

1st
Edition

Principles of
INDIAN
GE**GRAPHY**

For UPSC CSE & State PCS

From the Founder's Desk

Dear Aspirants,

We would like to humbly thank you for the great response we had from our first book, 'Fundamentals of Geography'. Within 10 days of launch, we were ranked #2 on the best sellers list for Amazon and Flipkart in the UPSC segment.

Taking inspiration from the overwhelming positive response of our first book, we are taking another leap towards our mission to democratize quality education for everyone. Study IQ Publications is delighted to present you with the first edition of our second book 'Principles of Indian Geography'.

This book was created keeping in mind the concerns and challenges that students face during their Civil services preparation. Students are frequently confused about what to study, how much to study, the depth of knowledge required for any topic, and the type of questions asked by the commission. Above all, the absence of consolidated study material and the information silo from multiple sources hinder our student's preparations. This is more evident for the subject of India geography where the sources are multiple, bulky and with bad presentation, making it difficult for the students to understand and comprehend.

This book is an honest attempt to tackle these problems and improve students' knowledge base, saving their precious time during their preparation and eliminating many academic misunderstandings that they encounter.

Special Features of This Book

This book aims to make your preparation focused and relevant based on UPSC's current trend and pattern, revision-friendly, and up-to-date.

- The requirements of the UPSC Civil Services Examination are the exclusive focus of this book.
- We have taken great care to ensure that the materials are written in a clear and easy-to-understand, so that students may learn and recall the concepts to their advantage.
- Wherever necessary, we've incorporated relevant examples, maps, and graphics to help students grasp the fundamental concepts and draw the relevant maps in their Mains examination.
- We have incorporated the relevant previous year's questions at the end of each chapter so that the students can test their knowledge while understanding the trend of the question.
- We have extensively used tables, so that our students can revise the facts easily during their second revision and not spend time reading the whole chapter again.

With all sincerity and humility, the Study IQ team wishes you the best in your preparation, and we are hopeful that this book will help you in your journey.

Happy Learning!!

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SAMPLE PAGES

Introduction to Indian Physical Geography

India's Geography encompasses one of the world's most diverse land layouts. India is the country that occupies most of the Indian subcontinent in Southern Asia. These diverse features make India one of the best topographic regions. In this chapter we are going to discuss the physical features of the Indian Subcontinent which includes its geographical extent, the different frontiers and the shared boundaries of our nation. We will also discuss the surrounding oceans, political divisions and the geological structure which comprises this huge sub continent.

India-A geographical Unit

The land of the ancient civilizations, **India** is a vast country with cultural and physical diversity, lying entirely in the Northern Hemisphere in the Continent of Asia. The word India has its origin in Greek Mythology which referred to the land of "**Indoi**" or people dwelling near the river **Indus**. India has been regarded by many names like- **Aryavarta** (The land of the Aryan race), **Bharat**, and **Hindustan** (the Land beyond the river Sindhu).

