

Chapter - 12

Physiography of India

(Special Reference to Rajasthan)

Introduction :

Our country India is great in terms of both geography and history. Its area is so wide that generally it is considered as 'sub-continent'. It is a part of Asia continent but herself seems like a continent. India is a largest country of Indian sub-continent in South Asia. In the North it is bounded with Himalayan Ice covered peaks, in the South till Kanyakumari, in the East upto Eastern Himalayan and Ganga-delta in Bengal and in the West slightly East of Indus-delta in Kutch of Gujarat, it is spread in thousands of square kilometer area. This land part is comprising extensive plains of North India, high snow capped mountains in a North, Thar desert in the West, Indo-Myanmar group of hills in the East and uneven plateau, ancient fields and coastal plains with coconut trees. This country receives good amount of heat from tropical sun and moisture from monsooni rain.

Indian main land is stretched between latitudes of $8^{\circ}4' N$ to $37^{\circ}6' N$ and longitudes between $68^{\circ}7' E$ and $97^{\circ}25' E$. The southern most point of India is Indira point at latitude of $6^{\circ}45' N$. Tropic of cancer ($23^{\circ}30' N$) passes through almost the middle of our country, which divides India into almost two equal parts. The standard time of India is perceived from the longitude of $82^{\circ}30' E$. This line passes from close to Allahabad.

The broadness of India can be speculated by the very fact that it has the expansion of 2933 km. east to west and 3214 Km. between north to south. It has a land frontier 15200 Km and the coastal boundary is 7516.6 Km long (including

Lakshdweep Aandman and Nikobar islands) It covers a area of 32,87,263 square km. Pakistan, Afganistan, China, Nepal, Bhutan, Myamaar and Bangladesh are the neighbouring countries attached to the land boundary of India. In the perspective of area India is the seventh largest nation in the world. Population of India is now 121.6 crores (according to the census of 2011). India accounts for the 2.42% area of the whole world, while it contains 17.5% of the worlds population.

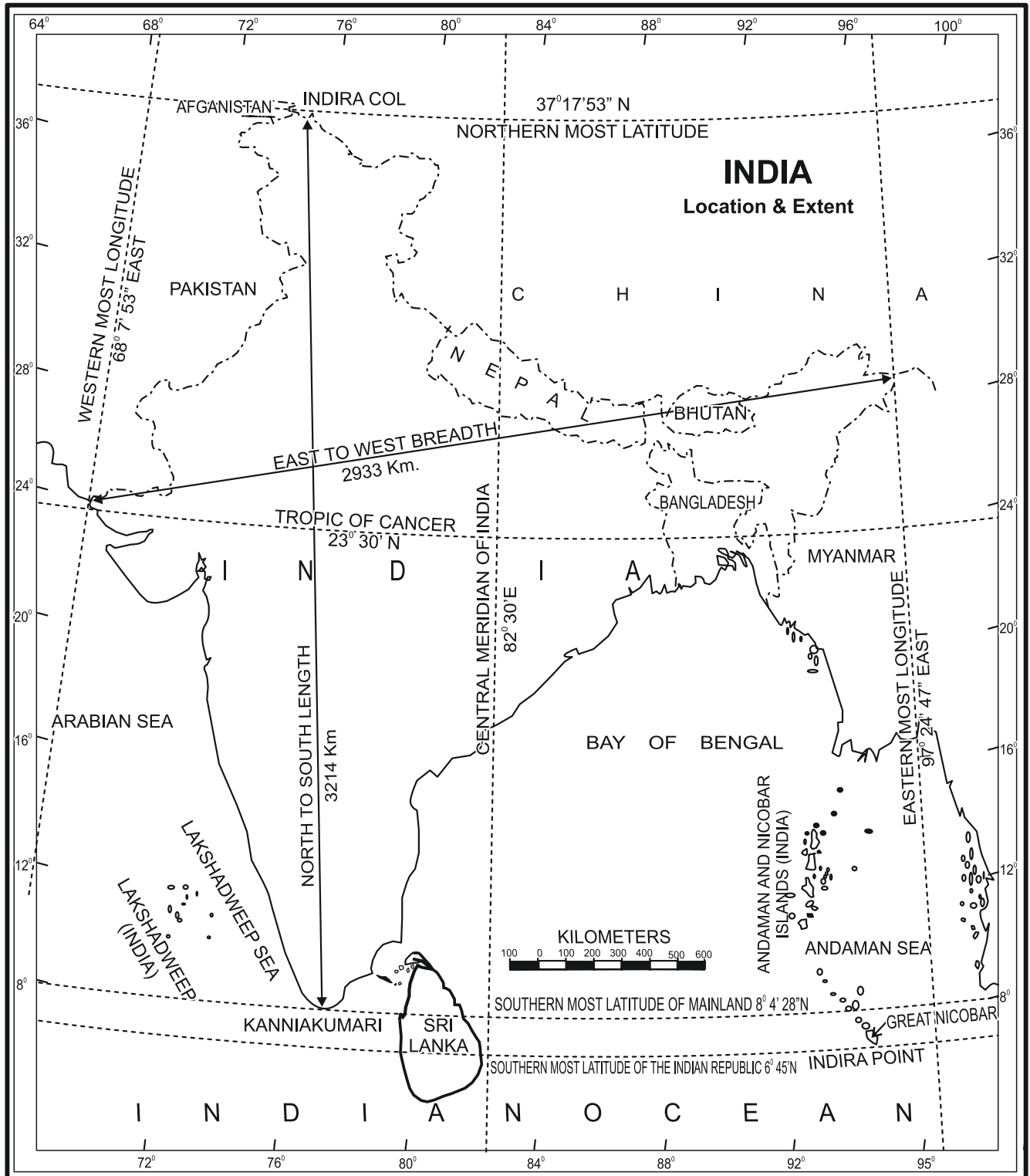
Physiographic Regions of India :

