



# Geography

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## Unit-10: Geography of India

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## Section-1: Unit at a Glance

### Sub unit-1: Physiographic Divisions of the Himalaya

For a systematic study of the physiographic and relief, the Himalaya may be divided into the following four divisions from north to south:

- The Trans-Himalaya
- The Greater Himalaya
- The Lesser Himalaya and
- The Shiwaliks or the Outer Himalaya.

### Longitudinal Divisions of the Himalaya

The Himalaya have also been divided by Sir.S. Burrard into four divisions, namely (i) The Western Himalaya, (ii) The Kumanu Himalaya, (iii) the Nepal Himalaya, (iv) The Assam Himalaya. Prof. S.P. Chatterjee (1973), divided the Himalaya into the following six transverse divisions from west to east.

- The Kashmir Himalaya
- The Himachal Himalaya
- The Kumaun Himalaya
- The Central Himalaya
- The Eastern Himalaya

### Main Mountain Passes of Himalayas

A mountain pass is a route through a mountain range or over a ridge. A pass plays a significant role in trade, war or migration.

### Glaciers and Snowline

A glacier is a body of dense ice that drifts under its own weight. A glacier is formed by accumulation of snow exceeding its ablation point over many years. It is the largest reservoir of fresh water on the earth (about 75%).

### The Great Plains of India:

The Great Plains of India lies to the south of the Shiwalik separated by the Himalayan Front fault (HFF). It is a transitional zone between the Himalaya of the north and Peninsular India of the south. It is an aggregational plain formed by the alluvial deposits of the Indus, Ganga, Brahmaputra and their tributaries. The plain stretches for about 2400 km from west to east. It has varying width, 90-100 km in Assam, 160 km near Rajmahal (Jharkhand), 200km in Bihar, 280 km near Allahabad and 500 km in Punjab. In general, the width of the plain increases from east to west.

### Meso-regions of the Northern Plains of India

On the basis of geo-climatic and topographical characteristics, the Northern Plains of India may be divided into the following four meso-regions.

- The Plains of Rajasthan;
- The Punjab Haryana Plains;
- The Ganga Plains; and
- The Brahmaputra Plains.

### Physiography and relief features of Peninsular India:

Covering an area of about 16 lakh sq km, the peninsular upland forms the largest physiographic division of India. With a general elevation between 600-900 m, the region constitutes an

irregular triangle with its base lying between the Delhi Ridge and the Rajmahal Hills and the apex formed by Kanyakumari.

### **The Coastal Plains:**

The peninsular plateau of India is flanked by narrow coastal plains of varied width from north to south, known as the West-Coastal Plains and the East-Coastal Plains. These coastal plains differ from each other. They were formed by the depositional action of the river and the erosional and depositional actions of the sea waves.

According to geologist, the origin of the western and eastern coasts of India may be attributed to the faulting and subsidence of the Arabian Sea and the Bay of Bengal towards the close of the Eocene Period. Consequently, alluvial deposits along these coasts are very recent origin, ranging from Pliocene to recent times. These coastal plains have the evidence of submergence and emergence. The Indian coastal plains may be subdivided into the following three divisions: (i) The Gujarat Coastal Plain, (ii) The West Coastal Plain, and (iii) The East Coastal Plain.

### **The Indian Islands:**

India has a total of 615 islands, of which 572 lie in the Bay of Bengal, and remaining 43 in the Arabian Sea. Out of the 572 islands of Andaman and Nicobar, only 36 are inhabited. The Bay of Bengal islands include the Andaman and Nicobar Islands which are largely tectonic and volcanic in origin, while the islands of the Arabian Sea are mainly coral formations. Moreover, there are a number of offshore islands along the mouth of the Ganga, eastern and western coasts and in the Gulfs of Khambhat, Kachchh and Mannar.

### **Vulcanicity:**

A volcano is an opening in the crust of the earth, connected by a conduit to underlying magma chamber, from which molten lava, volcanic gases, steam, and pyroclastic materials are ejected. It is usually in the form of a peak which may be cone shaped or dome-shaped depending on the type of volcano and type of material ejected. The main causes of volcanic eruptions are associated with sea-floor spreading, plate-tectonics, and mountain building processes.

## **Sub unit-2: The Drainage System of India**

The drainage system is an integrated system of tributaries and a trunk stream which collect and funnel surface water to the sea, lake or some other body of water. The total area that contributes water to a single drainage system is known as a 'Drainage basin'. This is a basic spatial geomorphic unit of a river system distinguished from a neighbouring basin by ridges and highlands that form divides. Thus, river basins are natural units of land.

### **Drainage patterns:**

A geometric arrangement of streams in a region; determined by slope, differing rock resistance to weathering and erosion, climate, hydrologic variability and structural controls of the landscape is known as a 'Drainage Pattern'. In other words, drainage pattern refers to a design which a river and its tributaries form together, from its source to its mouth. The factors controlling the pattern of drainage in a region include the topography, slope, structural control, nature of all, the tectonic activities, supply of water and above the following types of drainage patterns are found:

### **The Himalayan Drainage:**

The Himalayan drainage system comprises all the international rivers of Indian, i.e., the Indus, the Ganga, and the Brahmaputra. Most of these rivers and their major tributaries are perennial in character, obtaining their water from the glaciers and rains. These rivers are in their youthful



stage carving out a number of erosional land-forms like waterfalls, cataracts, rapids, gorges, steep slopes, and rivers terraces. The Himalayan river are not only eroding agents. But are depositing agents in the plains and deltas.

### **Irrigation:**

Irrigation in India include network of major and minor canals from Indian rivers, ground water well based system, tanks and other Rain water harvesting project for agricultural activities. Of the ground water system is the largest. In 2013-2014 only about 36.7% of total agricultural land in India was reliably irrigated and remaining 2/3<sup>rd</sup> cultivated land in India is dependent on monsoons.

### **Sub Unit-3: Indian Monsoon:**

Monsoon are a complex meteorological phenomenon. Experts of meteorology have developed a number of concepts about the origin of monsoons.

#### **Jet Stream and Indian Monsoon**

Jet stream is the most prominent movement in upper level westerly wind flows irregular concentrated meandering bands of geo strophic wind travelling at a speed of 300 to 400 kmph. The jet streams are high altitude (9000 to 12000 m) westerly winds between middle latitudes (summer  $35^{\circ}N$  to  $45^{\circ}N$ ; winter  $20^{\circ}N - 35^{\circ}N$ ) in the Northern Hemisphere. Recent researches have shown that these winds exert considerable impact on surface weather conditions.

#### **Season in India:**

The subcontinent of India has great latitudinal dimensions: there are different seasons from Kanyakumari (Cape-Caoro) to Jammu and Kashmir.

#### **Rainfall Distribution:**

The distribution of rainfall in India is highly uneven. Its distribution is largely controlled by the nearness of the sea and the orographic features. The influence of the Western Ghats, the Plateau of Meghalaya, the north-eastern hills, and the Himalaya mountain is quite significant. The average annual distribution of rainfall in India has been shown in. it may be observed from (Fig.) that the regional variations in the distributions of average annual rainfall over India are quite pronounced. In the southern parts of the Meghalaya plateau (Mausimram and Cherpunji), the average annual rainfall is more than 1200 cm or less in the Brahmaputra valley and the adjoining hills.

#### **Climatic Regions of India:**

India is often referred to as a country with tropical monsoon type of climate. The large size of India, its latitudinal extent, the presence of the Himalayas in the north, and the Indian Ocean, Arabian Sea and Bay of Bengal in the south have resulted in great variations in the distribution of temperature and precipitation in the subcontinent of India.

#### **Kopen's Classification of Indian Climate:**

A Koppen's classification is empirical in nature based on climatic data. Koppen, for the delineation of climatic regions took into consideration (i) the mean monthly temperature, (ii) the mean monthly rainfall, and (iii) the mean annual rainfall.

#### **Climatic Division by Stamp and Kendrew**

Professor L.D. Stamp and Kendrew divided India into several climatic divisions. This classification is arbitrary and subjective. Stamp used  $18^{\circ}C$  isotherm of mean temperature for January to divide the country into two broad climatic regions, namely:

### **Sub Unit-4: Mineral Resources:**

A mineral is aggregate of two or more than two elements. A mineral has a definite chemical composition, atomic structure and is formed by inorganic process.

### **Sub Unit-5:**

#### **Types of Rural Settlements**

##### **1. Compact (Agglomerated, Clustered or Nucleated Settlement)**

A compact settlement has a well-defined form in which the house is clustered in a small space.

### **Sub Unit-6:**

#### **Agricultural Productivity**

Agricultural Productivity is a Synonym for agricultural efficiency. They yield per unit area is known as agricultural productivity. Agricultural Productivity is generally the result of the Physical, Socioeconomic, and cultural farmer. Agricultural Productivity, however, is a dynamic concept which changes in space and time.

#### **Cropping Patterns**

The cropping pattern is an indicator to show the proportion of area under different crop at definite point of time. The crop statistics published by the government are used to denote the cropping patterns.

#### **Agricultural Regionalization**

Region is one of the basic concepts in geography. It has been defined differently by different geographers. A Widely accepted definition of region is “an area that is differentiated from other areas according to a specific criterion” “In other word, geo region is differentiated segment of the earth surface (whittlesey, 1936)”.  
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### **Sub Unit- 7:**

#### **Industrial Development during the Five-Year Plans**

The real growth and development of the industrial sector in India started during the period of Five-Year Plans.

