Unit-1
Geography: Meaning, features, Branches and Relationship with Tourism

Structure:

1.0 Objectives:

The following are the main objectives of the present unit:

- To understand the meaning and salient characteristics of Geography
- To know the different branches of Geography
- To learn the relationship between Geography and Tourism

1.1 Introduction:

Globalisation has increased tourist movement between places, both internationally and domestically, resulting in both positive and negative social, economic, and environmental impacts at various geographic scales. Different tourist motivational factors reflect a variety of needs that shape their decision-making and behaviour. Tourism geography has shifted from a focus on place description in earlier periods to today's focus on understanding the growth of the tourism industry and the relationship between tourists and different destinations. This shift reflects the rise of critical and cultural turns in geographic theory and research, encompassing concepts such as modernity, mobility, globalisation, production, consumption, identity, and sustainability.

1.2 Meaning and Characteristics of Geography:

Meaning of Geography:

In Geography, we study different places and the relationships between people and their environments. Geographers research the physical properties of Earth's surface and the human societies that inhabit it. They also examine how humans interact with the natural environment and how places and their characteristics can impact people. In geography, we study where different things are found, why they exist, and how they develop and change over time.

We broadly divide Geography into two branches:

- **Human geography:** Human geography studies people and their communities, cultures, economies, and environmental interactions by studying their relations with and across space and place.

- **Physical geography:** Physical geography highlights the processes and patterns of the natural environment, including the atmosphere, hydrosphere, biosphere, and geosphere.

Characteristics of Geography:

The following are the different features of Geography:

- Geography has two broad branches- Physical Geography and Human Geography.
- Geography studies the relationship between human activities and their physical environment.
- Geography is the study of Earth and its different components, viz. Water bodies, forests, Deserts, Mountain ranges, etc.
- Geography increases our understanding of Mother Earth.
- Geography helps us calculate the time.
- It helps us to calculate the distance between different destinations
- It helps us to know the exact location of a destination.

1.3 Different Branches of Geography:

Geography is so broad because the discipline is divided into many categories. In the broadest sense, geography is divided into physical and human geography. The details of these two categories are listed below:

- **Physical Geography:**

The natural environment is the primary concern of physical geographers, though many also examine how humans have altered natural systems. Physical geographers study Earth's seasons, climate, atmosphere, soil, streams, landforms, and oceans. Some disciplines within physical geography include:

▪ **Geomorphology:** the study of landforms and their formation. Geomorphologists study the impact of wind, ice, rivers, oceans, seas, volcanoes, earthquakes, and various fauna species on the shape of different landforms on Earth.

- **Glaciology:** Glaciologists study icebergs and their impacts on the world's climate. Usually, they study icebergs found in the Arctic and Antarctic regions.
- **Pedology:** Pedologists study the different types of soil, their features, formation, and properties. Such studies help farmers with crop production and civil engineers understand the sustainability of different areas for building heavy structures.

Hydrology: the study of Earth's water, including its properties, distribution, and effects. Hydrologists are primarily concerned with the movement of water as it cycles from the ocean to the atmosphere, then back to Earth's surface. Hydrologists study the water cycle through rainfall, streams, lakes, soil, and underground aquifers. Hydrologists provide insights critical to building or removing dams, designing irrigation systems, monitoring water quality, tracking drought conditions, and predicting flood risk.

Climatology: Climatologists study Earth's climate system and its impact on Earth's surface. For example, climatologists predict El Niño, a cyclical weather phenomenon characterised by warm surface temperatures in the Pacific Ocean. They analyse the dramatic worldwide climate changes caused by El Nino, such as flooding in Peru, drought in Australia, and, in the United States, the oddities of heavy Texas rains or an unseasonably warm Minnesota winter.

Biogeography: Biogeographers study how environmental factors shape the distribution of plants and animals. For example, a biogeographer might document all the places a certain spider species inhabited and what those places have in common.

- **Oceanography:**

Oceanography, a related discipline of physical geography, focuses on the creatures and environments of the world's oceans. Observation of ocean tides and currents was among the first oceanographic investigations. For example, 18th-century mariners mapped the Gulf Stream, a massive current flowing like a river through the Atlantic Ocean. The discovery and tracking

of the Gulf Stream helped communications and travel between Europe and the Americas.

Today, oceanographers research the impacts of water pollution, track tsunamis, design offshore oil rigs, investigate underwater lava eruptions, and study all types of marine organisms, from toxic algae to friendly dolphins.

- **Human Geography:**

Human geography concerns the distribution and networks of people and cultures on the earth's surface. A human geographer might study the local, regional, and global impacts of the emerging economic powers of China and India, which together account for 37 per cent of the world's population. They might also study how consumers in China and India adapt to new technologies and markets and how markets respond to such a large consumer base.

Human geographers also study how people use and change their environment. For example, when people let their animals overgraze a region, the soil erodes, and the grassland becomes a desert. The effects of overgrazing on the landscape and agricultural production are areas of research for human geographers.

Finally, human geographers study how political, social, and economic systems are organized in geographic space. These include governments, religious organizations, and trading partnerships. The boundaries of these groups are constantly changing.

The significant subdivisions within human geography reflect interest in different human activities or ways of life. Some examples of human geography include urban, economic, cultural, political, social, and population geography. Human geographers, who study geographic patterns and processes in the past, belong to the subfield of historical geography. Those who study how people understand maps and geographic space belong to a subdiscipline known as behavioural geography.

Many human geographers were interested in the relationship between people and the environment and worked in the subdisciplines of cultural and political geography.

Cultural geographers study how the natural environment influences the development of human cultures, such as how climate affects a region's agricultural practices. Political geographers study the impact of political circumstances on interactions between people and their environments, including environmental conflicts such as disputes over water rights.

Some human geographers focus on the connection between human health and geography. For example, health geographers create maps that track the location and spread of specific diseases. They analyse the geographic disparities in healthcare access. They are very interested in the impact of the environment on human health, especially the effects of environmental hazards such as radiation, lead poisoning, or water pollution.

1.4 Relationship between Geography and Tourism:

Geography is fundamental to the study of tourism because tourism is geographical. Tourism occurs in places. It involves movement and activities between places. It is an activity in which place characteristics and personal self-identities are formed through relationships among places, landscapes, and people. Physical geography provides the essential background against which tourist places are designed, and environmental impacts and concerns are significant issues that must be considered when managing their development.

The approaches to study will differ according to the varying concerns. Much of the tourism management literature remains quantitative in methodology. It considers tourism to consist of the places of tourist origin (or tourist-generating areas), tourist destinations (or locations of tourism supply), and the relationship (connections) between origin and destination places, which includes transportation routes, business relationships, and traveller motivations. Recent developments in human geography have resulted in approaches such as those from cultural geography, which take more

theoretically diverse approaches to tourism, including a sociology of tourism, which extends beyond tourism as an isolated, exceptional activity and considers how travel fits into the everyday lives and how tourism is not only a consumptive of places but also produces the sense of place at a destination.

Geography knowledge is essential for all tourism students because it is required when they join any travel company. Usually, we know that tourists travel for leisure and pleasure or business purposes and in leisure and pleasure purposes, we include Natural or Man-Made tourism resources. In natural resources, we include our water bodies (lakes, rivers, seas, oceans, and ponds), mountain ranges, hills, forests, plateaus, deserts, volcanoes, etc. Therefore, knowledge of each component of natural resources is essential for tourism professionals. Travel agents with a good understanding of physical geography can provide sufficient information, clear all doubts, and prepare a good destination tour package.

1.5 Check Your Progress

- **How is tourism dependent on Geography? Give your answer with suitable examples.**

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- **Explain the different branches of Geography.**

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1.6 Summary:

So, based on the above-detailed discussion, it is clear that geography is the study of the physical and human components and their characteristics. Broadly, it is classified into two groups: physical geography and human geography. In physical geography, we study the natural component or the things created by nature, and in human geography, we study human culture and its relation to Mother Earth. Here, we also discussed the relationship between geography and tourism because tourism depends on geography. To calculate time, the distance between two destinations, the exact location of a destination, the climatic condition of a destination, and the natural resources of a destination, we depend on the geography discipline.

1.7 Glossary:

- **Tourism:** Tourism is simply one of these activities a person can undertake to refresh his/her spirit. It places tourism firmly as part of a person's recreational activities spectrum.
- **Tourism Geography:** It is a particular branch of Geography called Tourism Geography. It is the study of travel and tourism as an industry and as a social and cultural activity. It covers a wide range of interests, including the environmental impact of tourism.

1.7 Self-Assessment Questions:

- Define Geography. Also, discuss its salient features.
- Discuss the relationship between tourism and geography.