Meeting with geographical diversities is natural because of the vast geographical area of India. India is considered as a sub continent. Mountainous part occupies 10.5%, Hills 18.6%, plateau 22.7% and the plains occupies the 43% of the total area of the country, In the north there lies the huge mountain ranges of Himalaya which have many icy peaks, beautiful valleys and great passes. India can be divided in to five Physiographic regions-

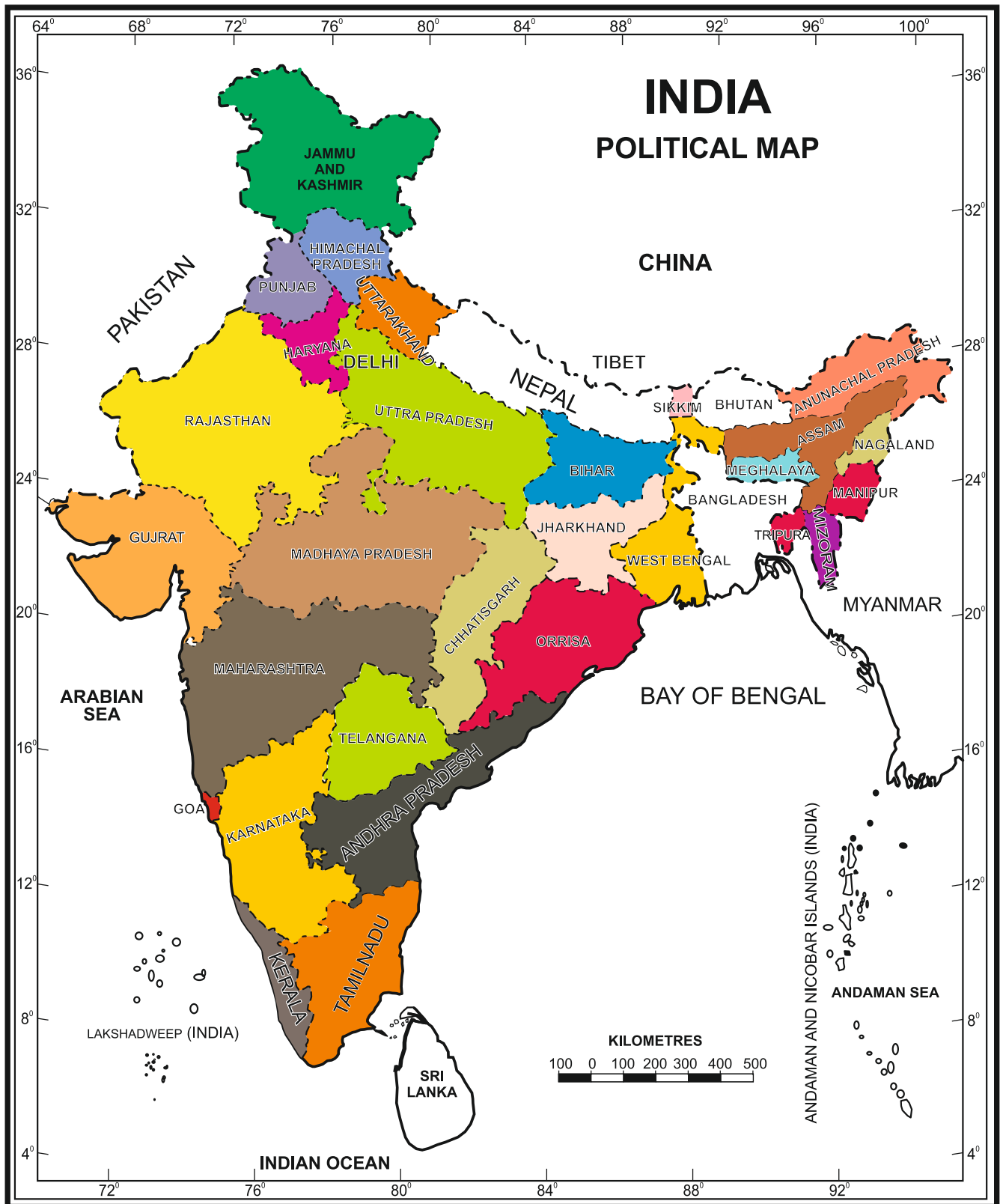
1. Northern mountain region
2. Great plains of the north
3. Peninsular plateau
4. Coastal plains
5. Islands

(I) Northern mountain region -

The Himalayan mountain is stretched over the north frontier of India from west to east in the form of a wide arc in the area of around 5 lac



Map 12.1 : Location & Extent of India



Map 12.2 : Political Map of India

square kilometers. This area is extended in 2400 km of length and in a width of 150 to 200 km. This is the highest mountain of the world. This range is a part of mountain system radiated from Pameer knot. Emerging from Pameer knot in the west it is spread up to Arunachal Pradesh. According to the geologists, an extension of Tethys sea was there where now lies the ranges of Himalayas. Due to the twisting of the layers of sedimentation formed by geological commotion in the time laps the surface of this sea got an elevation. Thereby new folded mountain ranges were formed.

1. Greater Himalaya - Major peaks : Mount Everest, Kanchanjanga, Nanga Parbat and Nanda Devi
2. Lesser Himalayas - Major ranges-Peer Panjal and Dholadhar
3. Outer Himalayas - Jammu, Giri, Mishmi Daphala Hills etc.