#### **Industrial Policy**

The first industrial policy was announced by the government of India on 6 April, 1948. In this policy both the public and private sectors were involved towards industrial development.

### **Sub Unit- 8:**

#### **Transport Communications and Trade**

**1. Transport** – Provisions of quality and efficient infrastructure services are essential to realise the full potential of growth impulses surging through the economy.

##### **2. Golden Quadrilateral –**

The National Highways Development Project (NHDP) has taken up a massive programme of road building in the country. Launched in January 1999, the Golden Quadrilateral (GQ) project is perhaps one of the largest projects of road building in the country with a length of 5846 km.

## Sub Unit-9:

### Regional Planning

Planning is a process to achieve certain objectives and goals. In fact, it is a process of human thought, and action based upon that through. Planning is believed to be related fundamentally to human beings, their behavior, their aspirations, their thoughts, and their abilities.

### Human Development Index

The Human Development Index (HDI) is a statistic composite index of life expectancy, education, and per capita income indicators, which are used to Rank countries into four tries of human development. A country scores a higher HDI when the lifespan is higher, the education level is higher, and the gross national income per capita is higher. It was developed by Pakistani Economist Mehbub ul Haq (1990) and Indian Economist Amartya Sen.

## Sub Unit-10:

### Environmental Hazards

Most of the environmental hazards are natural hazards such as earthquakes, volcanoes, landslides, hurricanes, cyclones, typhoons, tornadoes, lightning, tsunami, floods, droughts, and epidemics.

### Globalization and Indian Economy

The concept of globalization was introduced in the Indian economy in July 1991. It was a part of the structural adjustment package during the period of the government of Prime Minister Narasimha Rao. The government soon applied for a loan of \$2.3 billion from the International Monetary Fund (IMF) and began fulfilling the anticipatory conditionalities, including two successive devaluations and withdrawal of export subsidies, to smoothen the passage of the application (Agarwal leads, 1995, P.182). The annual budget of July 1991 fully reflected the structural adjustment package, which came to be known as the New Economic Policy (NEP).

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## Section-2: Key Statement

### Basic key Statements:

Metamorphic Rocks (10.1.2), Sea Floor Spreading (10.1.2), Sediments (10.1.2), Duns (10.1.3), Glaciers and Snowline (10.1.6), Great Plain (10.1.8), Tarai Tract (10.1.8), Coastal Plain (10.1.11), Island (10.1.13), Vulcanicity (10.1.14), Drainage Pattern (10.2.2), Dendritic Drainage (10.2.2), Tributaries (10.2.5), Waterfall (10.2.8), Monsoon (10.3.1), Rural Settlement (10.5.1), Crop Combination (10.6.9), Backward Area (10.9.3), Integrated Area (10.9.2), Tsunami (10.10.1), Earthquake (10.10.1)

### Standard Key Statements:

Pangia (10.1.2), Anticident River (10.1.3), Ice Ages (10.1.7), Gondwana Ice Age (10.1.7), Peninsular (10.1.8), Bhabar Plain (10.1.8), Bhangar Plain (10.1.8), Khadar Plain (10.1.8), Marusthali (10.1.8), Bagar (10.1.8), Consequent (10.2.2), Subsequent Drainage (10.2.2), Barbed Pattern (10.2.2), El-Nino(10.3.1), Alluvial (10.4.6), Laterite (10.4.6), Compact Settlement (10.5.1), Semi Compact Settlement (10.5.1), Agricultural Productivity (10.6.5), Copping Pattern (10.6.5), Crop Concentration (10.6.7), Agricultural Intensity (10.6.7), Golden Quadrilateral (10.8.1),

### Advance Key Statement:

Eocene Periods (10.1.2), Geosyncline (10.1.2), Tertiary Granite (10.1.2), Dharwar Ice Age (10.1.7), Pleistocene (10.1.7), Malwa Palteau (10.1.11), South Decan (10.1.11), Rectangular Drainage (10.2.2), Radial (10.2.2), Jet Stream (10.3.2), Karewa (10.4.6), Scattered Settlement (10.5.1), Dispersed Settlement (10.5.1), Cloudburst (10.10.1)

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[N.B. – Values in parenthesis are the reference number]

### Section-3: Key Facts and Figures

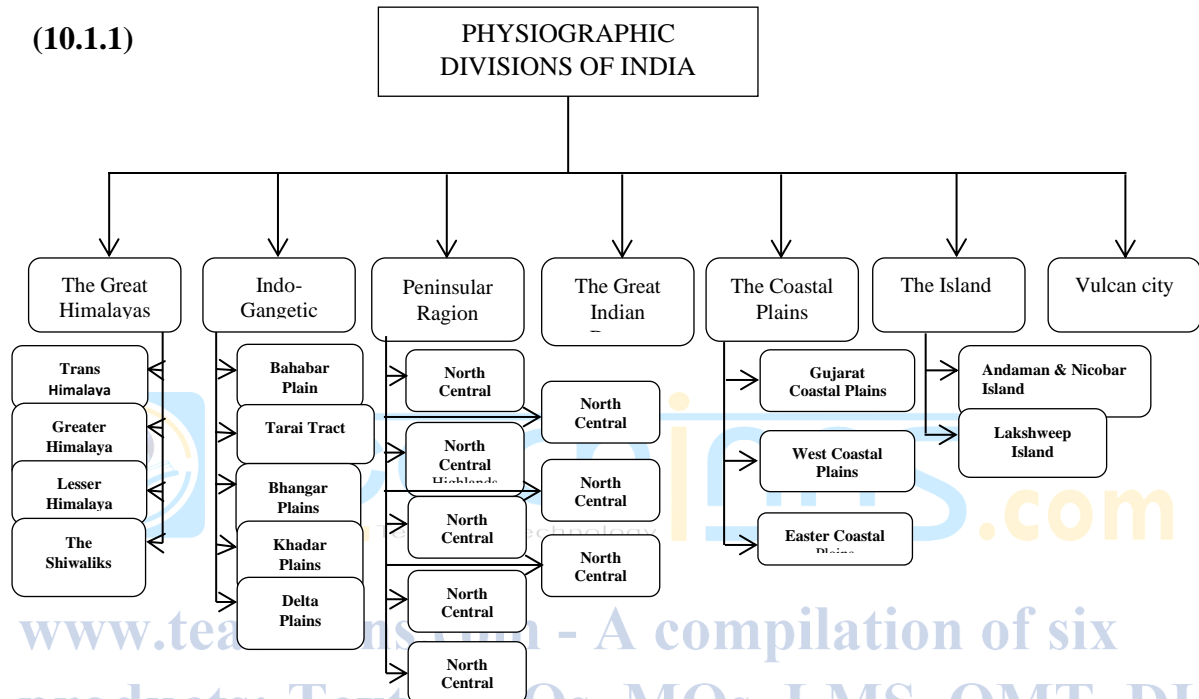
## Sub Unit – 1

# Geography of India

## Physiography & Physiographic Division of India:

**Introduction:** physiography deals with the study of the surface features and landforms of the Earth. On the basis of tectonic history, stratigraphy, and physiography, India may be divided into the following physiographic divisions as shown on the map.

(10.1.1)



**10.1.2. Origin of the Himalaya:** The origin of the Himalaya has been a point of contention among the geologists and geomorphologists. It is a complex mountain system having rocks from the Precambrian and Eocene periods. Mostly formed of sedimentary and metamorphic rocks, it has been subjected to intense folding and faulting. The main theories about the origin of the Himalayas are as under:

**(i) The Geosynclinal Origin**

The main supporters of the geosynclinal origin of the Himalaya are Argand, Kober, and Suess. According to these geologists, the disintegration of Pangaea, about 200 million years back, led to the formation of a long Tethys Sea between the Laurasian Shield (Angaraland) of the north and the Gondwanaland of the south. This sea was occupying the region of Himalaya during the Mesozoic Era (180 million years ago). At the end of the Palaeozoic and beginning of the Mesozoic Eras, the Tethys almost girdled the whole Earth running from Europe in the west to China in the east. Eroded material from the two land masses (Eurasian Shield – Angaraland and Gondwanaland) was deposited in the Tethys Sea and assumed considerable thickness due to the sinking nature of the sea bed. During the Cretaceous Period, the bed of the sea started rising which led to the folding of three successive ranges of the Himalaya. The first upheaval led to the formation of the Greater Himalaya during the Eocene Period (about 65 million years back). Similarly, the second upheaval took place during the Miocene Period (about 45 million years back) resulting in the formation of the Lesser Himalaya, and the third upheaval started in the Pliocene period (about 1.4 million years back) resulting in the formation of the Shiwalik or the Outer Himalaya.

**(ii) The Plate Tectonic Origin of the Himalaya**

The theory of Plate Tectonics was put forward by W. J. Morgan of Princeton University in 1967. This theory is based on the concept of “Sea-Floor Spreading” advocated by H.H. Hess. According to this theory, about 70 or 65 million years ago there was an extensive geosyncline, called the Tethys, in place of the Himalaya. About 65-30 million years ago the Indian plate came very close to the Asian plate and started subducting under the Asian plate. This caused lateral compression due to which the sediments of the Tethys were squeezed and folded into three parallel ranges of the Himalaya. It has been estimated that this convergence has caused a crustal shortening of about 500km in the Himalayan region and is compensated by sea floor spreading along the oceanic ridge in the Indian ocean region. Since the northward movement of the Indian plate is still continuing the height of the Himalayan peaks is increasing.