1.8 References and Suggested Readings:

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Unit-2
Climatic Regions of the World, Latitude and longitude Lines, Time Zones, International Date Line, Indian Standard Time

Structure:

2.0 Objectives:

The following are the main objectives of the present unit:

- To understand the different climatic regions of the World
- To learn the relationship between the tourism industry and the climatic conditions of the destination
- To know the different time zones of the world and their significance for tourism professionals

2.1 Introduction:

Knowledge of climatic regions is essential for travel agents because by having their knowledge, they can know the climatic conditions of a destination. Many tourists travel to a destination to enjoy the climatic conditions of the destination. For example, in the summer season, tourists from the Northern part of India travel to their nearby hill stations. Foreign tourists worldwide visit India from October to March (peak season) because climatic conditions are pleasant for them. Only a travel agent knowledgeable about climatic regions can provide relevant information to the tourists. Latitude and longitude lines are imaginary lines on the globe. Latitude lines run from the North Pole to the South Pole, and longitude lines run from the East to the West. These lines help us to know the exact location of a place. A travel agent with a proper understanding of these lines can identify a place and provide accurate information to tourists. There are 24 time zones worldwide because the Earth rotates 15 degrees per hour. A travel agent with good knowledge of these time zones can quickly determine the time at a destination. The International Date Line is the line that divides the Earth into two time zones. If a person crosses it from east to west, he gains a day. Knowledge of this line is also mandatory for travel agents so they can tell tourists the date of a particular country. Finally, Indian Standard Time is the time that is observed in India. The entire of India follows this time. Therefore, all these components of geography are crucial for travel agents, as having the proper knowledge of them can provide tourists with sufficient and reliable information.

2.2 Climatic Regions of the World:

Climate regions act like codes that tell geographers much about an area without giving many local details. To define a climate region, geographers must make generalisations about the typical weather conditions over many years in a location.

The two most significant factors in defining different climates are temperature and precipitation. A place's location on a continent, topography, and elevation may also impact the climate. Geographers use a variety of methods to describe climate patterns. The most common method uses latitude to help define the climate.

There are five general climate regions: tropical (low latitude), dry, mid-latitude, high latitude, and highland. Dry and highland climates occur at several different latitudes. Within the five regions, there are variations that geographers divide into smaller zones. The varied climate regions on the map are on pages 60–61. Although the map shows a distinct line between each climate region, there are transition zones between the regions. As you read about climate regions, refer to the climate map. You should see the latitude-related patterns that emerge in world climate regions.

Major Climatic Regions of the world:

The important climatic regions of the world are mentioned below:

1. Equatorial Climatic Region (10^0 N to 10^0 S):

It is found between 5° and 10° north and south of the equator. This region experiences heavy precipitation, averaging 150 cm per year. Due to the great heat, mornings are bright and sunny, and evenings receive convective rainfall. Thunder lightning often accompany the torrential showers. This region is well known for its natural rubber called Hevea brasiliensis. The Amazon Basin (South America), the Zaire Basin (Africa), especially the western part, and Southeast Asia (mainly islands) are three well-defined regions of this category.

2. The Savana or Sudan Climate (10^0 to 20^0 N and S):

The Savana or Sudan Climate is a transitional climate between the equatorial forests and the trade wind hot deserts. It is confined within the tropics and is best developed in the Sudan, where the dry and wet seasons are most distinct, hence its name, the Sudan Climate. This climate is characterized by an alternate hot, rainy, calm, and dry season. The region's prevailing winds are the Trade Winds, which bring rain to the coastal districts. Savanna is grasslands of the tropical zone. They are known as the natural Zoo of the World. Llanos and Campos in South America, Kano and Salisbury region in Africa, and Northern and Central parts of Australia are the critical regions of this category.

3. The Hot Desert and Mid-Latitude Desert Climate (20^0 to 30^0 N and S):

The aridity of the hot desert is mainly due to the effects of off-shore trade winds; hence, they are also called trade wind deserts. Sahara (Africa) is the biggest desert; the next largest is the Great Australian Desert. It is found between 20^0 and 30^0 N and S. Hot deserts Sahara, Australia, Arabian, Iranian, Thar, Kalahari, Namib, Nubian, Mohave (USA), Atacama etc. Cold Desert: Patagonia, Turkestan, Gobi etc.

4. The Warm Temperate Western Margin or Mediterranean Climate (30^0 to 40^0 N and S):

It is a climate with dry summers that are hot or warm and winters that are cool or mild with moderate or high rainfall. It includes the climate of much of the land near the Mediterranean Sea. One can find this climate outside the Mediterranean only in relatively small areas. It is found in many places roughly between latitudes 30° to 40° north and south of the equator.

Important Regions are the Coastal region of the Mediterranean Sea; Southern Tips of South-west Africa near Cape Town; Southern Australia (in southern Victoria and around Adelaide, bordering St. Vincent and Spencer Gulfs); South West Australia (Swanland); California around San Francisco; Central Chile in South America.

This region is famous for orchard farming, e.g. Citrus and fibrous fruits.

5. Temperate Grasslands or Steppe Climate (40^0 to 55^0 N and S):

It is dry land due to its position in land masses away from oceanic influences. It is characterized by meagre and unreliable precipitation. The annual range of temperature and rainfall is 13°C and 30 cm. The sub-regions of this climatic region are known by different names in different regions: Steppes (Eurasia); Pustaz (Hungary); Prairies (USA); Pampas (South America- Argentina and Uruguay); Velds (South Africa); Downs (Australia-Murray-Darling basin of southern Australia); Canterbury (New Zealand).

6. Cool Temperate Continental or Taiga or Siberian Climate (55^0 to 70^0 N and S):

It is characterized by a bitterly cold winter of long duration and a cool, brief summer. The average rainfall is 35-60 cm, which is quite well distributed throughout one year, with maximum rainfall in summer. This type of climate is experienced only in the northern hemisphere because there is no land mass in the southern hemisphere.

Important regions: Alaska across Canada into Labrador and high Rocky Mountains; Moscow and adjoining belt in Siberia; Central Europe.

7. The Arctic or Polar or Tundra Climate (70^0 to 90^0 N and S):

It is among Earth's coldest, harshest biomes. The ecosystems of this climatic region are treeless regions found in the Arctic and on the tops of mountains, where the climate is cold and windy, and rainfall is scant. The lands of this region are snow-covered for much of the year until summer brings a burst of wildflowers.

8. The Tropical Monsoon and Tropical Marine Climate:

It is also known as a tropical wet climate or trade-wind littoral climate. It is a tropical climate that is primarily influenced by the ocean. It is usually experienced by islands and coastal areas 10° to 20° north and south of the equator. There are two main seasons in a tropical marine climate: the wet season and the dry season. The annual rainfall is 1000 to over 1500 mm (39 to 59 inches). The temperature ranges from 20 °C to 35 °C (68 ° to 95 °F). The trade winds blow all year round and are moist as they pass over warm seas. For example, these climatic conditions are found across the Caribbean, the

eastern coasts of Brazil, Madagascar and Queensland, and many islands in tropical waters.

2.3 Latitude and Longitude Lines:

- **Latitude Lines:**

Latitude and longitude are coordinate systems that utilise the position or location of any place on Earth's surface to be determined and described. Latitude is a measurement on a globe or map of location north or south of the Equator. Technically, there are different kinds of latitude—geocentric, astronomical, and geographic (or geodetic)—but there are only minor differences between them. In most common references, geocentric latitude is implied. Given in degrees, minutes, and seconds, geocentric latitude is the arc subtended by an angle at Earth's centre and measured in a north-south plane poleward from the Equator. Thus, a point at 30°15′20″ N subtends an angle of 30°15′20″at the centre of the globe; similarly, the arc between the Equator and either geographic pole is 90° (one-fourth the circumference of the Earth, or 1/4 × 360°), and thus the most significant possible latitudes are 90° N and 90° S. As aids to indicate different latitudinal positions on maps or globes, equidistant circles are plotted and drawn parallel to the Equator and each other; they are known as parallels or parallels of latitude.

In contrast, geographic latitude, used in mapping, is calculated using a slightly different process. Because Earth is not a perfect sphere—the planet's curvature is flatter at the poles—geographic latitude is the arc subtended by the equatorial plane and the standard line that can be drawn at a given point on Earth's surface. Different methods are used to determine geographic latitude, such as taking angle sights on certain polar stars or measuring the noon Sun's angle above the horizon with a sextant. The length of a degree of arc of latitude is approximately 111 km (69 miles), varying, because of the nonuniformity of Earth's curvature, from 110.567 km (68.706 miles) at the Equator to 111.699 km (69.41 miles) at the poles. Geographic latitude is also given in degrees, minutes, and seconds.

- **Longitude Lines:**

Longitude is a measurement of location east or west of the prime meridian at Greenwich, the specially designated imaginary north-south line that passes through both geographic poles and Greenwich, London. Measured also in degrees, minutes, and seconds, longitude is the amount of arc created by drawing first a line from the Earth's centre to the intersection of the Equator and the prime meridian and then another line from the Earth's centre to any point elsewhere on the Equator. Longitude is measured at 180° east and west of the prime meridian. As aids to locating longitudinal positions on a globe or map, meridians are plotted and drawn from pole to pole where they meet. The distance between two degrees of longitude at the Equator is about 111.32 km (69.18 miles), and at the poles, 0.