(1) Greater Himalayas : The northern most mountain ranges of the Himalayas, which are also known as inner Himalaya, Himadri etc is called greater Himalaya. This Mountain range is spread in 2400 km. length from Sindhu river bend in north west to the river bend of Brahmaputra in the east making the shape of an arc. Its average height is approximately 6000 meters and the average width is 25 km. Here about 40 mountain peaks are higher than 7000 meters. World's highest peak Mount Everest is also located in these mountain ranges. Its height is 8848 meters. Avatar Singh Chima was the first Indian who climbed Mount Everest in the year 1965. Bachendri Pal was the first Indian woman who climbed this mountain peak in the year 1984. Kanchanjanga (8598 meters) is the highest Himalayan peak in Indian territory, which is located in Sikkim. Joji la, Shipki la, Mana la, Neeti la etc. are the mountain passes of this range. The famous Ganga and Yamuna rivers of our country originate from this region.

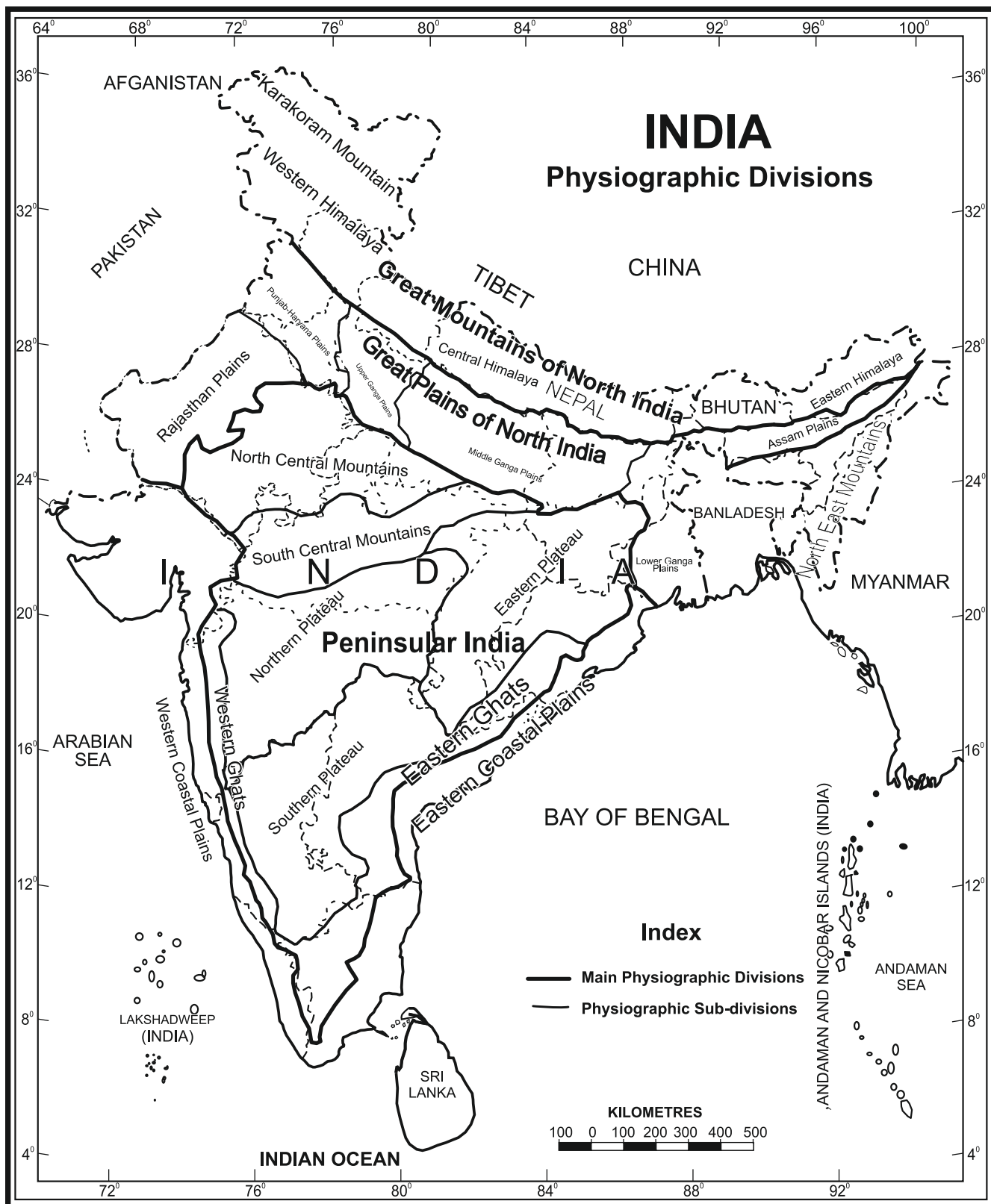
(2) Lesser Himalayas : This mountain range is

situated in the south of the greater Himalayas which is also known as middle or Himachal Himalayas. Its width is 60 to 80 Kilometers. It has an average height of 4000 meters but at many places here the mountains are of 5000 meters and above height. Dholadhar and Peer Panjal are its important mountain ranges. Banihal is the main pass. Snowfall is witnessed for 3 to 4 months in winter season but the summers are pleasant and healthy. Many tourist attractions like Shimla, Masuri, Nainital, Darjilling, Ranikhet etc. are located here. On the higher slopes of this range coniferous forests are found and the grass lands are found on the lower slopes which are called 'Marg' (Like Gulmarg, Sonmarg etc.) in Kashmir.

(3) Outer Himalayas : This is the southern most range of Himalayas. It is known as the outer Himalayas or the Shivalik ranges. This creation is latest amongst all the ranges of Himalaya. In the west this range is starting from western Jammu hills and continuous upto river Tista in the east. After that, with an interval of 80 to 90 km. these ranges are further extended upto Arunachal Pradesh. This range is about 10 to 50 kilometers wide and it has an average elevation of 900 to 1200 meters. In Jammu it is known as Jammu hills and in Arunachal it is called as Mishmi, Abores and Daphala hills. This whole region is forested. In the middle part of Shivalik hills, the rivers have cut these ranges and deposited alluvium in broad gaps and form higher valley plains. In the east these are called 'Dwars' like Haridwar and in the west called 'Doons' like Dehradun.