**10.1.3 Physiographic Divisions of the Himalaya**

For a systematic study of the physiographic and relief, the Himalaya may be divided into the following four divisions from north to south:

- a) The Trans-Himalaya
- b) The Greater Himalaya
- c) The Lesser Himalaya and
- d) The Shiwaliks or the Outer Himalaya.

**a) The Trans-Himalaya**

The Trans-Himalaya are about 40 km wide. They contain the Tethys sediments. The rocks of this region contain fossils bearing marine sediments which are underlain by “Tertiary granite”. It has partly metamorphosed sediments and constitutes the core of the Himalayan axis. It has a great accumulation of debris in the valleys of defeated streams which could not maintain their southerly course across the rising barrier of the Himalaya.

### **b) The Greater Himalaya**

The Greater Himalaya rise abruptly like a wall north of the Lesser Himalaya. The MCT separates the Greater Himalaya from the Lesser Himalaya. The Greater Himalaya are about 25 km wide with an average height above 6100 m (wadia, D.N.). Almost all the lofty peaks of the Himalaya, Mt. Everest, Kanchenjunga, Nanga-Parbat, Gasherbrum, Manaslu, Dhaulagiri, Annapurna, Gosainthan, Cho-Cyu, Nanda-Devi, Kamet, Badrinath, Nanda Devi, etc., lie in this zone. The Greater Himalaya are composed of crystalline, igneous or metamorphic rocks (granite, schists, and gneiss). The basal complex of the Himalaya is Archaean. At places, due to heavy thrust, older rocks are found overlying the newer rocks. The Greater Himalaya are almost a contiguous range. The range has very few gaps mainly provided by the antecedent rivers. The Greater Himalaya receive less rainfall as compared to the Lesser Himalaya and the Shiwaliks. Physical weathering is pronounced. Erosion is, however, less effective over the Greater Himalaya as compared to the Lesser Himalaya. Being lofty, they have very little forest area.

### **c) The Lesser Himalaya**

The width of the Lesser Himalaya is about 80 km with an average height of 1300-4600 m. It consists, generally, of fossiliferous sediments or metamorphosed crystalline. The main rocks are slate, limestone and quartzites. Along the southern margin of the Lesser Himalaya lies the autochthonous belt of highly compressed Upper Palaeozoic to Eocene rocks, often containing volcanic material. Examples of autochthonous belts are found between Murree and Panjal thrust in Kashmir, Giri thrusts in the Shimla region and Krol and MBT in Garhwal region. This region is subjected to extensive erosion due to heavy rainfall, deforestation, and urbanisation.

### **d) The Shiwaliks or Outer Himalaya/Sub-Himalaya**

The Shiwaliks extend from Jammu Division of Jammu and Kashmir State to Assam. In width Shiwaliks vary from 8 km in the east to 45 km in the west with an average elevation of about 900-1500m above sea level. It is not a continuous range. It is broader in the west and narrows down in the east. Between the Shiwaliks and the Lesser Himalaya are longitudinal valleys called Doons/Duns. Some of the important Duns are Dehra Dun, Potli, Kothri, Kathmandu, Chumbi, and Kyarda. The Shiwaliks are mainly composed of sandstones, sand-rocks, clay, conglomerates and limestones, mostly belonging to the upper Tertiary period.

## **10.1.4 Longitudinal Divisions of the Himalaya**

The Himalaya have also been divided by Sir. S. Burrard into four divisions, namely (i) The Western Himalaya, (ii) The Kumaun Himalaya, (iii) the Nepal Himalaya, (iv) The Assam Himalaya. Prof. S.P. Chatterjee (1973), divided the Himalaya into the following six transverse divisions from west to east.

- a) The Kashmir Himalaya
- b) The Himachal Himalaya
- c) The Kumaun Himalaya
- d) The Central Himalaya
- e) The Eastern Himalaya

### **a) The Kashmir Himalaya**

Sprawling over an area of about 350,000 sq. km in the state of Jammu and Kashmir, the range stretches about 700 km in length and 500 km in width. With an average height of 3000 m, it has the largest number of glaciers in India. The Ladakh region of the Kashmir Himalaya is characterised by cold desert conditions. Ladakh is one of the loftiest inhabited regions of the world (3600-4600m). The gorge of Gilgit is 5200 m in height above the sea level of the water at its bed. Surrounded by the Greater Himalaya and the Lesser Himalaya is the Kashmir Valley. Having a height of 1585 m above the sea-level, the total area of the Kashmir Valley is about

4920 sq. km. It is a structural longitudinal “Dum” (D.N. Wadia). A special feature of the Vale of Kashmir is the karawa (lacustrine) deposits consisting of silt, sand and clay. These Karewas are mainly devoted to the cultivation of saffron and have orchards of apple, peach, almond, walnut and apricot. Kashmir Himalaya are characterised by high snow-covered peaks, deep valleys, interlocked spurs and high mountain passes. Pir-panjal, Banihal (Jawahar tunnel), Zoji-La, Burzil, Khardungal, pensi-La, Saser-La, Lanak-la, Jara-La, Taska-La, Chang-La, Umasi-La, and Qara-Tagh-La (Karakoram) are the important mountain passes of the Kashmir Himalaya.

**The Himadri:** Known as the abode of gods, this section of the Himalaya has many snow-capped peaks, such known as Nanga-Parbat (8119 m), Nanda Devi (7817 m), Trisul (7140 m), Nunkun (7135 m), Kamath (7756 m), etc.

#### **b) The Himachal Himalaya**

Stretching over Himachal Pradesh, it occupies an area of about 45,000 sq. km. All the three ranges (the Greater, the Lesser, and Outter Himalaya) are well represented in this region. The northern slopes of the Himachal Himalaya are clothed with thick forests and show plains and lakes, while the southern slopes are rugged and forest clad. Rohtang, Bara-Lacha, and Shipki-La, are the important passes which join Himachal Pradesh with Tibet (China). The beautiful and highly productive valleys of Kangra, Kullu, Manali, Lahul, and Spiti lie in Himachal Pradesh. These valleys are well known for orchards and scenic beauty. Shimla, Dalhousie, Chamba, Dharamshala, Kullu-Manali are the important hill stations of this region.

#### **c) The Kumaun Himalaya**

The kumaun Himalaya lie between the satluj and the Kali rivers, stretching to a length of 320 km and occupying an area of about 38,000 sq km. Its highest peak is Nanda Devi (7817 m). Among the other peaks Kamet (7756 m), Trisul (7140 m), Badrinath (7138 m), Kedarnath (6940 m), Dunagiri (7066 m), Jaonli or Shivling (6638 m), Gangotri (6615 m), and Bandarpunch (6320 m) are important. Gangotri, Milam, and Pindar are main glaciers of Uttarakhand. The important hill stations include Mussorrie, Nainital, Ranikhet, Almora, and Bageshwar. The Kumaun Himalaya are connected to Tibet by a number of passes namely, Thaga-La Muling-La (5669 m), Mana pass, Niti Pass, (5068 m), Tun-Jun-La, Shalsal Pass, Balcha Dhura, Kungrinbingri Pass, Lampiya Dhura, Mangsha Dhura and Lipu Lekh.

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#### d) The Central Himalaya

This range stretches from river Kali to river Tista for about 800 km occupying an area of about 116,800 sq km. A major part of it lies in Nepal except the extreme eastern part called Sikkim Himalaya and in the Darjeeling District of West Bengal. All the three ranges of the Himalaya are represented here. The Highest peaks of the world like Mt. Everest (8850 m), Kanchenjunga (8598 m), Makalu (8481 m), Dhaulagiri (8172 m), Annapurna (8078 m), Manaslu (8154 m), and Gosainath (8014 m) are situated in this part of the Himalaya. It has very few passes. The passes of Nathu-La and Jelep-La (4538 m in Sikkim) connect Gangtok (Sikkim) with Lhasa (Tibet, China).

**Kanchanjunga:** Situated on the border of Sikkim and Tibet, it is the third highest mountain peak in the world. It is 8,598 m above sea level and remains snow covered throughout the year. Some of the important rivers of India like Kosi and Tista have their origin in this mountain.

#### e) The Eastern Himalaya

These lie between the Tista and the Brahmaputra rivers, covering a distance of about 720 km with an area of 67,500 sq km. The Eastern Himalaya occupy the state of Arunachal Pradesh (India) and Bhutan, in this part, the Himalaya rise very rapidly from the plains of Assam, and foothills of Shiwaliks are very narrow. The Eastern Himalaya include the Aka Hills, the Defla Hills, Miri Hills, Abor Hills, Mishmi Hills, and Namcha Barwa (7756 m). It has a number of mountain passes among which Bomdi-la, Bom La, Tunga, Yonggyap, Diphu, Pangsau, tse-La, Debang (Arunachal Pradesh) are the most important. In the Eastern Himalaya, due to heavy rainfall, fluvial erosion is quite pronounced.