The combination of meridians of longitude and parallels of latitude establishes a framework or grid utilizing which exact positions can be determined about the prime meridian and the Equator: a point described as 40° N, 30° W, for example, is located 40° of arc north of the Equator and 30° of arc west of the Greenwich meridian.

2.4 Time Zones:

Everyone wants the sun to reach its highest point in the sky (crossing the meridian) at noon. This would be impossible if there were just a one-time zone because the Earth rotates 15 degrees every hour. The idea behind multiple time zones is to divide the world into 24 15-degree slices and set the clocks accordingly in each zone. All people in a given zone set their clocks the same way; each zone is one hour different from the next.

The continental United States has four time zones: Eastern, Central, Mountain and Pacific. When it is noon in the Eastern time zone, it is 11 a.m. in the Central time zone, 10 a.m. in the Mountain Time zone and 9 a.m. in the Pacific Time zone.

All time zones are measured from a starting point centred at England's Greenwich Observatory. This point is known as the Greenwich Meridian or the Prime Meridian. Time at the Greenwich Meridian is called Greenwich

Mean Time (GMT) or Universal Time. The Eastern Time zone in the United States is designated as GMT minus five hours. It is noon in the Eastern Time zone at 5 p.m. at the Greenwich Observatory. The International Date Line (IDL) is located on the opposite side of the planet from the Greenwich Observatory.

Why is the Greenwich Observatory such a big deal? A bunch of astronomers declared the Greenwich Observatory to be the prime meridian at an 1884 conference. What is funny is that the observatory moved to Sussex in the 1950s, but the original site remains the prime meridian.

2.5 International Date Line:

The International Date Line, established in 1884, passes through the mid-Pacific Ocean and roughly follows a 180 degrees longitude north-south line on the Earth. It is located halfway around the world from the prime meridian—the zero degrees longitude established in Greenwich, England, in 1852.

The International Date Line functions as a "line of demarcation", separating two consecutive calendar dates. When you cross the date line, you become a time traveller! Cross to the west, and it is one day later; cross back, and you have "gone back in time."

Despite its name, the International Date Line has no legal international status, and countries can choose the dates they observe. While the date line generally runs north to south from pole to pole, it zigzags around political borders such as eastern Russia and Alaska's Aleutian Islands.

2.6 Indian Standard Time:

Indian Standard Time (IST) represents the time observed throughout India, with a time offset of UTC+5:30. India opted out of observing daylight saving time (DST) or other seasonal adjustments, although briefly using DST during the Sino–Indian War of 1962 and the Indo–Pakistani Wars of 1965 and 1971. E* ("Echo-Star") designates IST in military and aviation time.

Indian Standard Time is calculated based on 82.5° E longitude, just west of Mirzapur, near Allahabad in Uttar Pradesh. The longitude difference

between Mirzapur and the United Kingdom's Royal Observatory at Greenwich translates to an exact time difference of 5 hours and 30 minutes. A clock tower at the Allahabad Observatory (25.15° N 82.5° E) calculates local time, though the National Physical Laboratory in New Delhi has been entrusted with the official time-keeping devices.

2.7 Check Your Progress:

- **Throw light on climatic regions of the world.**

- **Highlight the significance of latitude and longitude lines in the tourism industry.**

2.8 Summary:

In summary, we can say that tourism depends on Geography discipline because before travelling to a destination, a tourist wants to know about the climatic conditions, exact location, and time of the destination, and a person who has good knowledge about geography can better understand such things. Therefore, knowledge of geography and its relationship with tourism is necessary for every professional and educational institution.

2.9 Glossary:

- **Latitude:**

  The distance of a place north or south of the line that we imagine around the middle of the earth (the equator).

- **Longitude:**

  Longitude is the measurement east or west of the prime meridian. Longitude is measured by imaginary lines that run around the Earth vertically (up and down) and meet at the North and South Poles.

- **Equator:**

  The Equator is the invisible line that runs around the Earth's centre at 0 degrees latitude.

2.10 Self-Assessment Questions:

- Write a short note on the International Date Line.
- What is Indian Standard Time?

2.11 References and Suggested Readings:

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- https://science.howstuffworks.com/science-vs-myth/everyday-myths/time3.htm
- https://oceanservice.noaa.gov/facts/international-date-line.html
- https://www.newworldencyclopedia.org/entry/Indian_Standard_Time.

Unit-3

Geography of Tourism: Definition, Concept, Scope and Importance of Geography in Tourism, Impacts of Climate and Weather on tourist destination

Structure:

3.0 Objectives:

The following are the essential objectives of the present unit:

- To know the meaning of Tourism Geography
- To understand the impacts of climate and weather on a tourist destination

3.1 Introduction:

Tourism Geography includes the study of different components of Geography that affect tourist destinations and visitors. It includes the natural environment because tourist activities positively or negatively affect a destination's environment; therefore, proper knowledge and understanding of the physical environment for tourism professionals are necessary. A tourist plans his journey when the destination's climate is pleasant, and he gets this information from the internet and service provider. A travel agent who understands the climatic conditions of a destination can provide reliable information to tourists. Sometimes, tourists want to see the natural beauty of the destination, and for more information, they rely on travel agents who provide them with information about the best natural resources in a destination.

3.2 Tourism Geography: Definition and Meaning:

Tourism geography covers a wide range of interests, including the environmental impact of tourism, the geographies of tourism and leisure economies, answering tourism industry and management concerns and the sociology of tourism and locations of tourism.

Tourism geography is that branch of human geography that studies travel and its impact on places.

Geography is fundamental to the study of tourism because tourism is geographical. Tourism occurs in places, it involves movement and activities between places, and it is an activity in which both place characteristics and personal self-identities are formed through the relationships that are created among places, landscapes and people. Physical geography provides the essential background against which tourist places are created, and

environmental impacts and concerns are significant issues that must be considered when managing the development of tourist places.

3.3 Scope of Tourism of Geography:

From ancient times to the present day, tourism sectors have changed. Nowadays, this industry has developed well. The Scope of tourism is vast and can be understood with the help of the following points: Scope of Tourism.

1. Tourism is a basic need

2. Tourism and Transportation

3. Natural Environment and Tourism

4. Culture and Tourism

5. Religion and Tourism

6. Tourism Products.

1. Tourism is a basic need - Tourism is one of the basic needs of human beings. Human beings want to take rest and pleasure away from their busy schedules. So he plans to rest from daily work, visit many tourist places, and try to get satisfaction and freshness. It is also necessary for our health. Through tourism, we get mental satisfaction too.

2. Tourism as Product – The 'Product' may be defined as the sum of the physical and psychological satisfactions provided to the buyer. Marketing is the development of a product to meet the needs of the consumer, and then the techniques of direct sales, publicity, and advertising are employed to bring this product to the consumer. The tourist product is the country's natural beauty, climate, history, culture and people. Transport, accommodation, and entertainment will hopefully result in consumer satisfaction. Attraction, facilities and accessibility are three essential components of tourist products.

A) Attraction - It is one of the essential factors, except the attraction, that will prevent the tourist from being attracted to a particular tourist place. The attraction is related to the purpose of the tourist, which means that the purpose is essential for the attraction. The attraction could be geographical,

cultural, or historical, including exhibitions, arts and music festivals, games, etc.

B) Facilities - Facilities are the things in the tourist product necessary for the tourist place. The facilities complement the attractions. These include accommodation, mode of transportation, entertainment, recreation and many others.

C) Accessibility- It is another essential component of the tourist product. It is a means by which a tourist can reach the area where attractions are located. If the tourist attractions are located where no means of transport can reach or share, there are inadequate transport facilities, and these become of little value. The tourist attractions, located near the tourist-generating markets and linked by a network of efficient transport, receive the maximum number of tourists.

3) Transportation and Tourism- Transport is the backbone of the modern economy. A quality transport network leads to tourism development; hence, transport and tourism have a very close relationship. A sound transport system promotes tourism services at the domestic and international levels. It helps to earn foreign exchange. Transport and tourism development are interrelated. Hence substantial efforts should be made to improve the efficiency of transport.

4) Natural Environment and Tourism - This is also one of the important elements of tourism. The environment is a fundamental part of a tourist. There are various tourist places on Earth with different environmental backgrounds. A good environment, cool climate, good sunshine, etc., contribute to the environment, so tourists visit many places according to their environmental background. Tourist places like forests, hills and mountains, birds and wild animals. They feel satisfied and pleased when they visit such types of places.

5) Culture and Tourism - India has a cultural background. Tourists visit tribal regions to know the culture of tribal people. These are the original habitats. Their culture has remained as it is; their life is closely related to the natural environment. They stay in the forest and away from the city area.

