall through intense leaching, which removes silica, calcium, and other minerals, leaving iron and aluminium oxides — giving the soil its red/brick colour.
10. **(B)** A positive IOD occurs when the western Indian Ocean is warmer than normal relative to the eastern Indian Ocean; this drives more moisture toward India, typically enhancing SW monsoon rainfall.
11. **(B)** The Sundarbans mangrove delta, formed at the confluence of the Ganga, Brahmaputra, and Meghna rivers, is shared between India (West Bengal) and Bangladesh, covering about 10,000 sq km.
12. **(B)** The Tropic of Cancer (23.5°N) passes through 8 Indian states: Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura, and Mizoram.
13. **(C)** Coimbatore is called the 'Manchester of South India' due to its massive textile and cotton milling industry, which has been central to the city's economy since the 19th century.
14. **(B)** Himalayan rivers like the Ganga and Brahmaputra are perennial — fed by Himalayan glaciers and snowmelt in summer even when monsoon rains are low. Peninsular rivers depend almost entirely on rainfall and can dry up in summer.
15. **(C)** Coimbatore lies in the rain shadow of the Western Ghats (Nilgiri/Anamalai hills) and receives significantly less rainfall, giving it a semi-arid to dry savanna climate with moderate temperatures.
16. **(B)** The Indira Gandhi Canal is fed by the Harike Barrage on the Sutlej River, which collects waters of both the Beas and Sutlej rivers, and carries water to the Thar Desert regions of Rajasthan.
17. **(B)** Kal Baisakhi ('Calamity of Baisakhi') are violent pre-monsoon thunderstorms and squalls occurring mainly in West Bengal, Assam, and Jharkhand during April–May.
18. **(B)** Papanasam Dam (Servalar Dam) is built across the Tamiraparani river in Tirunelveli district, Tamil Nadu, and is a major irrigation and power source for the region.
19. **(B)** Mangroves are halophytic (salt-tolerant) trees and shrubs that grow in intertidal coastal zones. In Tamil Nadu, the major mangrove areas are Pichavaram (Cuddalore), Muthupet (Tiruvarur), and parts of the Cauvery delta.
20. **(C)** Under UNCLOS, a coastal nation's Exclusive Economic Zone extends 200 nautical miles from the coast, within which the country has sovereign rights over natural resources.
21. **(C)** The Deccan Traps cover approximately 500,000 km² of peninsular India, formed by massive volcanic eruptions 65-66 million years ago (Cretaceous-Paleogene boundary).

- 22. (A)** During positive IOD events, the western Indian Ocean is warmer than the east; this enhances evaporation, moisture transport, and consequently Indian monsoon rainfall.
- 23. (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.
- 24. (B)** The Indus rises near Mansarovar Lake in the Tibetan Plateau (called Sengge Zangbo), flowing through Ladakh before entering Pakistan.
- 25. (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.