On the southern border of Arunachal Pradesh, the Himalaya take a southerly turn and the ranges are arranged in a north-south direction. Passing through the states of Arunachal Pradesh (Tirap Division) Nagaland, Manipur, Tripura, and Mizoram, the Himalaya are locally known as Purvanchal. The main hills of the Eastern Himalaya are Patkai-Bum (Arunachal Pradesh), Naga-Hills (Nagaland), Manipur Hills, Blue Mountains (Mizoram), Tripura Range, and Brail range. On the border of Nagaland and Myanmar lies the Arakanyoma. These hills are heavily forested. Northern Myanmar is connected through Diphu, Hpungan, Chaukan, Pangsau, and Likhapani (Arunachal Pradesh). Southwards, a pass joins Imphal (Manipur) with Mandalay (Myanmar). The Purvanchal is joined by the Meghalaya Plateau in the west. The extension of the Myanmar mountain chain continues southward up to Andaman and Nicobar Islands and even up to the Archipelago of Indonesia.

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### 10.1.5 Main Mountain Passes of Himalayas

A mountain pass is a route through a mountain range or over a ridge. A pass plays a significant role in trade, war or migration.

#### Main Mountain passes

Name of the pass	Altitude above the sea level	Location
Aghil Pass	5000 m	Situated to the north of K2 in Karakoram
Banihal Pass	2835 m	It is located in the Pir Panjal Range on NH1A that has been numbered as NH44
Bara Lacha	4843 m	Himachal Pradesh
Bomdi La	4331 m	Arunachal Pradesh. It is situated to the east of Bhutan in Greater Himalaya
Burzail Pass	greater than 5000 m	Srinagar with Kishan-Ganga Valley
Chang-La	>5270 m	In Greater Himalayas Ladakh with Tibet
Debsa-La	5270 m	High Mountain Pass in Greater Himalayas between the Kullu and Spiti districts of Himachal Pradesh
Dihang Pass	4000 m	Situated in Himachal Pradesh
Diphu Pass		Situated in the eastern part of Arunachal Pradesh
Lmisi La	>4500 m	Ladakh region of India and Tibet in China
Khardung La	>6000 m	Near Leh in China region
Khunjerab La	>5000 m	Karakoram Mountains in Ladakh
Likhapani	>4000 m	Arunachal Pradesh
Lipu Lekh		Pithoragarh district, Uttarakhand
Mana Pass	5611 m	Great Himalayas
Mangsha Dhura Pass	5000 m	Pithoragarh district of Uttarakhand
Muling La		Situated North to Gangotri, Uttarakhand
Nathu La	4310 m	Situated at Indo-China border, Sikkim
Niti Pass	5068 m	Uttarakhand
Pangsau Pass	>4000 m	Arunachal Pradesh
Pensi La	>5000 m	Greater Himalayas
Pir Panjal Pass	3494 m	Mughal Road
Qara Tagh Pass	5540 m	Located in Karakoram Mountain
Rohtang Pass	3979 m	Eastern side of Pir Panjal Range, 51 km from Manali
Shencottah-Gap	>4300 m	Located through the Satluj Gorge
Shipki La	3930 m	Himachal Pradesh
Thang La	5359 m	Ladakh
Trill's pass	5212 m	Uttarakhand. Situated at the end of the Pindari Glacier in the Pithoragarh and Bageshwar district of Uttarakhand
Zoji La	3528 m	Kashmir (100 km from Srinagar)

### 10.1.6 Glaciers and Snowline

A glacier is a body of dense ice that drifts under its own weight. A glacier is formed by accumulation of snow exceeding its ablation point over many years. It is the largest reservoir of fresh water on the earth (about 75%).

#### Altitude of Snowline in the Himalaya

Sl. No	Himalaya Region	Altitude of Snowline
1	North Eastern Himalaya (Arunachal Pradesh)	4400 m
2	Kashmir Himalaya	5200 m to 5800 m
3	Kumaun Himalaya	5100 m to 5500 m
4	Karakoram	5500 m to above

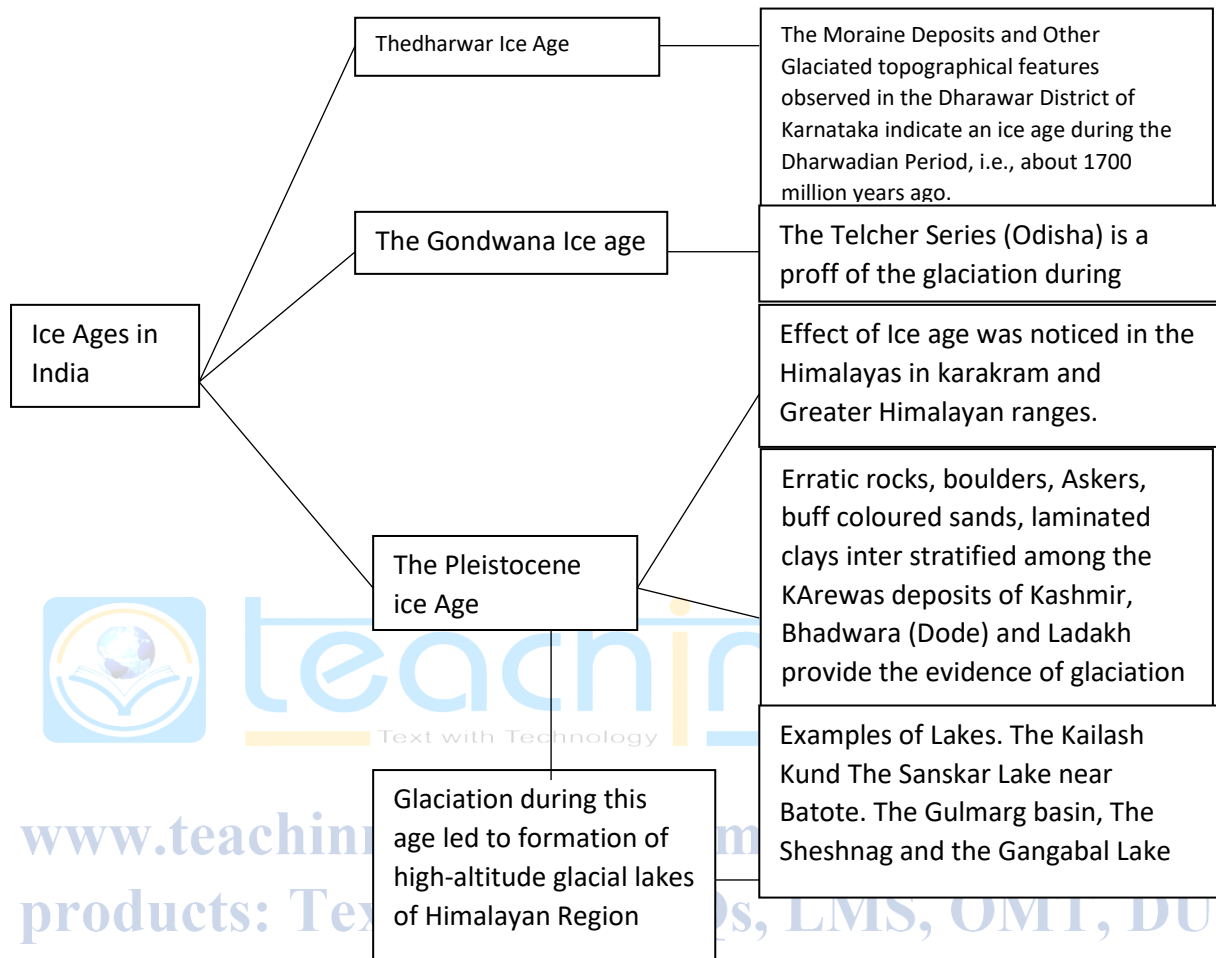
#### Main Glaciers of the Himalaya Region

Name of the glacier	Location	Length (km)	Altitude (m)
Siachen	Karakoram	76	5400
Biafo	Karakoram (Baltistan region of Ladakh)	60	5128
Chogo Lungma	Karakoram	50	5016
Gangotri	Uttarakhand	28	3415
Rimo	Siachen Area of Ladakh	40	7385
Hispar	Gilgit-Baltistan	63	5128
Zemu	Sikkim/Nepal	26	
Drang Drung	Himalayan Range	23	4780
Shafat	Eastern Himalayan Range	14	4400
Sonapani	Chandra Valley of Lahaul and Spiti region	15	4000
Milam	Uttarakhand	15	22290
Rupal	Kashmir	15	
Gangri	Nun Kun Mountains; Himalayan Range	13	7135
Bara Shigri	Chandra Valley of Lahaul in Himachal Pradesh	11	-4570
Diamir (Nanga Parbat)	Kashmir (Pakistan Occupied)	11	4203
Pindari	Kumaon Region of Uttarakhand	3	3353
Chong Kumdan	Karakoram	21	7071
Hispar	karakoram	60	5128

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### 10.1.7 Ice Ages in India

The subcontinent of India has recorded several ice ages. A brief Description of the Indian Ice Ages has been given in the following section:



### 10.1.8 The Great Plains of India:

The Great Plains of India lies to the south of the Shiwalik separated by the Himalayan Front fault (HFF). It is a transitional zone between the Himalaya of the north and Peninsular India of the south. It is an aggregational plain formed by the alluvial deposits of the Indus, Ganga, Brahmaputra and their tributaries. The plain stretches for about 2400 km from west to east. It has varying width, 90-100 km in Assam, 160 km near Rajmahal (Jharkhand), 200km in Bihar, 280 km near Allahabad and 500 km in Punjab. In general, the width of the plain increases from east to west.