They used to collect various medicines from the trees of the forest. Their lives are changing due to contact with the outside world. There are many tribes all over the world. For examples

1) Warli in the Thane district

2) Bhills in Madhya Pradesh, Maharashtra and Gujarat

3) Santhals in Bihar

4) Todas in the Nilgiri region these tribes have their core, monies, festivals, dance and music. People travel to these areas to study their lifestyles, and this way, tourism is encouraged.

Religious Tourism - India has many religions. People from different religions throng their pilgrimage centres, and others come for sightseeing. Religion is one of the major factors that attract vast numbers of tourists from all over the world. Every religious group visits their religious place or worship place within one year, one time; hence, tourism development is there. The above explanation helps us to understand the scope of tourism.

3.4 Importance of Geography of Tourism:

As the importance and popularity of tourism increased, especially in the last two or three decades, becoming one of the world's biggest industries, so did tourism's role in geography and its study. While before, there were few mentions of tourism-related facts in any book or research of geography, today, we cannot imagine any geographical descriptions without a separate chapter on tourism. Still rather raw and straightforward, L. Merlo (1969) considers this science as being a branch of geography that studies the position and appearance of tourist centres, their individual natural and cultural-historical characteristics, the attractions and traditions in the context of the area where they are found, the transportation network assuring the accessibility and the links with other tourist centres. Tourism is a geographical phenomenon regarding the transfer of people and services through space and time, so a particular domain dedicated to researching the interconnections between tourism and geography was inevitable. Although the scientific field is new, the connections between geography and travel can

be traced to ancient times, when geographers had no other way of describing the world than travelling and seeing it for themselves.

- Geography helps to know about the distance between two destinations.
- It helps to understand the exact location of the tourist destination.
- It assists in knowing about the climatic conditions of destinations.
- It assists tour operators, and tourists know the time difference between two destinations.
- Geography helps people learn about natural tourist attractions and destinations.

3.5 Climate and Weather:

- **Meaning of Climate:**

Whereas weather refers to short-term changes in the atmosphere, climate describes the weather over a long period in a specific area. Different regions can have different climates. To describe the climate of a place, we might say what the temperatures are like during different seasons, how windy it usually is, or how much rain or snow typically falls.

When scientists talk about climate, they often look at averages of precipitation, temperature, humidity, sunshine, wind, and other measures of weather that occur over a long period in a particular place. In some instances, they might look at these averages over 30 years. We refer to these three-decade averages of weather observations as Climate Normal.

While an area's climate descriptions provide a sense of what to expect, they do not provide specific details about the weather on any given day. Looking at Climate Normal can help us describe whether the summers are hot and humid and the winters are cold and snowy at a particular place. They can also tell us when we might expect the warmest or coldest day of the year at that location. However, while descriptions of an area's climate provide a sense of what to expect, they do not provide any specific details about what the weather will be like on any given day.

Here is one way to visualize it. Weather tells you what to wear each day. Climate tells you what types of clothes to have in your closet.

- **Meaning of Weather:**

The weather is the mix of daily events in our atmosphere. Even though there is only one atmosphere on Earth, the weather differs worldwide. The weather differs in different parts of the world and changes over minutes, hours, days, and weeks.

Most weather happens in the part of Earth's atmosphere closest to the ground—called the troposphere. Many factors can change the atmosphere in a certain area, such as air pressure, temperature, humidity, wind speed and direction, and many other things. Together, they determine the weather at a given time and location.

Differences between Climate and Weather:

Sr. No.	Weather	Climate
1.	The main difference between these two terms is duration: weather is the day-to-day, short-term condition of atmospheric changes.	The climate is the average weather condition of a particular place over a long time, about 30 years.
2.	Weather forecasting is observed by the Meteorological Department of any particular place, and the study is known as Meteorology.	The Climate Prediction Centre predicts climate, and its study is known as Climatology.
3.	Changes in weather conditions are observed very frequently.	Climate change takes a longer time to change.
4.	The weather may affect day-to-day occupation and hamper transportation services, agriculture, etc.	Climate significantly affects agriculture, industry, and people's livelihoods**.**
5.	The weather is affected by temperature, pressure, humidity, cloudiness, wind, precipitation, rain, flooding, ice storms, etc.	Climate is the long-term observation of atmospheric conditions at a given location, such as humidity, temperature, sunshine, and wind.
6.	The short-term atmospheric condition of any place is the weather, which may vary by time.	The long-term average weather and atmospheric conditions of a place or country are its climate.

3.6 Impacts of Climate and Weather on Tourist Destination:

Climate and weather are important factors in tourists' decision-making and influence the successful operation of tourism businesses. More specifically, the climate is the prevailing condition observed as a long-term average in a location. In contrast, the weather manifests climate at a specific time and place. So, while tourists might expect certain climatic conditions when they travel to a place, they will experience the actual weather, which might deviate quite substantially from the average conditions. Hence, in the first place, tourists and tourism businesses are likely to be affected by weather conditions, although in the long term, these will follow systematic changes as projected under different climate change scenarios. For example, surface and sea temperatures are generally forecast to increase, rain patterns will change with some areas becoming wetter and others drier, and extreme events are likely to increase.

For this reason, tourist destinations will benefit from understanding potential climatic changes in their area and how they might impact their operations. The following sections of this report review the international literature on the interaction between climate/weather and tourism. The existing literature provides insight into global phenomena, such as destination choice, and particular case studies of weather-recreation interactions, such as the impact of warmer summers in Canada on the length of the golfing season. Both aspects are relevant to tourism in New Zealand, though the findings need to be applied to the New Zealand context. In the following section, the demand for tourism will be discussed first. This includes an analysis of the importance of climate and weather for international tourist flows, destination choice, and tourist satisfaction and safety. This is followed by a discussion of how climate change will change the conditions in which tourism destinations operate and manage tourist flows and assets. The impacts of warmer temperatures, sea-level rise, changing alpine environments, and other ecosystems will be considered.

3.7 Check Your Progress:

- **Differentiate between Climate and Weather:**

- **How do the Weather conditions of a place affect the growth of a tourist destination?**

3.8 Summary:

So, based on the above discussion, it is clear that tourism is based on Geography to understand the destination's climatic conditions, the environment, its significance, and the tourism's impacts on the natural environment. All travel agents should know geography; otherwise, they cannot provide complete knowledge of the destination. Currently, most tourism institutes have included tourism geography courses in their programmes. Many tourism professionals do not have proper degrees in tourism. Therefore, owners of a travel agency should provide them with workshops or training on Geography and its features.

3.9 Glossary:

- **Weather:** Atmospheric conditions (wind, heat, humidity, rain or temperature) of a place for a short period.
- **Climate:** Atmospheric conditions of a particular destination that exist for a long time and repeat every year.

3.10 Self-Assessment Questions:

- Highlight the impact of climate conditions on a tourist destination
- Why is a good knowledge of climate and weather necessary for travel agents?

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Unit-4

Brief Introduction of important Oceans, Seas, Mountain Ranges, Lakes and Deserts of the World

Structure:

4.0 Objectives:

After completing this unit, you will be able to:

- Understand the meanings and differences among water bodies.
- Explain the role of water bodies in promoting and developing the tourism industry.

4.1 Introduction:

As previously discussed, tourists travel to see man-made or natural resources at the destination. In natural resources, we include attractions created by nature, and man has played no role in the information about them. In this unit, we will discuss water bodies, which are created by nature, and how human beings visit destinations to see these attractions. Water bodies include oceans, seas, rivers, lakes, and ponds. Tourists visit here to see the beauty of the water bodies, enjoy boating on lakes and rivers, observe water species, visit islands, beaches, etc.

Mountain ranges of the world also attract nature lovers. These mountains host hill stations, lakes, green forests, pleasant climates, snowfall, and other features. Some essential mountain ranges in the world include the Himalayan, Aravali, Adez, Shivalik, and Rocky Mountain ranges. Deserts also attract a large number of tourists. Deserts offer flora and fauna, camel safaris, dunes, unique cultures, etc. Some important deserts worldwide include the Sahara Desert, the Gobi Desert, and the Thar Desert. India is rich in cultural and natural tourism resources. In summer, tourists visit nearby hill stations to enjoy the pleasant climate. Tourists visit the southern part of India to enjoy its beaches, marine life, and islands. Those who wish to see the lakes can visit the cities of India, viz. Udaipur, Nainital and Bhopal. The river can go to Rishikesh, Haridwar, Varanasi, and other places.

4.2 Oceans:

Have you ever heard the Earth is called the "Blue Planet"? This term makes sense because over 70% of Earth's surface is covered with water. Most of that water (97.2%) is in the oceans. Without all that water, our world would be a different place. The oceans are an essential part of Earth: they help to

determine the make-up of the air, they help determine the weather and temperature, and they support significant amounts of life. The composition of ocean water is unique in its location and depth. Just as Earth's interior is divided into layers, the ocean is separated into different layers, called the water column.