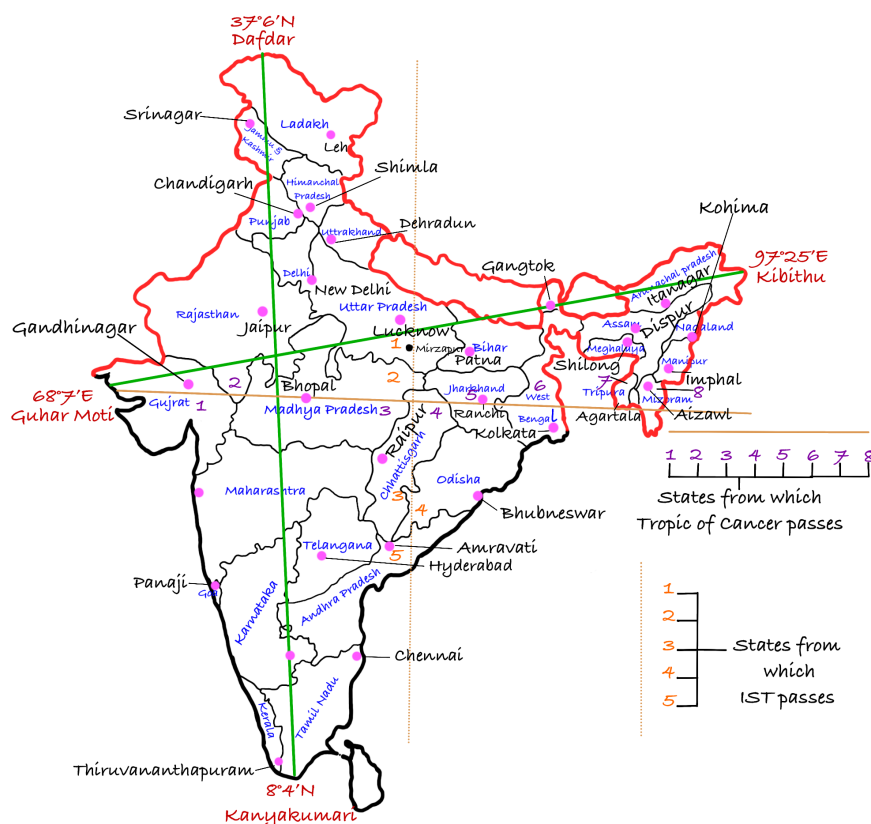
India forms part of South Asia; it is the seventh-largest country in the world in size. India has a vast geographical extent, extending from the snowy ranges of the Himalayas ranges in the north to the shores of the Indian Ocean in the south and the Arabian Sea in the south-west to the Bay of Bengal in the south-east. It also encompasses a diverse landmass that varies from permanently ice-covered lofty **Himalayas** to Great **Indo-Gangetic Plains**. It spans from vegetation devoid **Thar** deserts in the west to vegetation abundant hilly north-east. The land mass is as old as the oldest land of **Gondwana** in the Indian **peninsula** and relatively new like the coastal plains in both eastern and western India.

To the southeast and southwest of the mainland lie the islands of **Andaman and Nicobar Island** in the Bay of Bengal and **Lakshadweep Islands** in the Arabian Sea respectively.

The mainland extends between latitudes **8°4'N** and **37°6'N** and longitudes **68°7'E** and **97°25'E**. Both latitudinal and longitudinal extent is about thirty degrees. India extends

from **Indira Ridge** in Kashmir to **Kanyakumari** in Tamil Nadu with 3214 kilometers. The west-east extent of India spans from **Rann of Kutch** in Gujarat in the west to **Kibithu** (the easternmost town) in Arunachal Pradesh in the east with a distance of 2933 kilometers. The Indian landmass has an area of **3.28 million square kilometers**, which is around **2.4 percent** of the total geographical area of the world.

With 30° longitudinal differences between Saurashtra in the west and Arunachal Pradesh in the east, the local time difference is **120 minutes or 2 hours**. Thus, Arunachal sees the sun rising 2 hours earlier than Saurashtra in the west. The standard meridian in India



India's Geographical Extent

The Sutlej River System

River Name	Sutlej
Origin	Mansarovar-Rakas Lake near Darma Pass in Tibet
Length	1450 Km (1050 Km in India)
Discharge	Joins Chenab and together they form Panjnad and discharge into the Indus.
Major Cities	Kapurthala district of Punjab
Right Bank Tributaries	Spiti, Beas, Chenab
Left Bank Tributaries	Baspa
Major Dams	Bhakra-Nangal Dam

The Sutlej is the longest of the five rivers (Jhelum, Chenab, Ravi, Beas, and Sutlej) that flow through the Punjab region in northern India and Pakistan. The river originates from **Mansarovar-Rakas Lake** near Darma Pass in Tibet. The river is known as Langchen Khamban in Tibet. The river flows almost parallel to the Indus River for 400 kilometers before entering India through **Shipkila Pass**. The main tributary of the Sutlej River is the **Spiti River**. The Spiti River joins Sutlej at Namgia. It feeds the Bhakra Nangal canal system. After entering the plains at Rupar, the river turns westward and joins Beas at Harike. From Ferozpur, it forms the boundary between India and Pakistan for 120 Kilometres.