Importance of Great northern mountains :

These great mountains of north India are strategically important, along with these mountains protect us from cold waves coming from north in winter season and ensure good monsoon range in Indian region through creating barrier for moisture laden winds in summer season. This mountainous region of north India is the origin of great perennial rivers. The tourist places located in this region are important for tourism development in India.



Map 12.3 : Physiographic Divisions of India

(II) Great plains of North India -

This place is situated amidst the Himalaya mountain and the peninsular plateau regions. Since ancient times this tract is known as Ganga-Indus plain but due to the partition in the year 1947, the Indus river with plains of its tributaries Jhelam, Chinab and Ravi are now lie in Pakistan. So this Indian region is now called as the plains of Satluj-Ganga-Brahmputra, which is formed by the sediments brought by these rivers and their tributaries. The arc shaped plain is 2400 kilometers long and 150 to 300 kms wide. This is an area of various dooabs. Dooabs are the plains made up off alluvial deposits lying between two rivers. The parts of Punjab, Hariyana, Uttarkhand west Bengal and Jharkhand are included in this plain. In the western part of this plain there are vast arid and semi-arid spread in the west of aravalli in western Rajasthan and some parts of Punjab, Haryana and Gujarat. Geographically, these are also included in the great plains of north India.

Geographical Classification -

(a) Bhabar area : It has the expansion of 8 to 16 km wide strip from Satluj to Tista river at the foot hills of Shivallik. After emerging out of the mountain region and just entering to the plain, due to the decreasing slope, the rivers lay up heavily unsorted debris of rocks (in this area there are deposits of finer rock particles to large size pebbles) in this foot hill area. Due to this majority of the rivers flow underground in this region.

(b) Tarai Sector : Tarai sector is the part of the plain south to Bhabar, where the underground water flow of Bhabar reappears on the ground. Marshes are found here due to the decrease in slope and irregular water flow. Dense forest, high grasses as kans, elephant grass etc. are found here in abundance.

(c) Bangar terrain : Highlands made by old sedimentation are called Bangar where the flood water of rivers cannot reach today. These are found in the north west part of Uttar Pradesh and Uttarkhand mostly.

(d) Khadar terrain : These are the low lands formed by new sediments and coop soil where the approaching flood water keeps on laying new layers of soil every year. This type of plains are known as 'Khadar' These are mostly found in eastern U.P., Jharkhand, Bihar and west Bengal.

The Plain Area of Thar Desert :

It is said that in geological history this region was full of green vegetation. But due to varrious land movement and climatic change this region has dry desertic conditions today. This desert is extended from west of Aravali mountain to the plain of India in north west. The average elevation of these desert plains is 150 to 380 meters and it covers the 640 km. long and 250 to 300 km. wide area. The strong winds form sand dunes here. Here, Sambhar, Loonkaransar, Deedwana, Pachpadara are the major lakes of saline water. Salt is made in these lakes. According to the geologists, this region was a fertile land earlier. Many large rivers used to flow here. Finding the residues of Saraswati river are its proof.

The importance of Great Northern Plains -

These plains are made up off alluvium deposited by rivers thus these are highly fertile plains. Abundant water is available here for drinking and irrigation purposes due to network of several rivers. Rivers have been as a means of cheap transport. Dense network of roads and railways is available due to the flat nature of this place. Most of the industrial, commercial and religion cities are situated here, here like- Delhi, Haridwar, Mathura, Varanasi, Amritsar, Agra, Patna, Kolkata etc.

(III) Peninsular Plateau :

In ancient lava built terrain extended in the South of vast Indian plain there is a tract situated which is spread in to 7 lakh square km. It is surrounded by the sea on three sides, the base of this triangular plateau and the cape of Kumari is its top in the south. From the highlands of Rajasthan to the Kanyakumari it has the maximum length of 1800 km. and maximum width is 1400 km. approximately. The average elevation of this plateau

from the sea level is 600 meters. It stretches from south east Rajasthan, Gujrat, Jharkhand, Madhya Pradesh, Chatisgarh, Orrisa, Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu and partially in Kerala too.

The Peninsular India can be further divided as follows -

(a) Western Ghats : The western edge of the Southern plateau which is of continuous hills is known as Western Ghats. It is also known as Sahyadri hills. The Nilgiri hills are found in the south of western ghat. Its slope towards Arab Sagar is acute and slow in the east. Having an average elevation of 1000 M. the Sahyadri keeps the serial extension from Tapi valley to the cape of Kumari which includes. The passes Bhore Ghat, Thal Ghat and Pal Ghat. All these have met with eastern Ghat in south. Anaimudi (2695 meters) is the highest peak here.

(b) Eastern Ghats : These are smaller relatively than the western Ghats and situated far away from the coast line with irregular presence. These Ghats are spread parallel to eastern coast in almost 800 km. They are extended from Mahanadi valley in north to Nilgiri mountain in South. All the rivers flowing towards the East have lapped enough the eastern Ghats. They have the average height of 600 meters.

(c) Deccan Plateau : This terrain is very ancient and solid. Which is formed by the volcano ejected lava. Containing fertile black soil, this terrain of plateau is stretched almost in 5 lakh square kilometers. Parts of South East Rajasthan, Gujarat, Madhya Pradesh, Maharashtra, Andhra Pradesh and parts of Karnataka are included in it. This plateau keeps the average height of 600 meters. Due to its eastern slope all the rivers related to this plateau flow towards the east. These rivers have divided it into many small plateaus like Chhattisgarh, Mysore plateau, the plateau of Rayalseema, Telangana plateau etc.