Scientists have developed several hypotheses about how the oceans formed. Though these hypotheses have changed over time, one idea now has the comprehensive support of Earth scientists, called the volcanic outgassing theory. This means that water vapour from volcanoes erupting over millions or billions of years cooled and condensed to form Earth's oceans.

Saline seawater covers approximately 361,000,000 km2 (139,000,000 sq mi) and is customarily divided into several principal oceans and smaller seas, with the ocean covering approximately 71% of Earth's surface and 90% of the Earth's biosphere. The ocean contains 97% of Earth's water, and oceanographers have stated that less than 20% of the World's oceans have been mapped. The total volume is approximately 1.35 billion cubic kilometres (320 million cu mi), with an average depth of nearly 3,700 meters (12,100 ft).

The world ocean is the principal component of Earth's hydrosphere. It is integral to life, forms part of the carbon cycle, and influences climate and weather patterns. The World Ocean is home to 230,000 known species, but because much of it remains unexplored, the total number of ocean species is likely much higher, possibly over 2 million.[10] The origin of Earth's oceans is unknown; they are thought to have formed in the Hadean aeon and may have been the catalyst for the emergence of life.

When the Earth formed 4.6 billion years ago, it would never have been called the Blue Planet. There were no oceans, no oxygen in the atmosphere and no life. However, there were violent collisions, explosions, and eruptions. The Earth, in its earliest stage, was molten. This allowed elements to separate into layers within the Earth—gravity pulled denser elements toward the Earth's centre, while less dense materials accumulated near the surface. This process of separation created the layers of the Earth as we know them.

As temperatures cooled, the surface solidified, forming an atmosphere. Volcanic eruptions released water vapour from the Earth's crust, while more water came from asteroids and comets that collided with the Earth (Figure 14.1). About 4 billion years ago, temperatures cooled enough for oceans to form.

Five Oceans of the World:

Oceans are responsible for the existence of life in our world. Life began in the ocean, and today more than 230,000 marine species call the sea home. Five different Oceans of the World are listed below:

- **The Pacific Ocean:**

The Pacific Ocean is the largest and deepest of Earth's oceanic divisions. It extends from the Arctic Ocean in the north to the Southern Ocean (or, depending on the definition, to Antarctica) in the south and is bounded by the continents of Asia and Australia in the west and the Americas in the east. At 165,250,000 square kilometres (63,800,000 square miles) in the area (as defined with an Antarctic southern border), this largest division of the World Ocean—and, in turn, the hydrosphere—covers about 46% of Earth's water surface and about 32% of its total surface area, making it larger than all of Earth's land area combined (148,000,000 square kilometres). The centres of the Water Hemisphere and the Western Hemisphere are in the Pacific Ocean. Ocean circulation (caused by the Coriolis effect) subdivides it into two largely independent volumes of water, which meet at the equator: the North (ern) Pacific Ocean and the Southern Pacific Ocean. While straddling the equator, the Galápagos and Gilbert Islands are deemed wholly within the South Pacific.

Its mean depth is 4,000 meters (13,000 feet).[3] Challenger Deep in the Mariana Trench, located in the western North Pacific, is the deepest point in the world, reaching a depth of 10,928 meters (35,853 feet). The Pacific also contains the deepest point in the Southern Hemisphere, the Horizon Deep in the Tonga Trench, at 10,823 meters (35,509 feet). The third deepest point on Earth, the Sirena Deep, is also located in the Mariana Trench.

The western Pacific has many major marginal seas, including the South China Sea, the East China Sea, the Sea of Japan, the Sea of Okhotsk, the Philippine Sea, the Coral Sea, and the Tasman Sea.

- **The Atlantic Ocean:**

The ocean's name, derived from Greek mythology, means the "Sea of Atlas." It is the second-largest of the world's oceans, with an area of about 106,460,000 km2 (41,100,000 sq mi). It has an average depth (with its seas) of 10,925 feet (3,300 metres) and a maximum depth of 27,493 feet (8,380 metres) in the Puerto Rico Trench, north of the island of Puerto Rico. It covers approximately 20 percent of Earth's surface and about 29 percent of its water surface area. It separates the "Old World" from the "New World". The Atlantic Ocean occupies an elongated, S-shaped basin extending longitudinally between Europe and Africa to the east and the Americas to the west.

- **Indian Ocean:**

The Indian Ocean is the third-largest of the world's oceanic divisions, covering 70,560,000 km2 (27,240,000 sq mi) or 19.8% of the water on Earth's surface. The Indian Ocean is a body of salt water covering approximately one-fifth of the world's total ocean area. The Indian Ocean's average depth is 12,990 feet (3,960 metres), and its deepest point, in the Sunda Deep of the Java Trench off the southern coast of the island of Java (Indonesia), is 24,442 feet (7,450 metres). It is the smallest, geologically youngest, and physically most complex of the world's three major oceans. It is bounded by Asia to the north, Africa to the west and Australia to the east. To the south, it is bounded by the Southern Ocean or Antarctica, depending on the definition. At its core, the Indian Ocean has several large marginal or regional seas, including the Arabian Sea, the Laccadive Sea, the Somali Sea, the Bay of Bengal, and the Andaman Sea.

- **Arctic Ocean:**

Though it is the world's most miniature ocean, spanning 6.1 million square miles, the Arctic is now receiving unprecedented international attention. It is the smallest and shallowest of the world's five major oceans. It is also

known as the coldest of all oceans. The International Hydrographic Organisation (IHO) recognises it as an ocean, although some oceanographers refer to it as the Arctic Mediterranean Sea. It is sometimes classified as an estuary of the Atlantic Ocean, and it is also seen as the northernmost part of the all-encompassing World Ocean. The Arctic Ocean is warming faster than anywhere else on Earth, and we feel the onslaught of climate change. The U.S., Canada, Greenland, Iceland, Norway, and Russia all have territories reaching the Arctic Ocean. About four million people live in the Arctic region, and many indigenous groups have thrived there for millennia. Many people in the region rely on the ocean's bounty to survive the harsh climate and sustain their livelihoods. This includes fishing, sealing, whaling, and other activities. The Arctic's otherworldly landscapes are also increasingly drawing tourists to the region.

- **The Southern Ocean:**

The Southern Ocean, also known as the Antarctic Ocean or the Austral Ocean, comprises the southernmost waters of the World Ocean, generally taken to be south of 60° S latitude and encircling Antarctica. It is regarded as the second-smallest of the five principal oceanic divisions: more minor than the Pacific, Atlantic, and Indian Oceans but more significant than the Arctic Ocean.

4.3 Seas:

The word "sea" can also be used for many specific, much smaller bodies of seawater, such as the North or Red Sea. There is no sharp distinction between seas and oceans, though generally, seas are smaller and are often partly (as marginal seas) or wholly (as inland seas) bordered by land. However, the Sargasso Sea has no coastline and lies within the circular North Atlantic Gyre. Seas are generally larger than lakes and contain salt water, but the Sea of Galilee is freshwater. The United Nations Convention on the Law of the Sea states that all the ocean is "sea". Some crucial seas of the world are listed below:

- **South China Sea:**

The South China Sea is a marginal sea of the Western Pacific Ocean. It is bounded in the north by the shores of South China (hence the name), in the west by the Indochinese Peninsula, in the east by the islands of Taiwan and northwestern Philippines (mainly Luzon, Mindoro and Palawan), and in the south by Borneo, eastern Sumatra and the Bangka Belitung Islands, encompassing an area of around 3,500,000 km2 (1,400,000 sq mi). It communicates with the East China Sea via the Taiwan Strait, the Philippine Sea via the Luzon Strait, the Sulu Sea via the straits around Palawan (e.g. the Mindoro and Balabac Strait), the Indian Ocean via the Strait of Malacca, and the Java Sea via the Karimata and Bangka Strait. The Gulf of Tonkin and the Gulf of Thailand are both part of the South China Sea, and its shallow waters south of the Riau Islands are also known as the Natuna Sea.

- **The Black Sea:**

The Black Sea is a body of water located in western Eurasia. Depending on the view, it can be classified as the world's largest inland body of water (larger than the Caspian Sea) or as a marginal sea. It is supplied by major rivers, principally the Danube, Dnieper, Southern Bug, Dniester, Don, and Rioni. The watersheds of many countries drain into the sea beyond the six that share its coast.

The Black Sea covers 436,400 km2 (168,500 sq mi) (not including the Sea of Azov), a maximum depth of 2,212 m (7,257 ft), and a volume of 547,000 km3 (131,000 cu mi),[6] making it the world's largest inland body of water. Most of its coasts rapidly ascend. These rises are the Pontic Mountains to the south, bar the southwest-facing peninsulas, the Caucasus Mountains to the east and the Crimean Mountains to the mid-north. In the west, the coast generally has small floodplains below the foothills, such as the Strandzha, Cape Emine, a dwindling of the east end of the Balkan Mountains, and the Dobruja Plateau, considerably further north.