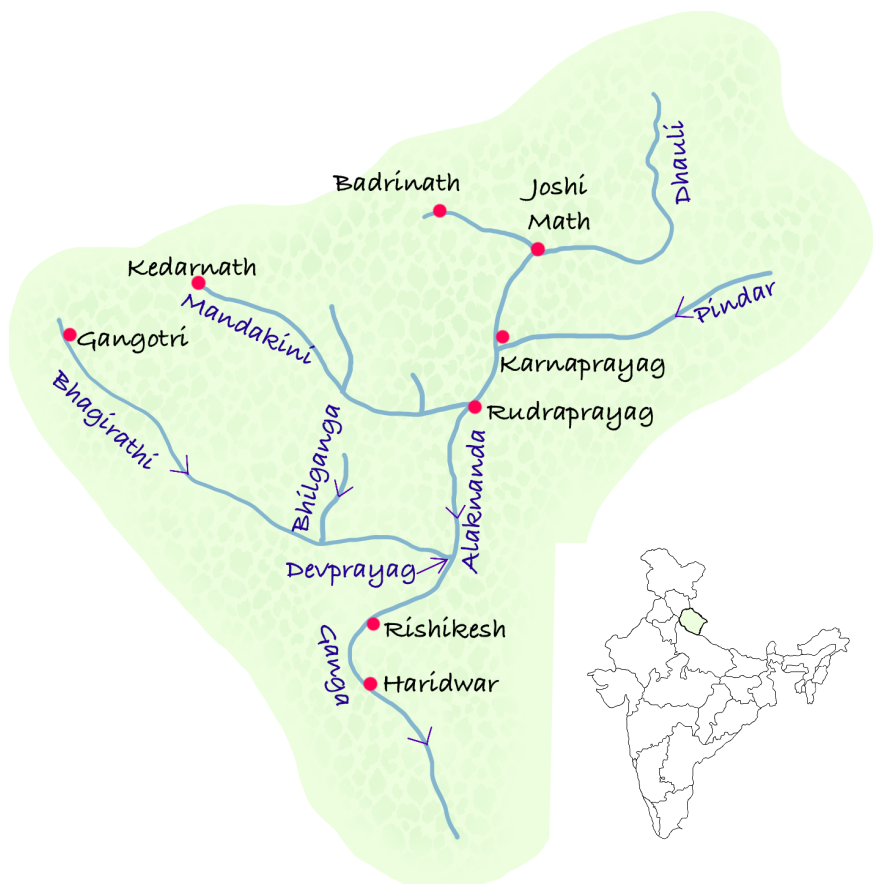
The Ganga River System

The Ganga River is a lifeline to millions of people and India's longest river. It has a historical and mythological significance. Many imperial capitals like Pataliputra, Kannauj, and Munger have flourished on the banks of the river Ganga. Apart from cultural and geographical significance, it has an environmental significance. The deteriorating condition of the Ganga River system has raised concerns in India.

The Ganga rises as **Bhagirathi** from the **Gangotri glacier at Gaumukh** at 7,010 meters above the mean sea level. **Alaknanda**, another head-stream of river Ganga,

originates from the **Satopanth glacier near Badrinath**. Alakananda River flows to meet the Dhauliganga River at **Vishnuprayag**, the Pindar River at **Karnaprayag**, the Mandakini or Kali Ganga at **Rudraprayag** and finally the Bhagirathi at **Devprayag**. At Devprayag, the river gets its name "**Ganga**."

After flowing 280 kilometers from its source southwest, Ganga touches the Gangetic Plains at **Haridwar**. Haridwar is considered one of the major holy pilgrimages for Hindus. From this point, the Ganga River starts flowing south-east direction through the plains of northern India. The river takes a curved path while passing through the city of Kanpur before being joined by the **River Yamuna** from the southwest direction at **Allahabad**. The river passes some major towns like



The Ganga and its Tributaries in the Area of Origin

Varanasi, Buxar, Patna, and Bhagalpur. The Ganga River is joined by numerous rivers such as **Kosi, Son, Gandak, and Ghaghra** before changing its course in the south direction.