Importance of Peninsular Plateau :

Rich mineral deposits are found here. The

black soil is fruitful in the production of cotton. Valuable monsoon forests of teak, sheesam and sandal wood are found here. There are waterfalls found in rivers which are the sources of hydro power. Pachmadi, Mahabaleshwar, Udagmandam (Ooty) etc. are the tourist destination in this region.

(IV) Coastal Plains :

There are coastal plains located on either side of the Deccan plateau along the Sea coast. These coastal plains can be further divided into two parts. These plains are made by either rivers or the action of sea waves.

(i) Western Coastal Plain : Starting from the gulf of Khambhat this plain extends up to the Kanyakumari. It keeps an average width of 65 kms and Maximum elevation of 180 meters with the length of 1600 kms. Fast flowing rivers are found here. This plain is much wider in the north. Narmada, Tapi and Mahanadi rivers flow here. The north part of this coast is known as Konkan and Malabar is the name of Southern part. Its main seaports are Kandla, Mumbai, Goa, Cochin and Mangalore. Dense population is found here due to good Climate, fertile soil and trade facilities.

(ii) Eastern coastal plain : It is spreading from estuary of Ganga to the Kanyakumari. It is much wider than the Western plain. Its length is about 1500 km. and average width of 120 kilometers. These plains are narrow in the north and wide in the south. The northern part of this coast is called Uttar Pradesh and the Southern part is known as Coromandel coast. Mahanadi, Krishna, Godavari and Kaveri are the major rivers form delta here. Vishakhapatnam, Chennai Paradweep and Tutukorin are the main seaports. Chilka, Pulicat, and Kolleru are the lakes found here.

(V) Islands :

Near Eastern and Western coast of India, Arabian sea and in Bay of Bengal there are many Indian islands situated. Most of the islands are located in Bay of Bengal. The major islands are Andaman and Nicobar, Lakshadweep and Shriharikota etc. The Southern most point of India

i.e. 'Indira point' lies in the southern most part of great Nicobar island of Nicobar island groups.

(a) Andaman and Nicobar group of Islands :

These islands are located in Bay of Bengal 1248 km South to Kolkaata. This group of islands comprises almost 265 islands Sundari trees are found in abundance at the island coasts here. The major islands are north Andaman, central Andaman, South Andaman, little Andaman, Barren and Ruth-land. Nicobaar island lies 128 kms South to Andaman islands. The island lies in north of these island groups are known as Car Nikobaar, in central part there are Kamorata, Tilanchang and Trasa, in southern part there is Great Nicobar island are the major islands.

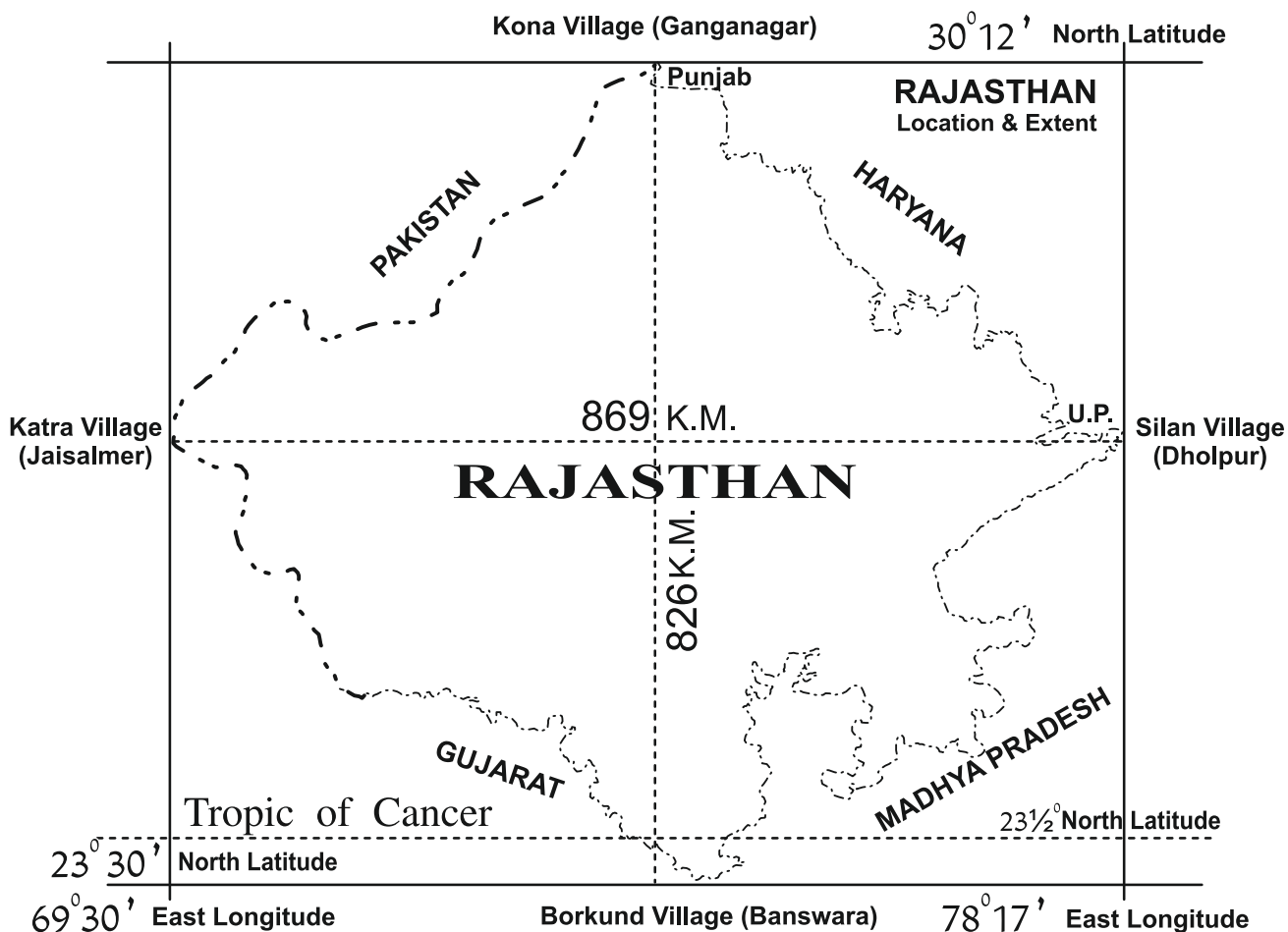
(b) Lakshdweep Islands : Its Situated near the Western coast of India in Arabian sea. There are 25

important islands. This region is spread in the area of 109 sq. km. Here the islands located in the northern part of 11° north are called Amandivi and towards its south called Kennor islands. Coconut trees are found there in abundance. This is truly a coral island. Cherbaniani, Kalpni and Minicoy are important islands here.