- **Red Sea:**

The Red Sea is a seawater inlet of the Indian Ocean between Africa and Asia. Its connection to the ocean lies to the south, through the Bab el Mandeb Strait

and the Gulf of Aden. To its north lie the Sinai Peninsula, the Gulf of Aqaba, and the Gulf of Suez (leading to the Suez Canal). The Red Sea Rift, part of the Great Rift Valley, underlies it.

The Red Sea has a surface area of roughly 438,000 km2 (169,100 mi2), is about 2250 km (1398 mi) long, and — at its widest point — 355 km (220.6 mi) wide. It has an average depth of 490 m (1,608 ft) and, in the central Suakin Trough, reaches a maximum depth of 3,040 m (9,970 ft).

- **The Coral Sea:**

The Coral Sea is a marginal sea of the South Pacific off Australia's northeast coast and is classified as an interim Australian bioregion. The Coral Sea extends 2,000 kilometres (1,200 mi) down the Australian northeast coast. The Battle of the Coral Sea was fought in the sea, a major confrontation during World War II between the navies of the Empire of Japan, the United States, and Australia.

The sea contains numerous islands and reefs, and the world's most extensive reef system, the Great Barrier Reef (GBR), was declared a World Heritage Site by UNESCO in 1981. All previous oil exploration projects were terminated at the GBR in 1975, and fishing is restricted in many areas. The reefs and islands of the Coral Sea are particularly rich in birds and aquatic life and are a popular tourist destination nationally and internationally.

Differences between Ocean and Sea:

Sr. No.	Basis of Comparison	Ocean	Sea
1.	**Meaning**	Water bodies cover 2/3rd of the surface of the earth.	Bodies of saltwater surround its landmasses.
2.	**Size**	Large water bodies	Comparatively smaller in size
3.	**Water**	Saltwater	Saline water
4.	**Depth**	Very deep	Comparatively less deep
5.	**Land**	Not enclosed by land	Partially enclosed by land
6.	**Marine Life**	Rare	Abundant

7.	**Uses**	Industrial uses include mining for natural gas and oil	Commercial uses like fishing, recreational sports activities
8.	**Area**	Covers a larger area	Covers the smaller area in comparison
9.	**Example**	Pacific Ocean, Atlantic Ocean, Indian Ocean, etc.	Mediterranean Sea, Caribbean Sea, South China Sea, etc.

4.4 Mountain Ranges:

A Mountain Range is a sequential chain or series of mountains or hills with similarity in form, structure and alignment arising from the exact cause, usually an orogeny. There are five major Mountain Ranges in the World, which are discussed below:

1. The Himalayan Mountain Range:

The Himalayas or Himalayas is a mountain range in Asia that separates the plains of the Indian subcontinent from the Tibetan Plateau. Its highest peak is Mount Everest (8,848m). It is a young fold mountain of the tertiary period, which was folded over the Tethys Sea due to the inter-continental collision. It extends for about 2500 km between the Indus and Brahmaputra gorges from west to east in an arc-shaped manner. It plays an essential role in determining the climate of the Indian Sub-continent. It has enormous potential for various metallic minerals like Cobalt, Nickel, Zinc, Copper, Antimony, and Bismuth.

2. The Alps Mountain Range:

The Alps Mountain Range is the highest and most extensive mountain range system of Europe, stretching approximately 1,200 kilometres (750 mi) across eight Alpine countries (from west to east): France, Switzerland, Italy, Monaco, Liechtenstein, Austria, Germany, and Slovenia. It plays an essential role in determining the climate of Europe. Its highest peak is Mont Blanc (4,808.73 m).

3. The Atlas Mountains Range:

The Atlas Mountains Range stretches for about 2,500 km (1,600 mi) across Morocco, Algeria, and Tunisia. Its highest peak is Toubkal (4,167 m). It separates the Mediterranean and Atlantic coastlines from the Sahara Desert and is inhabited by Berber populations. It was formed during the Precambrian period.

4. The Andes Mountain Range:

The Andes, or Andean Mountain Range, is the world's longest continental mountain range, stretching approximately 7,000 km (4,300 mi). Its highest peak is Aconcagua (6,961m). A continuous highland along the western edge of South America forms it.

5. The Rocky Mountain Range:

The Rocky Mountain Range, situated in western North America, stretches more than 3,000 miles (4,800 km) from the northernmost part of British Columbia, in western Canada, to New Mexico, in the Southwestern United States. Its highest peak is Mount Elbert (4,401 m). Public parks and forest lands protect it and are popular tourist destinations, especially for hiking, camping, mountaineering, fishing, hunting, mountain biking, skiing, and snowboarding.

The position of the mountain ranges influences the climate of any region. It also obstructs the moisture-laden winds. For example, the Himalayas act as a climatic barrier, blocking frigid winds from Central Asia and Siberia. These mountain ranges are also the source of the rivers.

4.5 Lakes:

Meaning of Lake:

A lake is an area filled with water, localised in a basin, surrounded by land, apart from any river or other outlet that feeds or drains the lake. Lakes lie on land and are not part of the ocean, although, like the much larger oceans, they form part of the earth's water cycle. Lakes are distinct from lagoons, which are generally coastal parts of the ocean. They are generally larger and more profound than ponds, which lie on land, though no official or scientific

definitions exist. Lakes can be contrasted with rivers or streams, which usually flow in a channel on land. Most lakes are fed by rivers and streams and drained by them.

Natural lakes are generally found in mountainous areas, rift zones, and areas with ongoing glaciation. Other lakes are found in endorheic basins or along the courses of mature rivers, where a river channel has widened into a basin. Many lakes exist in some parts of the world because of chaotic drainage patterns left over from the last Ice Age. All lakes are temporary over geologic time scales, as they slowly fill with sediment or spill out of the basin that contains them.

Many lakes are artificial and constructed for industrial or agricultural use, hydroelectric power generation, domestic water supply, aesthetic or recreational purposes, or other activities.

Types of Lakes:

The 09 major types of lakes are tectonic lakes, volcanic lakes, landslide lakes, glacial lakes, solution lakes, fluvial lakes, Aeolian lakes, shoreline lakes, and organic lakes

- **Tectonic lakes:**

Tectonic lakes are formed by the deformation of the Earth's crust and the resulting lateral and vertical movements. These movements include faulting, tilting, folding, and warping. Some of Earth's well-known and largest lakes are rift lakes occupying rift valleys, e.g., the Central African Rift lakes and Lake Baikal. Other well-known tectonic lakes, the Caspian Sea, the Sea of Aral, and other lakes from the Pontocaspian, occupy basins that have been separated from the sea by the tectonic uplift of the sea floor above sea level.

- **Volcanic lakes:**

Volcanic lakes are bodies of water that occupy either local depressions, e.g., craters and maars, or larger basins, e.g., calderas, created by volcanism. Crater lakes form in volcanic craters and calderas and fill with precipitation more rapidly than they empty through evaporation, groundwater discharge, or a combination of both.

- **Glacial lakes:**

  Glacial lakes are lakes created by the direct action of glaciers and continental ice sheets. A wide variety of glacial processes create enclosed basins. As a result, there is a wide variety of glacial lakes, and it is often challenging to draw clear-cut distinctions between them and lakes influenced by other activities. The general types of glacial lakes recognised are lakes in direct contact with ice, glacially carved rock basins and depressions, morainic and outwash lakes, and glacial drift basins. Glacial lakes are the most numerous lakes in the world. Most lakes in northern Europe and North America have been influenced by, or created during, the latest, but not last, glaciation to cover the region.

- **Fluvial lakes:**

  Fluvial lakes are lakes produced by running water. These lakes include plunge-pool lakes, fluviatile dams, and meander lakes.

- **Solution lakes:**

  A solution lake occupies a basin formed by the surface dissolution of bedrock. In areas underlain by soluble bedrock, its solution by precipitation and percolating water commonly produces cavities. These cavities frequently collapse to form sinkholes in the local karst topography. Where groundwater lies near the ground's surface, a sinkhole will fill with water, forming a solution lake.

- **Landslide lakes:**

  Landslide lakes are lakes created by the blockage of a valley by either mudflows, rockslides, or screes. Such lakes are common in mountainous regions. Although landslide lakes may be large and quite deep, they are typically short-lived. Quake Lake was an example of a landslide lake, formed by the 1959 Hebgen Lake earthquake.

- **Aeolian lakes:**

  Aeolian lakes are lakes produced by wind action. They are found mainly in arid environments, although some aeolian lakes are relict landforms indicative of arid paleoclimates. Aeolian lakes consist of basins dammed by wind-blown sand, interdunal lakes between well-oriented dunes, and

deflation basins formed by wind action under previously arid paleoenvironments. Moses Lake, Washington, is an example of a lake basin dammed by wind-blown sand.