#### Origin of the Great Plains of India

There is no unanimity amongst the geologists about the origin of the Great Plains of India. The puzzling questions are related to the enormous thickness of the alluvium, nature of the depression mode of its formation, subterranean rock-beds and the underlying geological structure. Some of the important views about the origin of the Northern Plain of India have been presented briefly in the following section:

### 10.1.9 Physiographic

The Great Plains of India are a remarkably homogeneous surface with an imperceptible slope. In fact, they are a featureless alluvial fertile plain formed mostly by the depositional process of the Himalaya and Vindhyan rivers. These rivers deposit enormous quantity of sediments along the foothills. Beyond the foothills, the rivers deposit the alluvium in their flood plains. The Northern Plains of India may be divided into the following sub-regions:

#### 1. The Bhabar Plain

- Location-lies to the south of the Shiwalik from west to east (Jammu Division to Assam).
- Its width is greater in the Western plains than in the eastern plains of Assam.
- Its width measures 8 to 15 km.
- Composition-Gravel and unasserted sediments deposited by the rivers descending from the Himalayan region and the Shiwaliks.
- Due to high porosity, small streams (chos and raos) disappear in the region and only big rivers flow over the surface in the tract.
- Unsuitable for crop cultivation.
- Big trees with large roots thrive in the region.
- Inhabitants are largely cattle keeping Gujjars.

#### 2. The Tarai Tract

- Location-Lies south to the Bhabar tract and it is 15-30 km wide.
- It is wide in the eastern parts of the Great Plains in Brahmaputra region due to high rainfall.
- It is a zone of excessive dampness, thick forests, rich wild life and infested with mosquitoes.
- Once a marshy zone of jungle and wild grass along the southern edge of the Shiwaliks, Tarai has been almost reclaimed for agriculture.
- In Uttarakhand, Uttar Pradesh, Haryana, Punjab, and Jammu Division (J&K) the Tarai forests have been cleared for cultivation of crops.
- Cultivated crops include sugarcane, rice, wheat, maize, oilseeds, pulses, fodder

#### 3. The Bhangar Plains

- They represent the upland alluvial tracts of the Great Plains of India, formed by the older alluviums.
- The Bhangar formations were deposited during the middle Pleistocene Period and it lies above the flood limits of the river.
- Its soil is dark in colour, rich in humus content and productive. It contains concretions and nodules of impure calcium carbonate or 'kankar'.
- In relatively drive areas, the Bhangar also exhibits small tracts of saline and alkaline efflorescence's known as 'Reh', 'Kallar', or 'Thur'.
- Bhangar is generally a well-drained and most productive land of the Great Plains of India.
- The Bhangar deposit have the fossils of elephants, horses, man, rhinoceros, hippopotamus, etc.



#### 4. The Khadar Plains

- The new alluvium tracts along the courses of the rivers are known as the 'Khadar' or 'Bet' lands.
- Tracts are enriched by fresh deposits of silt every year during the rainy season.
- Khadar land consists of sand, silt, clay and mud. Post-independence, this region has been brought under cultivation and devoted to sugarcane, rice, wheat, maize, oilseeds, legumes, and fodder crops.
- The Khadar deposits have the fossils of living species like man, deer, oxen, buffaloes, horses, elephants, rhino, etc.

#### 5. Delta Plains

- The deltaic plain is an extension of the Khadar land.
- It covers about 1.9 lakh sq km of area in the lower reaches of the Ganga River.
- It is an area of deposition as the river flows in this tract sluggishly.
- The deltaic plain consists mainly of old mud, new mud and marsh.
- In the delta region, the uplands are called 'Chars' while marshy areas are known as 'Bils'.
- The delta of Ganga being an active one is extending towards the Bay of Bengal.

#### 10.1.10 Meso-regions of the Northern Plains of India

On the basis of geo-climatic and topographical characteristics, the Northern Plains of India may be divided into the following four meso-regions.

- e) The Plains of Rajasthan;
- f) The Punjab Haryana Plains;
- g) The Ganga Plains; and
- h) The Brahmaputra Plains.

##### a) The Plains of Rajasthan

They lie to the west of the Aravallis and include the Marusthali and the Bagar of Rajasthan. The Rajasthan plains cover a total area of about 175,000 sq. km. This plain has a general slope from north-east to south-west. In the lower reaches of the Luni river (Gujarat), this plain is only 20 m above sea level. A substantial part of this plain has been formed by the recession of the sea as is evidenced by the presence of salt water lakes (Sambhar, Degana, Didwana Kuchaman, Lunkaransar-Tal, and Pachpadra). The Sambhar Lake occupying an area of about 300 sq. km during the rainy season lies about 65 km to the north-west of Jaipur city.

##### b) The Punjab Haryana Plains

Stretching over an area of about 650 km from north-east to south-west and 300 km from west to east, the Punjab-Haryana Plain is an aggregational plain, deposited by the Satluj, Beas, and Ravi rivers. The height of the plains varies from 300 m in the north-near Jammu and Kathua to 200 m in the south-east. In the east the Delhi Ridge separates it from the Gangetic Plain. The general direction of slope is from north-east to south-west and south. The main topographical features of the Punjab-Haryana Plains are bluffs, locally called as Dhaya, as high as three metres or more, and the Khadar belts known as Bet. The undulating topography south of the Shiwaliks is adversely affected erosion, caused by seasonal streams locally called as Chos. The south western parts, especially Hissar District is sandy, characterised by shifting sand-dunes. Satluj, Beas, and Ravi are the only perineal rivers. Between the Satluj and the Yamuna, the Ghaggar (the ancient Saraswati) is a seasonal stream which passes through Ambala Cantt. Its course is about ten km wide and contains water only during the rainy season.

### c) The Ganga Plains

The Ganga Plains lie between the Yamuna catchment in the west Bangladesh border in the east. It is about 1400 km from west to east and has an average width of 300 km from north to south. The general gradient of the plain is about 15 cm per km from north-west to south-east. The maximum height of this plain is found to the north of Saharanpur (276 m) followed by Roorkee (274 m), Agra (169 m), Kanpur (125 m), Allahabad (98 m), Patna (53 m), Kolkata (6 m), and Sagar Island only 3 m above sea level.

The main topographical variations in the plains include, Bhabar, Tarai, Bhangar, Khadar, river bluffs (levees), abandoned courses, Khol, dead-channels, Bills, Tals, and badlands.

### d) The Brahmaputra Plain

Stretching over an area of about 56,275 sq km, it is the eastern part of the Great Plains of India. It is about 720 km long and about 80 km wide. The region is surrounded by high mountains on all sides, except on the west. It is a depositional plain. The general altitude of the Brahmaputra Plain varies between 130 m in the east to only 30 m in the west. The northern tributaries descending from the Arunachal and Assam Hills form a series of alluvial fans which coalesce and obstruct the courses of the tributaries forcing them to form meanders and adopt parallel course along the main stream, Brahmaputra. Consequently, there are numerous levees along the north bank. This has led to the formation of Bills, ox-bow lakes, marshy tracts, and Tarai lands with dense forest cover. The southern bank of the Brahmaputra is less uneven and less wide. Moreover, the tributaries in the southern part are considerably larger. Here Dhansiri and Kapili, through their headward erosion have almost isolated the Mikir and Rengma hills from the Meghalaya Plateau.

## 10.1.11 Physiography and relief features of Peninsular India:

Covering an area of about 16 lakh sq. km, the peninsular upland forms the largest physiographic division of India. With a general elevation between 600-900 m, the region constitutes an irregular triangle with its base lying between the Delhi Ridge and the Rajmahal Hills and the apex formed by Kanyakumari.

### 1. The North Central Highlands:

The central highlands of peninsular India include the Aravallis, the Malwa Plateau, and the Vindhyan Range.

- (i) **The Aravallis:** It is a range that runs from north-east to south-west for about 800 km between Delhi to Palanpur (Gujrat). It is one of the oldest folded mountains of the world. Being highly denuded, its highest peak-Guru-Sikhar- is only 1722 m in height.
- (ii) **The Malwa Plateau:** It is bordered by the Aravallis in the north, the Vindhyan Range in the south and the Bundelkhand Plateau in the east. The Malwa Plateau has two drainage systems, one towards the Arabian Sea (Narmada and Mahi), and another towards the Bay of Bengal (Chambal, Sind, Betwa, and Ken) joining the Yamuna river.

### 2. The South-Central Highlands:

The Vindhyan Range extends from Jabat (Gujrat) and Chittorgarh (Rajasthan) to Sasaram in Bihar. It extends for about 1050 km with general elevation between the Vindhyan and the Satpura mountains.

### 3. The Chotanagpur Plateau:

The Chotanagpur Plateau sprawls over parts of West Bengal, Jharkhand, Chhattisgarh, Odisha, and north-eastern part of Andhra Pradesh. This Plateau has a series of the meso and micro plateaus (Ranchi, Hazaribagh, Singhbhum, Dhanbad, Palamu, Santhal, Parganas, and Purulia districts of west Bengal). It is composed of Archaean granite and gneiss rock with patches of the Cretaceous Period.

Moreover, the Chhotanagpur Plateau consists of plateaux at different levels of elevation, the highest general elevation of about 1100 m in the mid-western parts is known as pat lands.