Geographical Regions of Rajasthan :

Introduction :

According the geographical, historical, economical, social and cutural point of view Rajasthan is a state of great diversity. In the north west of India having the shape of a kite. It is located between the latitudes 23.3 to 30.12 North and the longitudes 69.30 to 78.17 east. Tropic of cancer (23.30 North latitude) passes south to it. The



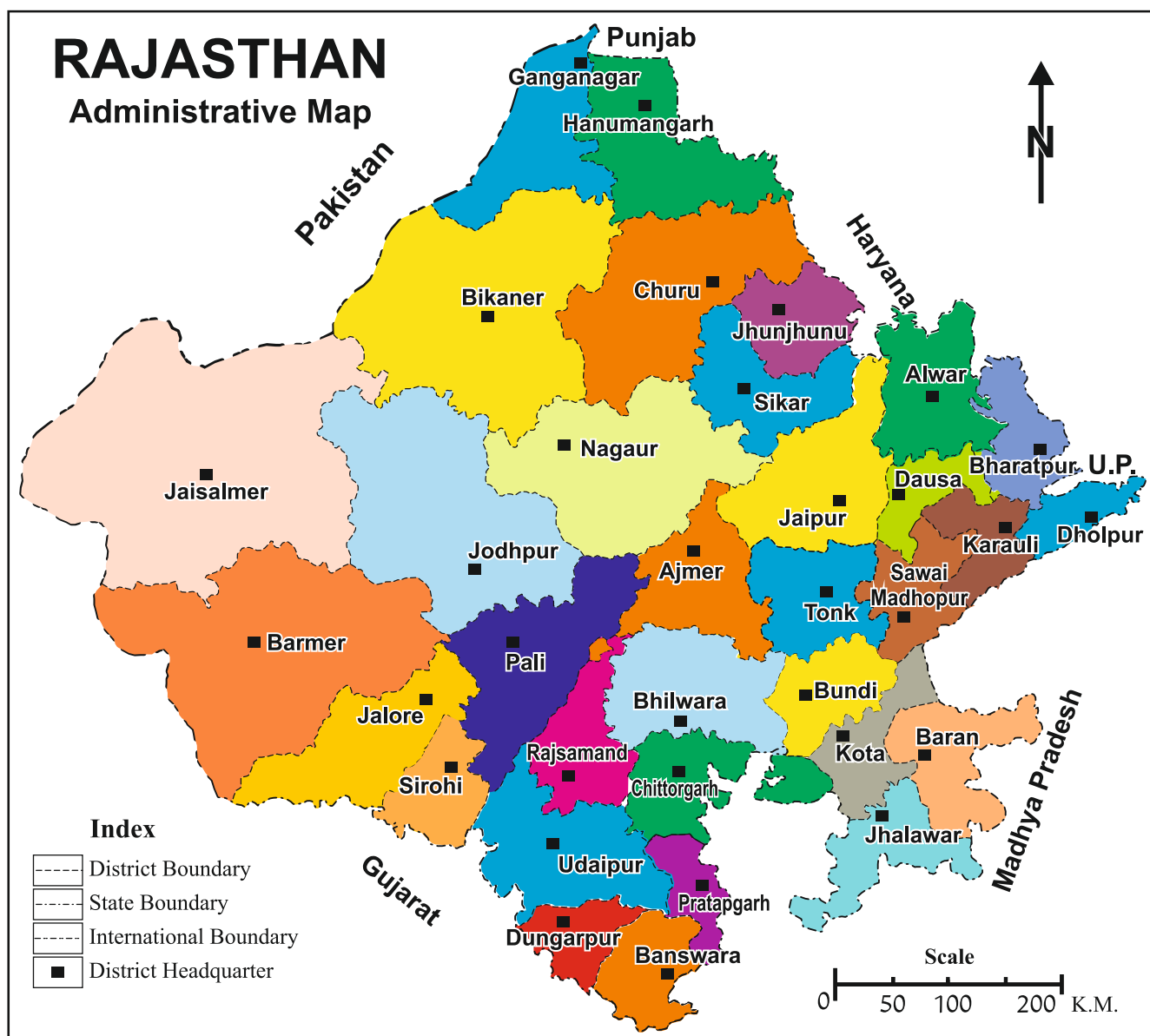
Map 12.4 : Location & Extent of Rajasthan

maximum length it covers from East to West is 869 kms and from north to south the maximum width is 826 kms. It covers the total area of 3,42,259 square kilometers which holds the 10.43 percent part of our nation . It stands first in terms of area in India.

The state shares its north western and western boundary with Indo-Pakistan border that extend upto 1070 kilometers. Rajasthan is bordered by Uttar Pradesh and Madhya Pradesh in the east Punjab and Haryana in the north and Gujrat and the districts of Madhya Pradesh in the south. According

to the census of 2011, No. of people reside in the state are 6,85,48,437 and the average population density stands at 200 people per square km.