- **Shoreline lakes:**

  Shoreline lakes are generally created by the blockage of estuaries or by the uneven accretion of beach ridges. They include maritime coastal lakes, ordinarily in drowned estuaries; lakes enclosed by two tombolos or spits connecting an island to the mainland; lakes cut off from larger lakes by a bar; or lakes divided by the meeting of two spits.

- **Organic lakes:**

  Organic lakes are lakes created by the actions of plants and animals. Overall, they are relatively rare and quite small. In addition, they typically have features that are ephemeral relative to those of other types of lakes. The basins where organic lakes occur are associated with beaver dams, coral lakes, or dams formed by vegetation.

Important Lakes of the World:

- **Lake Baikal:**

Lake Baikal is the largest freshwater lake in the world (by volume) and the world's deepest lake. Somewhat crescent-shaped, it is situated in southern Siberia, Russia. In 1996, it was declared a UNESCO World Heritage Site.

"Lake Baikal is the oldest lake in the world. It is home to approximately 1,700 to 1,800 endemic plant and animal species," said Jennifer Castner of Pacific Environment's Russia program. Additionally, the lake holds 20 per cent of the world's freshwater due to its depth.

4.6 Deserts:

Meaning of Desert:

Deserts cover more than one-fifth of the Earth's land area and are found on every continent. A place that receives less than 10 inches (25 centimetres) of rain per year is considered a desert. Deserts are part of a broader class of regions called drylands. These areas are in a “moisture deficit,” meaning

they frequently lose more moisture through evaporation than they receive from annual precipitation.

Despite the common conceptions of deserts as hot, there are also cold deserts. The largest hot desert in the world, northern Africa's Sahara, reaches temperatures of up to 122 degrees Fahrenheit (50 degrees Celsius) during the day. However, some deserts are always cold, such as the Gobi Desert in Asia and the polar deserts of the Antarctic and Arctic, which are the world's largest. Others are mountainous. Only about 20 percent of deserts are covered by sand.

The driest deserts, such as Chile's Atacama Desert, have areas that receive less than 0.08 inches (2 mm) of precipitation per year. Such environments are so harsh and otherworldly that scientists have even studied them for clues about life on Mars. On the other hand, a stormy period can produce "super blooms" every few years, where even the Atacama becomes blanketed in wildflowers.

Major Deserts of the World:

Sr. No.	Desert	Region
1.	Sahara	Northern Africa
2.	Barberton, Simpson, Gibson, Australia Stuart, Victoria	Australia
3.	Nafud, Hamada	Saudi Arabia
4.	Gobi	Mongolia and China
5.	Kalahari	Botswana
6.	Taklamakan	Sikiang province of China
7.	Sonoran	USA & Mexico
8.	Namib	Namibia
9.	Karakum	Turkmenistan
10	Thar	India and Pakistan
11.	Somalian	Somalia

1. **Sahara Desert:**

The Sahara is the largest hot desert in the world and the third-largest desert, behind Antarctica and the Arctic, both cold deserts. The Sahara is one of the harshest environments on Earth, covering 3.6 million square miles (9.4 million square kilometres), nearly a third of the African continent, and about the size of the United States (including Alaska and Hawaii). The name of the desert comes from the Arabic word ṣaḥrāʾ, which means "desert."

The Sahara is bordered by the Atlantic Ocean on the west, the Red Sea on the east, the Mediterranean Sea on the north and the Sahel Savannah on the south. The enormous desert spans 11 countries: Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Western Sahara, Sudan and Tunisia.

The Sahara Desert has various landforms, but it is most famous for its dune fields, often depicted in movies. The dunes can reach almost 600 feet (183 meters) in height, covering only about 15 per cent of the entire desert. Other topographical features include mountains, plateaus, sand- and gravel-covered plains, salt flats, basins and depressions. Mount Koussi, an extinct volcano in Chad, is the highest point in the Sahara at 11,204 feet (3,415 m), and the Qattara Depression in Egypt is the Saraha's deepest point, at 436 feet (133 m) below sea level.

2. **Kalahari Desert:**

Stretching around 360,000 square miles across Botswana, Namibia and South Africa, the Kalahari Desert is not a desert in the strictest sense of the word. It receives too much rainfall - between 5 and 10 inches annually. Only its vast expanses of sand, through which precipitation filters rapidly, leaving nothing on the surface, have made the Kalahari into the "thirstland" that early European settlers described.

The desert is part of the 970,000-square-mile Kalahari Basin, which includes the Okavango River Delta and other wetter areas.

The basin encompasses virtually all of Botswana and more than half of Namibia.

The Kalahari dunes, some stretching west to the Namib Desert, compose the largest continuous expanse of sand on earth. Although the Sahara Desert is larger overall, dunes comprise only about 15% of its area.

These dunes are covered with a relative abundance of vegetation, including grass tussocks, shrubs, and deciduous trees that have evolved to cope with the area's infrequent precipitation and wild temperature swings. In summer, the heat can top 45 degrees Celsius (115 degrees Fahrenheit); on winter nights, lows can drop to -15 degrees Celsius (seven degrees Fahrenheit).

Flora and fauna:

Animals adapted to the Kalahari's arid conditions include meerkats, gemsbok (a large antelope), social weavers, and other birds. And the Kalahari lion.

Kalahari's endemic wildlife species have adapted to survive for many days without water or to obtain water from plants. Many reptiles live in the Kalahari, including Cape cobras, puff adders, and rock monitors.

Numerous other birds and mammals inhabit the desert, but most are migratory, venturing into the Kalahari only when water is available. In addition to the Hoodia cactus, other edible plants - used by both animals and humans - include creeping tsamma melons, gemsbok cucumbers, and wild cucumbers.

3. **Gobi Desert:**

The Gobi Desert is a large desert or brushland region in East Asia. It covers parts of Northern and Northeastern China and Southern Mongolia. The Gobi measures over 1,600 km (1,000 mi) from southwest to northeast and 800 km (500 mi) from north to south. The desert is most expansive in the west, along the line joining Lake Bosten and the Lop Nor (87°–89° east). It occupies an arc of land in the area as of 2007; it is the 6th-largest desert in the world and Asia's 2nd-largest. Much of the Gobi is not sandy but is covered with bare rock. The desert basins of the Gobi are bounded by the Altai Mountains and the grasslands and steppes of Mongolia to the north, by the Taklamakan Desert to the west, by the Hexi Corridor and the Tibetan Plateau to the southwest, and by the North China Plain to the southeast. The Gobi is

notable in history as the location of several important cities along the Silk Road. The Gobi is a rain-shadow desert formed by the Tibetan Plateau, which blocks precipitation from the Indian Ocean from reaching the Gobi. More recently, the Gobi Desert has also hosted desert sporting events organised by enthusiasts, such as "The Gobi Desert Cup". Founded in 2016 by FEI 3* Endurance Rider Camille Champagne, the Gobi Desert Cup is a multi-stage endurance ride and cultural experience through the Gobi Desert, riding trained and conditioned Mongolian horses every day for six days over a total of 480 kilometres (300 mi).

4. **Thar Desert:**

The Thar Desert, also known as the Great Indian Desert, is a large arid region in the northwestern part of the Indian subcontinent that covers 200,000 km2 (77,000 sq mi) and forms a natural boundary between India and Pakistan. It is the world's 17th-largest desert and 9th-largest hot subtropical desert.

About 85% of the Thar Desert is located in India, with the remaining 15% in Pakistan. India covers about 170,000 km2 (66,000 sq mi), and the remaining 30,000 km2 (12,000 sq mi) is within Pakistan. The Thar Desert forms approximately 5% (c. 4.56%) of the total geographic area of India. More than 60% of the desert lies in the Indian state of Rajasthan, extending into Gujarat, Punjab, Haryana, and the Pakistani province of Sindh. Within Pakistan's Punjab province, the Thar continues as the Cholistan Desert. The desert comprises an arid western part, the Marusthali region, and a semidesert eastern region with fewer dunes and slightly more precipitation.

4.7 Tourism Activities in the Ocean:

Human interest in the sea fuels a multi-billion-dollar-a-year ocean tourism industry. Ocean tourism refers to pleasure travel in which the sea is the primary focus of activities. Ocean tourism comes in many forms, including cruises, ecotourism, and fishing expeditions.

Cruising:

Cruises are one of the most popular forms of ocean tourism. Cruise liners were needed to carry passengers across the oceans in the late nineteenth and early twentieth centuries.

While cruise ships were needed for Atlantic Ocean crossings, air travel made ocean crossings cheaper and faster by the mid-twentieth century. An aeroplane can cross the Atlantic in several hours instead of the one week most cruise ships require. Cruise lines could no longer promote their services as providing a means of travel to and from vacation. (A cruise line is a company that owns one or more cruise ships.) With little need for cruise ships for ocean crossings, cruise line operators had to take a different approach to their business. They began to shift the concept of the cruise itself from a cruise to a vacation. Ships started travelling to exotic locations and offering more services and activities.