### 4. The Meghalaya Plateau and Mikir Hills:

Consisting of the Garo, Khasi, Jaintia hills and the outlying Mikir and Rengma hills, it is a plateau which has been detached from the Indian Peninsula by the Malda Gap. The Meghalaya Plateau has a chequered evolutionary history of emergence, submergence, planation surface with several phases of erosion, sedimentation, diastrophism and intrusions. The Shillong Peak is the highest elevation (1823 m) in the Meghalaya Plateau, while Norkek (1515 m) is the highest Peak of the Garo Hills. Mawsynram ( $25^{\circ}15'N$ ,  $91^{\circ}44'E$ ) about 16 km west of Cherrapunji records the highest rainfall in the world.

### 5. The North Deccan (Maharashtra Plateau):

The plateau of Maharashtra includes the entire state of Maharashtra, except the Konkan coast and the Sahyadris. It is mainly covered by the basalt of the Cretaceous Period. The basaltic sheet has a thickness of about 3 km in the western parts which diminishes towards the east and south-east. The most striking feature of the Maharashtra Plateau is the fault (1000 m), giving rise to the present shoreline of the Arabian Sea.

### 6. The South Deccan:

- (i) **Karnataka Plateau:** This Plateau has an average elevation of 600-900 m. Mulangiri (1913 m) is the highest peak in Baba-Budan Hills, followed by the Kudermukh (1892 m) peak.
- (ii) **The Telengana Plateau:** The plateau of Telengana consists of Dharwar and Cuddapah formations.
- (iii) **The Tamil Nadu Uplands:** This upland lies between the South Sahyadri and Tamil Nadu coastal plains. Between Coimbatore and Anaimalais, there is a board gap, known as Palakkad Gap (Palghat), about 25 km wide.

### 7. The Western Ghats:

The Western Ghats in Sanskrit Sahyadris run parallel to the western coast for about 1600 km in the north south direction from the mouth of the Tapi river to Kanyakumari (Cape Camorin). The average elevation of the Western Ghats varies between 1000 to 1300 m. Anaimudi is the highest peak of Sahayadris Mt. is 2695 m above the sea level.

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## 8. The Eastern Ghats:

The Eastern Ghats form the eastern boundary of the Deccan Plateau. It is a massive outlying block of hills. The average height of the Eastern Ghats is above 600 m. The Eastern Ghat is a series of detached hills of heterogeneous composition which are called by various local names. The peak of Aroya-Konda (Andhra Pradesh) with an elevation of 1680 m is the highest peak of the Eastern Ghats.

### 10.1.12 The Coastal Plains

The peninsular plateau of India is flanked by narrow coastal plains of varied width from north to south, known as the West-Coastal Plains and the East-Coastal Plains. These coastal plains differ from each other. They were formed by the depositional action of the river and the erosional and depositional actions of the sea waves.

According to geologist, the origin of the western and eastern coasts of India may be attributed to the faulting and subsidence of the Arabian Sea and the Bay of Bengal towards the close of the Eocene Period. Consequently, alluvial deposits along these coasts are very recent origin, ranging from Pliocene to recent times. These coastal plains have the evidence of submergence and emergence. The Indian coastal plains may be subdivided into the following three divisions: (i) The Gujrat Coastal Plain, (ii) The West Coastal Plain, and (iii) The East Coastal Plain.

#### (i) The Gujrat Coastal Plain:

The Gujrat plain covers almost the entire state of Gujrat, except the districts of Banaskantha and Sabarkantha. It is formed by the alluvial deposits of Sabarmati, Mahi, Luni, and numerous tiny parallel consequent streams. Part of this plain is the product of the winds and recession of the sea. It contains the Gondwana rock (Umia Series), resting over the marine Jurassic rock and capped by lower Cretaceous (Apatian) beds. The Deccan lava lies over the Umia series. Sahyadris in the southern side and igneous complex of the Girnar Hills (Goraknath Peak, 1117 m) and Mandev Hills in Kathiawad.

#### (ii) The West Coastal Plain:

It lies between the Sahyadris and the Arabian Sea. It is about 1400 km long and 10 to 80 km wide. It has an elevation up to 150m above sea level, reaching more than 300 m at places. The Western Coastal plain is characterised mainly by sandy beaches, coastal sand-dunes, mud-flats, lagoons, alluvial tracts along rivers, estuary, laterite-platforms and residual hills. The Sahyadris (elevation 750-1225 m) run parallel to the plain and present their steep face to the low lands with Thalaghaat and Bhorghat (gaps) in the north and the Palghat (Plakkad Gap) in the south of Nilgiri. The northern part of the west coastal plain, known as the Konkan Plain, is about 530 km long and 30 to 50 km wide. Southward is the Karnataka Coastal plain which is about 525 km long and 8 to 25 km wide. It is the narrowest part of the West Coastal plain. The southern part is known as the Malabar coast which is about 550 km long and 20 to 100 km wide.

#### The Eastern Coastal Plain:

The eastern coastal plain lies between the Eastern Ghats and the Bay of Bengal, and stretches along the coasts of Odisha, Andhra Pradesh, and Tamil Nadu. These Plains are formed by the alluvial fillings of the littoral zone comprising some of the largest deltas of the world. The East-Coastal plains consist mainly of recent and Tertiary alluvial deposits. These are gently, monotonous plains rising gently westwards to the foot of the eastern Ghats. The monotony of the topography is broken by the presence of numerous hills. This coastal plain has a straight shoreline with well-defined beaches of sand and shingles.

### 10.1.13 The Indian Islands

India has a total of 615 islands, of which 572 lie in the Bay of Bengal, and remaining 43 in the Arabian Sea. Out of the 572 islands of Andaman and Nicobar, only 36 are inhabited. The Bay of Bengal islands include the Andaman and Nicobar Islands which are largely tectonic and volcanic in origin, while the islands of the Arabian Sea are mainly coral formations. Moreover, there are a number of offshore islands along the mouth of the Ganga, eastern and western coasts and in the Gulfs of Khambhat, Kachchh and Mannar.

#### Islands of the Bay of Bengal:

The main islands of the Bay of Bengal are the Andaman and Nicobar groups. The Andaman and Nicobar Islands are separated by the Ten Degree Channel. The shortest distance of the Andaman Islands from the mainland (Bay of Bengal Head) is about 2000 km and the extreme southern point is the Indira point- the southernmost point of the Great Nicobar Island.

#### The Arabian Sea Islands:

There are 43 islands in the Arabian Sea, out of which only 11 are inhabited. The shortest distance from the mainland (Calicut) is about 109 km. Kavaratti, located on the island of this name is the capital of Lakshadweep. Lakshadweep islands are separated from the Maldives by the Eight-degree Channel. Hills and Streams are absent on these islands.

#### Offshore Islands:

There are numerous islands in the delta region of Ganga and in the gulf of Mannar. Among the Western coast islands Piram, Bhaisala (Kathiawar), Diu, Vaidia, Nora, Priotian (Priothan), Karunbhar (Kachchh coast), Khadiabet, Alibet (Narmada-Tapi mouths) Butchers, Elephanta, Karanja, cros (Near Mumbai), Bhatkal, Pegioncock, St. Mary (Mangalore coast), Anjidiv (Goa coast), Vypin near Kochi, Pamban, Crocodile, Adunda (Gulf of Mannar), Sri Harikota (mouth of pullicat lake, Pairkud (mouth of Chika Lake), Short, Wheeler (Mahanadi-Brahmani mouth), and New Moore, and Ganga-Sagar and Sagar (Ganga Delta). Many of these islands are uninhabited and administered by the adjacent states.

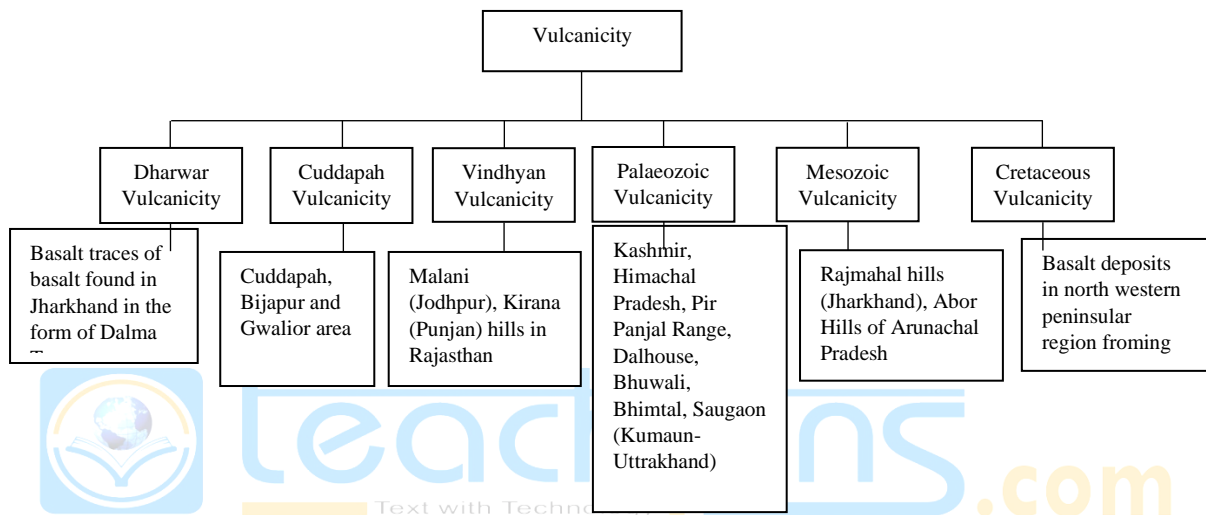
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### 10.1.14 Vulcanicity

A volcano is an opening in the crust of the earth, connected by a conduit to underlying magma chamber, from which molten lava, volcanic gases, steam, and pyroclastic materials are ejected. It is Usually in the form of a peak which may be cone shaped or dome-shaped depending on the type of volcano and type of material ejected. The main causes of volcanic eruptions are associated with sea-floor spreading, plate-tectonics, and mountain building processes.