The integration of Rajasthan was completed in 1956 after the independence. At present it is divided in to 7 division, 33 districts and 244 Tehsils (Subdivision) administratively. Jaipur, Ajmer, Bikaner, Jodhpur, Udaipur, Kota and Bharatpur are the divisions. In terms of area the district of Jaisalmer is the biggest and Dholpur is the smallest district.



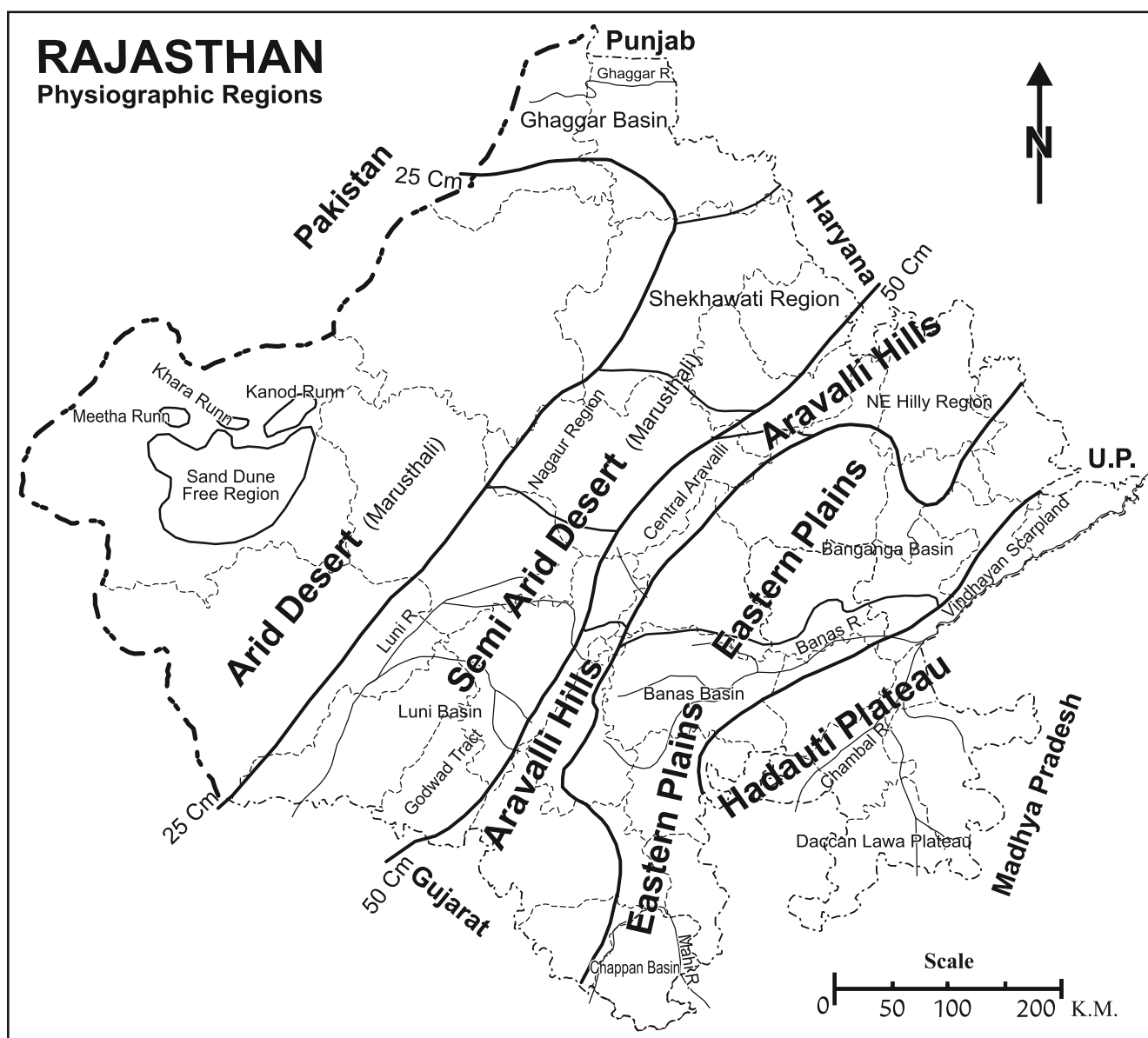
Map 12.5 : Administrative Map of Rajasthan

The names of 33 districts are Ajmer, Alwar, Baran, Banswara, Barmer, Bharatpur, Bhilwara, Bikaner, Bundi, Chittor, Churu, Dholpur, Dausa, Dungarpur, Sriganganagar, Hanumangarh, Jaipur, Jaisalmer, Jalore, Jhalawar, Jhunjhunu, Jodhpur, Karauli, Kota, Nagaur, Pali, Pratapgarh, Rajsamand, Sawai Madhopur, Sikar, Sirohi, Tonk and Udaipur.

The Physical appearance of Rajasthan :

Geographical land views like mountains, plateaus, plains and deserts all are found in

Rajasthan. In the west of Aravalli mountains there are arid and semi-arid plains in Rajasthan where landforms are found which are made by wind action. In these sand-dunes are most important. Most of the Western and North Western part of Rajasthan was the only relic of Tethys ocean which was inundated with the soil brought by the Himalayan rivers in the time-lapse. It is supposed that the residues of the Tethys ocean, the salt water lakes like Sambhar, Deedwana, Pachpadara, Loonkaransar etc., are still exist in Rajasthan.



Map 12.6 : Physiographic Regions of Rajasthan

In Rajasthan the Aravalli mountain range and the southern plateau are the part of Gondwana land. Aravalli is considered as one of the oldest mountain ranges of the world. It is a major watershed of the state and divides the drainage system of Rajasthan into two parts. Physical appearance of the state has got its present from due the mingled effect of geologic stirrs, geological structure and the water flow system also. Mountains, Plateaus, Plain and deserts are found in the surface appearance of Rajasthan which have been made from the shale groups to the newer alluvium deposited by winds.