At Pakur, the river begins to branch its distributaries. The first distributary, the **Bhagirathi-Hoogly**, forms the **Hooghly River**. Near the border of Bangladesh, the

Flora: Chir Pine, Oaks, and Olives are important trees.

Fauna: Asian elephant, clouded leopard, gaur, golden langur, etc are found.

Do You Know?

Oak trees are of huge economic value as they are used to make furniture and flooring, railroad ties, and mine timbers. They are also used to make barrels in which many wines and spirits are aged.

Sub-tropical Dry Evergreen Forests

Distribution: Sub-tropical Dry Evergreen Forests are found in the western Himalayas up to about 1000 metres above sea level and Shiwalik and Bhabar.

Climatic conditions: The annual rainfall in this area ranges between 50 and 100 cm. Summers are hot enough, and winters are bitterly cold.

Characteristic:

- Low scrub forest with stunted evergreen trees and shrubs are found.
- Considerable regions are covered by dwarf creeping palm Nonnorpops.

Flora: The most common species are olive, Acacia Modesta, and pistacia.

Fauna: Snow Leopard, Himalayan Wild Yak, Musk Deer, etc are found here.

Temperate Vegetation

Himalayan Dry Temperate Forests

Distribution: It is found in the inner dry ranges of the western Himalayas. Ladakh, Lahul, Chamba, Kinnaur, Garhwal, and Sikkim are examples of such areas.

Climatic condition: Precipitation here is low, below 100 cm, and is mostly in the form of snow.

Characteristics:

- The forests are mainly coniferous with xerophytic shrubs.
- Epiphytes and climbers are rare.

Flora: Deodar, Chilgoza, oak, maple, ash, Parrotia, and olive, are important species.

Fauna: The snow leopard and the black-necked crane are found here.

Himalayan Moist Temperate Forests

Distribution: These occur in the western Himalayas between 1,500m and 3,000m. These are found in Kashmir, Himachal Pradesh, Uttaranchal, Darjeeling, and Sikkim.

Characteristics:

- Mainly **coniferous species** are found.
- These go upto 30 to 50 m high.
- Mosses and ferns thrive on trees.
- They have a shrubby undergrowth.

Flora: Oak, cedar, spruce, maple, walnut, deodar, and chestnut are found. These forests provide high-quality wood for construction. They are also used for making railway sleepers.

Fauna: Barking Deer, Red pandas, Snow Leopard, etc are found here.

Montane Wet Temperate Forests

Distribution: Evergreen wet temperate forests can be found between 1800m and 2700m altitude in the eastern Himalayas. This type of forest can be found in Tamil Nadu and Kerala's higher hills, primarily above 1500m in elevation.

Climatic conditions: The average annual rainfall ranges from 150-to 300cm. The average temperature is 11° to 14° Celcius.

Characteristics:

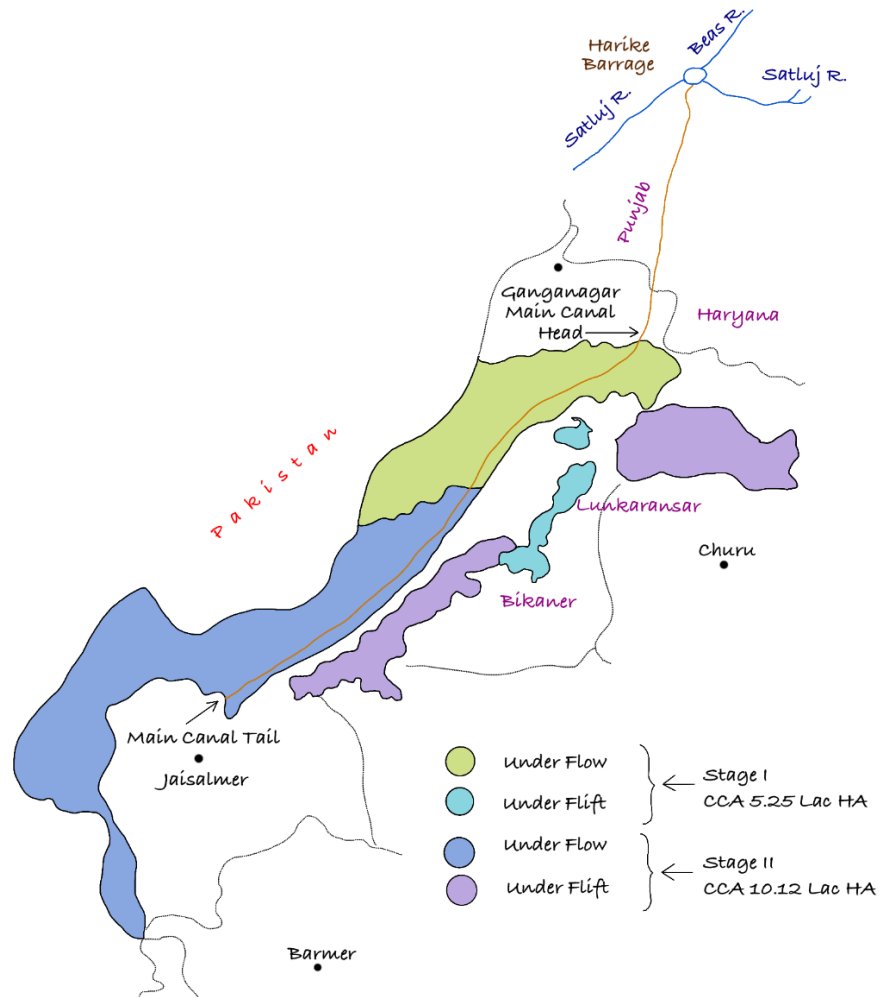
- The trees are shorter. The trees rarely reach heights of more than 6 meters.
- The undergrowth is dense, with abundant epiphytes, mosses, and ferns that cover the branches.
- These are closed evergreen forests. The leaves are densely packed and rounded.
- Woody climbers are common.

Flora: Oak, Plum, Birch, Deodar, Indian chestnut, magnolia, blue pine, hemlock, chilaune, etc are found.

Fauna: The Nilgiri tahr is found only in the Nilgiri Hills and the southern portions of the Western and Eastern Ghats in the Indian states of Tamil Nadu and Kerala.

Alpine and Sub-Alpine Forests

Distribution: It occurs above the tree line, between elevations of 3,200 and 3,600 meters, and goes up to about 4,200 meters in the western Himalayas and 4,500 meters in the eastern Himalayas.



Indira Gandhi Canal Command Area

Case Study-Indira Gandhi Canal Project

Indira Gandhi Canal, which was earlier known as the Rajasthan Canal is one of the largest canal systems in the country. It originates at Harike barrage in Punjab and runs parallel to the Pakistan border in the Thar Desert of Rajasthan. The construction work of the canal was carried out in two stages. The First stage command areas include Ganganagar, Hanumangarh, and the northern part of the Bikaner districts. Whereas, second stage command areas include Bikaner, Jaisalmer, Barmer, Jodhpur, Nagaur, and Churu districts covering culturable command areas.

The canal irrigation in these areas has transformed its ecology, environment, and society. It also brought a change in the agricultural economy of the region. Moreover, the presence of soil moisture and various afforestation and pasture development programs under CAD helped in reducing wind erosion and siltation of the canal system.

Objectives of Command area Development:

- Reduce water pilferages and efficient utilization of water for irrigation.
- Leveling of land to achieve a uniform spread of irrigation water in the field.
- Construction of roads.
- Develop participatory management of irrigation.
- Reclamation of waterlogged areas that have been rendered useless.
- Promoting a rotational system of water distribution. This is done to ensure an equitable share of irrigation water between the large, small, and marginal farmers.
- Diversification of agriculture.