At present, the only active volcanoes in India are the Barren and Narcondam Islands (Andaman group of Islands), but geographical evidence is available for vulcanicity in the past. Prof. H.L. Chibber (1945) has identified six episodes of vulcanicity in the given as follow:



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# Previous Year Questions Analysis with Explanation

## Unit – 10 Sub Unit – 1

**December - 14**

**1. The Pir Panjal range lies in**

- (A) Outer Himalayas
- (B) Trans Himalayas
- (C) Greater Himalayas
- (D) Middle Himalayas

**Answer: C**

**Explanation: -**

The Pir Panjal Range, also Panchaladeva in Hindu scriptures, is a group of mountains in the Lesser Himalayan region, running from east-southeast (ESE) to west-northwest (WNW) across the Indian state of Himachal Pradesh, the Indian administrated Union Territory of Jammu and Kashmir and the Pakistani administered territory of Azad Kashmir, where the average elevation varies from 1,400 m (4,600 ft) to 4,100 m (13,500 ft).<sup>[1]</sup> The Himalayas show a gradual elevation towards the Dhauladhar and Pir Panjal ranges. Pir Panjal is the largest range of the Lesser Himalayas. Near the bank of the Sutlej River, it dissociates itself from the Himalayas and forms a divide between the Beas and Ravi rivers on one side and the Chenab on the other. The renowned Galyat mountains are also located in this range.

**2. Match the following List – I with List – II and select the correct answer from the codes given:**

<b>List – I</b>	<b>List – II</b>
<b>(Mountain Range)</b>	<b>(Highest Peak)</b>
a. The Western Ghats	i. Doddabetta
b. The Eastern Ghats	ii. Gurusikhar
c. The Nilgiris	iii. Annamudai
d. The Aravalis	iv. Deomali

**Codes:**

	<b>(a)</b>	<b>(b)</b>	<b>(c)</b>	<b>(d)</b>
(A)	i	ii	iii	iv
(B)	iv	ii	i	iii
(C)	ii	iii	iv	i
(D)	iii	iv	i	ii

**Answer: D**

**Explanation: -**

Doddabetta is the highest mountain in the Nilgiri Mountains at 2,637 metres. There is a reserved forest area around the peak. It is 9 km from Ooty, on the Ooty-Kotagiri Road in the

Nilgiris District of Tamil Nadu, India. It is a popular tourist attraction with road access to the summit.

Guru Shikhar, a peak in the Arbuda Mountains of Rajasthan, is the highest point of the Aravalli Range. It rises to an elevation of 1,722 metres. It is 15 km from Mount Abu and a road from there leads almost to the top of the mountain.

Anamudi is a mountain located in the Indian state of Kerala. It is the highest peak in the Western Ghats and South India, at an elevation of 2,695 metres and a topographic prominence of 2,479 metres. It lies on the border of Devikulam Taluk, Idukki district and Kothamangalam Taluk, Ernakulam district.

Deomali, is a mountain peak in the Chandragiri-Pottangi subrange of the Eastern Ghats. It is located near Koraput town in the Koraput district of southern Odisha, India.

**3. Given below are two statements, one labelled as Assertion (A) and the other labelled as**

**Reason (R).** Select the correct answer from the codes given below:

**Assertion (A):** Indus and Ganges are the antecedent rivers.

**Reason (R):** These rivers pass through the very narrow and deep gorges in the Himalayan mountain region.

**Codes:**

(A) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(B) Both (A) and (R) are correct, but (R) is not the correct explanation of (A).

(C) (A) is correct, but (R) is false.

(D) (A) is false but (R) is correct.

**Answer: B**

**Explanation: -**

The Indus, the Sutlej, the Ganga, the Ghaghra, the Kosi, the Brahmaputra etc., are antecedent to all of the three ranges of the Himalayas as they cut across the Greater, the Lesser and the Outer Himalayan ranges. All of these rivers have formed deep and narrow gorges while cutting across the Himalayan ranges.

**4. Match the following List – I with List – II and select the correct answer from the codes given:**

**List – I**

**(Rivers)**

a. Chenab

b. Beas

c. Ganga

d. Brahmaputra

**List – II**

**(Origin)**

i. Great Himalaya

ii. Kullu Hills

iii. Gangotri

iv. Kailas Range

**Codes:**

	(a)	(b)	(c)	(d)
(A)	i	ii	iii	iv
(B)	i	iii	ii	iv
(C)	ii	iii	i	ii
(D)	iv	iii	i	ii

**Answer: A**

**5.** Match the following **List – I** with **List – II** and select the correct answer from the codes given:

<b>List – I</b>	<b>List – II</b>
<b>(Plateau)</b>	<b>(States)</b>
a. Bhandar	i. Chhattisgarh
b. Ranchi	ii. Madhya Pradesh
c. Bastar	iii. Jharkhand
d. Shillong	iv. Meghalaya

**Codes:**

	(a)	(b)	(c)	(d)
(A)	i	ii	iii	iv
(B)	i	iii	iv	ii
(C)	ii	iii	i	iv
(D)	ii	i	iii	iv

**Answer: C**

**Explanation: -**

The Chhota Nagpur Plateau is a plateau in eastern India, which covers much of Jharkhand state as well as adjacent parts of Odisha, West Bengal and Chhattisgarh. The Indo-Gangetic plain lies to the north and east of the plateau, and the basin of the Mahanadi River lies to the south.

**December - 15**

**1. Which one of the following passes connects Arunachal Pradesh with Tibet?**

- (A) Aghil
- (B) Bom - Di La
- (C) Banihal
- (D) Changla

**Answer: B**

**Explanation: -**

Bomdila is the headquarters of West Kameng district in the state of Arunachal Pradesh in India. Bomdila is one of the 60 constituencies of the state of Arunachal Pradesh.



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## July - 16

**1. Which one of the following plateaus lies between Aravali and Vindhyan ranges?**

- (A) Chhota Nagpur
- (B) Deccan
- (C) Malwa
- (D) Both (2) and (3)

**Answer: C**

**Explanation: -**

The Malwa plateau lies between Aravali and Vindhya ranges.

**2. Which of the following mountain ranges does not emerge from the Pamir Knot?**

- (A) Hindu Kush
- (B) Zagros
- (C) Tienshan
- (D) Kunlun

**Answer: B**

**Explanation: -**

The “knot” refers to the convergence of some of the world's major mountain ranges, including the TIAN SHAN, Karakorum, Kunlun, HINDU KUSH, and Pamir systems. It is located in the Gorno-Badakhshan autonomous region of eastern TAJIKISTAN.

**3. Which one of the following sequences of physical features is correct?**

- (A) Mountain, Tarai, Plain and Bhabhar
- (B) Plain, Bhabhar, Tarai and Mountain
- (C) Mountain, Plain, Bhabhar and Tarai
- (D) Plain, Tarai, Bhabhar and Mountain

**Answer: D**

**Explanation: -**

Tarai, also spelled Terai, region of northern India and southern Nepal running parallel to the lower ranges of the Himalayas. A strip of undulating former marshland, it stretches from the Yamuna River in the west to the Brahmaputra River in the east.

A plain is a broad area of relatively flat land. Plains are one of the major landforms, or types of land, on Earth. They cover more than one-third of the world's land area. Plains exist on every continent.

Bhabar or *Bhabhar* is a region south of the Lower Himalayas and the Sivalik Hills in Uttarakhand state of India.

A mountain is a large landform that rises above the surrounding land in a limited area, usually in the form of a peak. A mountain is generally considered to be steeper than a hill. Mountains are formed through tectonic forces or volcanism.

**4. Match List – I with List – II and select the correct answer using the codes given below:**

<b>List – I</b>	<b>List – II</b>
<b>(Hill Name)</b>	<b>(State Name)</b>
I. Mikir Hills	A. Madhya Pradesh
II. Amarkantak	B. Assam
III. Khasi Hills	C. Karnataka
IV. Baba Budan Hills	D. Meghalaya

**Codes:**

- (a) (b) (c) (d)
- (A) ii iii i iv  
 (B) iv i iii ii  
 (C) ii i iv iii  
 (D) iv iii ii i

**Answer: C**

**Explanation: -**

Mikir Hills are a group of hills located to the south of the Kaziranga National Park, Assam. The easternmost Meghalaya comprising the detached Mikir Hills is partly isolated being surrounded by three sides. Karbi plateau or Mikir Hills is known oldest landform in Assam.

Amarkantak is a pilgrim town and a Nagar Panchayat in Anuppur, Madhya Pradesh, India. The Amarkantak region is a unique natural heritage area and is the meeting point of the Vindhya and the Satpura Ranges, with the Maikal Hills being the fulcrum. This is where the Narmada River, the Son River and Johila River emerge.