According to available physical varieties and geographical situations Rajasthan is divided into five regions as follows :

- (a) Western desert plains
- (b) Semi-arid region
- (c) Aravalli region
- (d) Eastern plains
- (e) South eastern plateau region

(A) Western desert plains :

This is the biggest region is size and can be divided in to three paralld belts. Marusthali, Bangar and Rahi which are spread from west to east. Marusthali incldues plethora of Mounds, Bangers are the extensive plains of sand and Rahis are the fields formed due to flood of small rivers. It has the average elevation of 150-300 meters. The eastern border works as a threshold of 25 cm rainfall. Sand Mounds known as ‘Dhore’ in the local dialect are found here. Now Indira Gandhi canal has brought a change in the ecology of this region.

(b) Semi-arid region :

It is streched from north -east to south -west in the west of Aravali mountain range. It keeps 300-450 meters of average height. western border works as a threshold of 25 cm. rainfall. It covers the parts of Barmer, Jaisalmer, Bikaner, Pali, Jalore, Sikar, Jodhpur, Jhunjhunu, Churu, Nagaur, Ganganagar and Hanumangarh districts. Some of its part comes under the region of under ground drainage. This is

called Bangur in Rajasthan Luni Basin. Shekhawati, Nagaur high lands and Ghagghar plain are considered the sub regions of it.

(c) Aravalli Region :

Aravalli is also called Aadavala mountains. It is stretched 682 kms in length from Delhi to Khedbrahma near Palanpur town of Gujarat. This is regarded as one of worlds oldest mountain ranges. Its height declines from southwest to north-east. Gurushikhar of Mount Abu in Sirohi district is the highest peak of Aravalli having 1722 meters height. Colonel James Todd has called it “The peak of saints” It is the highest peak between Himalaya and Nilgiri. It is in sub-regions divided further as in North east hills, middle Aravalli, Mewar hills or the Bhorat plateau and Mount Abu.

(d) Eastern Plains :

It is spread in the Eastern part of Aravalli mountains in the state. The low land of chambal basin and Banas and Mahi Basins are comprised in it. Underground water streams, Plains made by flood, river edges rugged forests are found in Chambal Basin, Banas basin is bifurcated in Malpura - Karauli and Mewar plains. The Mahi plain located in the southern part of this region is called as ‘Plain of Chhapan’. Mahi and Banas are the major rivers of this region.

(e) South-eastern plateau region :

It is also known as Hadoti plateau. It is spread in to Baran, Bundi, Kota and Jhalawar districts. Here black fertile soil is found in excess, Chambal is the major river in this area. The famous Chuliya water fall is located on Chambal near Bhensroadgarh. The plateau region between Bhansroadgarh and Bijoliya is known as Upper mall. Alluvial Basin was formed in Baran and Kota by Chambal and its tributaries Kali Sindh and Parvati. Mukundare and Bundi Hills are located in this part.

Important Points

1. Our country is divided into five geographical regions Northern hilly region, Gangetic plain of north Desert of Thar, Deccan plateau and

coastal plains and islands.

2. Northern hilly region is further divided into three parts greater Himalaya, Lesser Himalaya and Sub-Himalaya.
3. Great Gangetic plain of north is densely populated due to its fertile plain land mass.
4. Southern plateau is a store house of ample mineral resources.
5. Coastal plains are divided into two parts Western coastal plains and Eastern coastal plains.
6. Islands: Coastal islands alluvial soil islands and stony islands.
7. Rajasthan is the biggest state in India located between 23.30 to 30.12 North latitudes and the longitudes 69.30 to 78.17.
8. Major physical regions of Rajasthan are western desert land, semi dry land, Aravali region, Eastern plains and south Eastern plateau.
9. Gurushikher is the highest peak of Aravali Mountain range.

Objective type Questions :

1. The line passing through the center of India is -
(a) Tropic of cancer (b) Center line
(c) Tropic of capricorn (d) Equator
2. The northern mountain region is the part of -
(a) Aravali (b) Pamur knot
(c) Armenia Knot (d) Kailash Mountains
3. The most populous part of India is -
(a) Central Gangetic plains
(b) Thar desert
(c) Southern plateau
(d) All three are wrong
4. India's southern most point, "Indira Point" is located in -
(a) Andaman (b) Nicobar

(c) Lakshdweep (d) Minikaaya

5. Rajasthan's position in India in terms of area is -
(a) First (b) Second
(c) Third (d) Fifth
6. The smallest district of Rajasthan is -
(a) Karauli (b) Dungarpur
(c) Dhaulpur (d) Sikar
7. The highest peak between Neelgiri and Himalaya is -
(a) Gurushikher (b) Ser
(c) Mahabaleshwar (d) Achalgarh

Very short answer type questions :

1. What is 'Dhore'?
2. Which is the most populous territory of India?
3. Where are Bhabar found?
4. Where are 'Murg' found?
5. What is the total area of Rajasthan?

Short answer type questions :

1. Name the three major parts of Himalayas.
2. Explain the importance of Deccan Plateau.
3. What is the difference between east & west coast of India?
4. Mention names of those Indian islands which have been formed by corals.
5. Describe the features of desert land of Rajasthan.

Essay type questions :

1. Classify India into physical sections and describe one of them.
2. Explain in detail about the Northern hilly region.
3. Describe the importance and features of Deccan Plateau.
4. Divide Rajasthan into Physical sections and

describe one of them in detail.

Mark in maps :

1. Show the major physical sections in map of India.
2. Show the major Indian mountain peaks in the map.
3. Mark physical sections of Rajasthan in its map.

Answer to objective questions :

1. (a) 2. (b) 3. (a) 4. (b) 5. (a) 6. (c) 7. (a)