The Khasi Hills is a low mountain formation on the Shillong Plateau in Meghalaya state of India. The Khasi Hills are part of the Garo-Khasi-Jaintia range and connects with the Purvanchal Range and larger Patkai Range further east.

Baba Budangiri is a mountain in the Baba Budan range of the Western Ghats of India. Located in the Chikmagalur taluk, Chikmagalur District of Karnataka, Baba Budangiri is known for its shrine to the Sufi saint Baba Budan, a pilgrimage site for both Hindus and Muslims.

## January - 17

1. Which one of the following regions separates the Great Plains of North India from the plateaus and coastal plains of the Deccan?

- (A) Central Highlands
- (B) Western Himalayas
- (C) Eastern Himalayas
- (D) Western Arid Plains

**Answer: A**

**Explanation: -**

Part lying to the north of the Narmada river. Major part of the Malwa plateau makes up the central highland. Covered by Vindhya at North, Satpura at South and Aravalis on the Northwest. The central Highland are wider in the West but narrower in the East known as Bundelkhand and Baghelkhand.

2. Given below are two statements, one labelled as Assertion (A) and other labelled as Reason (R). Select your answer from the codes given below:

**Assertion (A):** The Tarai region represents a marsh like landscape.

**Reason (R):** The Tarai region is a zone of seepage where the fine sand, silt and clay are deposited by the emerging streams.

**Codes:**

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
- (C) (A) is true, but (R) is false.
- (D) (A) is false, but (R) is true.

**Answer: A**

**Explanation: -**

Tarai, also spelled Terai, region of northern India and southern Nepal running parallel to the lower ranges of the Himalayas. A strip of undulating former marshland, it stretches from the Yamuna River in the west to the Brahmaputra River in the east.

It is the *zone of seepage* where *fine sand, silt and clay* are *deposited* by the *emerging streams*.

3. Which one of the following statements is correct?

- (A) One Himalayas were formed due to faulting of the earth's crust.
- (B) Himalayas are the oldest mountains.
- (C) Himalayas belong to the Caledonian mountain system.
- (D) Himalayas have risen from the Tethys Sea when the sea got compress

**Answer: D**

**Explanation: -**

The Himalayan mountain range and Tibetan plateau have formed as a result of the collision between the Indian Plate and Eurasian Plate which began 50 million years ago and continues today. 225 million

years ago (Ma) India was a large island situated off the Australian coast and separated from Asia by the Tethys Ocean.

**4. The oldest rocks in India are reported from**

- (A) Siwalik range
- (B) Aravali range
- (C) Dharwar region
- (D) Vindhyan range

**Answer: C**

**Explanation: -**

The oldest rocks in India are reported from Dharwar region, Karnataka.

**5. Match List-I with List-II and select the correct answer from the codes given below:**

List-I	List-II
(Pass)	(State)
I. Shipki-la	A. Arunachal Pradesh
II. Niti	B. Himachal Pradesh
III. Nathu-la	C. Uttarakhand
IV. Bomdi-la	D. Sikkim

**Codes:**

	(a)	(b)	(c)	(d)
(A)	i	ii	iii	iv
(B)	iii	i	ii	iv
(C)	ii	iii	iv	i
(D)	iv	ii	I	iii

**Answer: C**

**Explanation: -**

Shipki La is a mountain pass and border post with a dozen buildings of significant size on the India-China border. The river Sutlej, which is called Langqên Zangbo in Tibet, enters India near this pass. A spur road on the Indian side rises to an altitude of 4,720 metres four km southwest of Shipki La.

*Niti Pass* is an international high mountain pass at an elevation of 5.070m (16633ft) connecting Uttarakhand.

Nathu La is a mountain pass in the Himalayas in East Sikkim district. It connects the Indian state of Sikkim with China's Tibet Autonomous Region. The pass, at 4,310 m above mean sea level, forms a part of an offshoot of the ancient Tea Horse Road. Nathu means "listening ears" and La means "pass" in Tibetan.

The Bum La Pass is located about 37 km away from Tawang in Arunachal Pradesh, at the Indo-China border above 15,200 ft above sea level.

## November - 17

1. Which one of the following passes connects Arunachal Pradesh with Tibet?

- (A) Banihal Pass
- (B) Chang La Pass
- (C) Bom Dila Pass
- (D) Aghil Pass

**Answer: C**

**Explanation: -**

The Bomdi-La pass connects Arunachal Pradesh with Lhasa, the capital city of Tibet. It is located in the east of Bhutan. It is located in the Northeastern states of Arunachal Pradesh.

2. Match List - I with the List - II and select the correct answer from the code given below:

List - I (Mountains/Ranges)	List - II (Peaks)
(a) Nilgiri	(i) Sagarmatha
(b) Satpura	(ii) Mt. Abu
(c) Aravalli	(iii) Dhupgarh
(d) Himalaya	(iv) Dodabetta

**Code:**

- |         |     |     |     |
|---------|-----|-----|-----|
| (a)     | (b) | (c) | (d) |
| (A) iii | iv  | i   | ii  |
| (B) i   | ii  | iii | iv  |
| (C) iv  | ii  | ii  | i   |
| (D) iii | iv  | ii  | i   |

**Answer: C**

**Explanation: -**

Its most common Tibetan name, Chomolungma, means “Goddess Mother of the World” or “Goddess of the Valley.” The Sanskrit name Sagarmatha means literally “Peak of Heaven.” Its identity as the highest point on the Earth's surface was not recognized, however, until 1852, when the governmental Survey of India established.

Mount Abu is a hill station in western India's Rajasthan state, near the Gujarat border. Set on a high rocky plateau in the Aravalli Range and surrounded by forest, it offers a relatively cool climate and views over the arid plains below. In the center of town, Nakki Lake is a popular spot for boating.

Mount Dhupgarh or Dhoopgarh is the highest point in the Mahadeo Hills, Madhya Pradesh, India. Located in Pachmarhi, it has an elevation of 1,352 metres. The top of the hill is a popular area to watch sunsets. Pachmarhi Hill station is located close to the peak.

Doddabetta is the highest mountain in the Nilgiri Mountains at 2,637 metres. There is a reserved forest area around the peak. It is 9 km from Ooty, on the Ooty-Kotagiri Road in the Nilgiris District of Tamil Nadu, India. It is a popular tourist attraction with road access to the summit.



## Model Questions

1. Why is there difference in local time within the Eastern and Western extremes of India?
  - (a) Because of the great areal extent.
  - (b) Because of the latitudinal differences between the two extremes
  - (c) Because of the great longitudinal extent the country has
  - (d) Due to Greenwich mean time standards.
2. The Indian states which share borders with China are
  - (a) West Bengal, Sikkim, Assam and Arunachal Pradesh
  - (b) Bihar, West Bengal, Jammu and Kashmir
  - (c) Himachal Pradesh, Gujarat, Sikkim, Jammu and Kashmir
  - (d) Jammu and Kashmir, Arunachal Pradesh, Himachal Pradesh, Sikkim and Uttarakhand
3. Which one of the following states has the longest coastline?
  - (a) Maharashtra
  - (b) Tamil Nadu
  - (c) Andhra Pradesh
  - (d) Karnataka
4. Which one of the following physiographic units has been created by both exogenic and endogenic forces?
  - (a) The Peninsular plateau
  - (b) The Thar desert
  - (c) The Indo-Gangetic plain
  - (d) The Himalayas
5. Geologically, which of the following physiographic divisions of India is supposed to be one of the most stable land blocks?
  - (a) The Himalayas
  - (b) The Peninsular plateau
  - (c) The Northern plains
  - (d) The Indian desert
6. The disintegration of Pangea and formation of Tethys sea and Himalayas is described by which theory?
  - (a) The Plate Tectonics Theory
  - (b) Subsidence Theory
  - (c) The Geosynclinals Origin
  - (d) The Foredeep Theory
7. Geographically, the Himalayas are divided into
  - (a) Himachal, Darjeeling, Arunachal Pradesh and Eastern hills
  - (b) New and old Himalayas
  - (c) Greater, Trans, Lesser and Outer Himalayas
  - (d) Greater, Trans and Outer Himalayas

8. Which is the correct sequence of the following ranges from North to South?

- (a) Karakoram, Zaskar, Laddakh, Greater Himalayas
- (b) Karakoram, Laddakh, Zaskar, Greater Himalayas
- (c) Karakoram, Greater Himalayas, Zaskar, Laddakh
- (d) Karakoram, Zaskar, Greater Himalayas, Laddakh

9. The Himalayan front fault is located between

- (a) Siwaliks and Lesser Himalayas
- (b) Great and Trans Himalayas
- (c) Lesser and Great Himalayas
- (d) Siwaliks and Piedmont zone

10. The Western Syntaxial bend of the Himalayas is near

- (a) Zaskar Range
- (b) Pir Panjal Range
- (c) Nanga Parbat
- (d) Siwalik Hills

### Answer with Reference

QUESTION NO.	ANSWER	REFERENCE
1.	c	Physiography and Physiographic Division of India
2.	d	Physiography and Physiographic Division of India
3.	c	Physiography and Physiographic Division of India
4.	c	Physiography and Physiographic Division of India
5.	a	Physiography and Physiographic Division of India
6.	c	Physiography and Physiographic Division of India
7.	c	Physiography and Physiographic Division of India
8.	b	Physiography and Physiographic Division of India
9.	d	Physiography and Physiographic Division of India
10.	a	Physiography and Physiographic Division of India

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