Today's cruise ships are large ships that serve as floating hotels for vacationers. Cruise ships include restaurants, shops, swimming pools, theatres, and cinemas. Some cruise ships even offer college-level courses onboard. Cruise ships cost hundreds of millions of dollars to construct and may be over 1,000 feet (305 meters) long, over 150,000 gross tons (a term used to describe the size of a boat, ship, or barge), and stand taller than a 20-story building. The length of the largest cruise ship in 2004, the Queen Mary 2, is only 117 feet (36 meters) shorter than the height of the Empire State Building. The largest cruise ships can carry nearly 4,000 people, including the crew.

Tourism on the oceans provides a significant boost to the economies of countries that are popular cruise destinations. In the United States, nearly 8 million people take a cruise annually. Cruises contribute an estimated $18 billion to the American economy each year. Cruise lines directly employ over 25,000 Americans. The cruise industry supports an estimated 250,000 American jobs.

4.8 Water-Based Adventure Tourism Activities:

Water-based adventure tourism activities are conducted in water bodies, including oceans, seas, rivers, lakes, canals, and ponds. These are performed under the guidance and training of professional trainers. These are hazardous activities that require proper training. When considering the best watersports destinations in India, Goa is likely to come to mind first. This is not surprising, as watersports have become hugely popular there, now that they are no longer offered only by luxury hotels. Some southern states of India, like Goa, Karnataka, Kerala, Chennai, and the Andaman and Nicobar Islands, are famous for water-based adventure sports. Some important water-based adventure tourism activities are mentioned below:

- **Goa:** When it comes to watersports in Goa, you name it, and you are likely to find it! This includes jet skiing, windsurfing, parasailing, water skiing, wakeboarding, kite surfing, catamaran sailing, and all the fun kids' activities such as banana boat rides. Most of the action happens on and around the most developed beaches of Calangute and Baga in North Goa. However, watersports take place on beaches all over the state. This guide to adventure sports in Goa has more information. Going white water rafting in Goa during the monsoon season is also possible.
- **Andaman Islands:**

  Parasailing, jet skiing, boating, and surfing are all available in the pristine Andaman Islands, a union territory of India in the Bay of Bengal. However, scuba diving, snorkelling and undersea walking stand out.

  Lock Island has the most scuba diving companies; the experience is better there than at Port Blair. The companies provide about 15 minutes of basic training for beginners, followed by a 45-minute dive. Recommended companies include Dive India, Blue Corals Dive, and Ocean Tribe. Alternatively, choose a dive-and-stay package at the famous Vinnie's Tropical Cabanas and Dive Centre. Here are some other top places to stay on Havelock Island for all budgets.

If you are interested in snorkelling and undersea walking, head to Elephant Beach on Havelock Island.

Cannot make it to Havelock Island? The Rajiv Gandhi Water Sports Complex in Port Blair offers a variety of water sports. Alternatively, North Bay Beach (north of Port Blair) has good snorkelling around its coral reefs. Other watersports also take place there. The tourist season runs from October to May.

- **Kerala:**

With a massive network of tranquil backwaters, lakes, and rivers, Kerala is an ideal destination for laid-back kayaking, canoeing and even bamboo rafting.

Kerala Kayaking offers daily kayaking tours through narrow backwater canals and villages. The starting point is in Alleppey.

Head to Periyar Tiger Reserve or Kerala's lush Wayanad district for bamboo rafting. It occurs at various Wayanad locations, including Kuruva Island and Pozuthana (near Vythiri). Check out the bamboo rafting trips offered by Ciceronis and Thrillophilia there.

If you are more interested in adrenaline-pumping water sports such as parasailing and jet skiing, you will find them at Payyambalam beach in the Kannur district of northern Kerala. There are surfing and windsurfing at Varkala and Kovalam beaches further south.

Jellyfish Water Sports offers a vast dedicated space for watersports (predominantly kayaking and Stand-up Paddling) and adventure activities on the Chaliyaar River near Calicut.

- **Rishikesh, Uttarakhand:**

Rishikesh is famous for river rafting and kayaking along the Ganges. The shortest trips last for a couple of hours. For added adventure, river rafting can be combined with camping, trekking, and zip-lining. These trips extend for a couple of nights. Longer rafting expeditions can be undertaken as well. Popular companies in Rishikesh include Red Chilli Adventure, Rishikesh River Rafting, White World Expeditions, and Explore Watersports.

- **Nainital and Bhimtal, Uttarakhand:**

  You might have heard about zorbing on land, but how about on the water? Water zorbing has been introduced on Bhimtal Lake, about 45 minutes southeast of Nainital in Uttarakhand. It is a big hit with tourists! Other watersports, such as kayaking and boating, also take place in the area, which is renowned for its lakes. Being in the mountains is ideal for escaping India's searing summer heat.

- **Covelong and Mahabalipuram, Tamil Nadu:**

  The most reliable waves on the Indian mainland are found at the fishing village-turned-surfing destination of Covelong, south of Chennai in Tamil Nadu. It has a remarkable social surfing movement and a newly constructed surfing facility with guest rooms and a cafe on the beach. Further down the coast in Mahabalipuram, there is a thriving surf and backpacker scene. Mumu Surf School gives lessons and professional coaching.

4.9 Check Your Progress:

- **Discuss the adventure sports activities that are performed on water bodies:**

- **How do water bodies help the tourism industry's growth at any destination?**

4.10 Summary:

Natural tourism resources attract nature lovers. These include water bodies, mountain ranges, deserts, etc. A tourism service provider should have proper knowledge about such resources. Otherwise, he will not be able to satisfy customers' queries. Only a travel agent knowledgeable about a destination's natural resources can satisfy a customer's query.

4.11 Glossary:

- **Desert:** A large area covered with sand that receives very little rainfall.
- **Sand Dune:** A small hill made with a large amount of sand.

4.12 Self-Assessment Questions:

- How do natural resources help the tourism industry's growth at the destination?
- Discuss the different tourism resources of the deserts.

4.13 References and Suggested Readings:

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Unit-5
Africa: Political, physical and climatic features

Structure:

5.0 Objectives:

Objectives of the present unit are mentioned below:

- To know the physical features of Africa.
- To understand the political and climatic features of Africa.

5.1 Introduction:

The African continent is the second-largest continent in terms of total area and population. Its total area is about 30.3 million km2, including adjacent islands. It covers 6% of Earth's total surface area. With a population of 1.3 billion, it accounts for about 16% of the world's population. Despite a wide range of natural resources, Africa is the least wealthy continent per capita, partly due to geographic impediments, legacies of European colonisation and the Cold War, undemocratic rule, and deleterious policies. Despite this low concentration of wealth, recent economic expansion and a large, young population make Africa an essential economic market in the broader global context.

The continent is surrounded by the Mediterranean Sea to the north, the Isthmus of Suez and the Red Sea to the northeast, the Indian Ocean to the southeast, and the Atlantic Ocean to the west. The continent includes Madagascar and various archipelagos. It contains 54 fully recognised sovereign states (countries) and eight territories. Algeria is Africa's largest country by area, and Nigeria has the largest population.

Africa straddles the Equator and encompasses numerous climate zones; it is the only continent that stretches from the northern to the southern temperate zones. Most of the continent and its countries are in the Northern Hemisphere, with a substantial number in the Southern Hemisphere. Africa is home to significant biodiversity; it is the continent with the greatest number of megafauna species, as it was least affected by the Pleistocene megafauna extinction. However, Africa is also heavily affected by various environmental issues, including desertification, deforestation, and water scarcity. These entrenched environmental concerns are expected to worsen as climate change impacts Africa. The UN Intergovernmental Panel on

Climate Change has identified Africa as the most vulnerable to climate change.

The African continent is world-famous for its culture and natural beauty, but its National parks and wide variety of flora and fauna attract mainly nature lovers. In this unit, learners will understand the African continent's political, physical, and climatic features.

5.2 Political Features of Africa:

54 African countries are members of the African Union. Forty-eight countries occupy mainland Africa, and six island nations are considered part of the continent. There are 54 sovereign African countries and two disputed areas: Somaliland and Western Sahara. On 6th June 2019, the African Union suspended Sudan's membership "immediately."

A member of the Union is the Sahrawi Republic, which established itself in northwest Africa as a sovereign state, recognized by the African Union and 47 UN members as the representative government of Western Sahara, which Morocco claims.

Somaliland declared independence from Somalia and is de facto a state, although it is not recognised as a sovereign nation by any other country.

Several dependent territories are still controlled by former colonial powers, such as Tromelin Island and Mayotte, which France administers, and Ascension Island and Saint Helena, which the UK administers.

Languages of Africa:

Africa's languages can be subdivided into three primary language families: Afro-Asiatic, Nilo-Saharan, and Niger-Congo. The thousands of languages and dialects which are spoken on the continent are classified into six prominent language families:

Afro-Asiatic (e.g., Berber, Semitic, Cushitic, etc.), Austronesian languages (Madagascar), Indo-European languages (colonial languages), Nilo-Saharan (African interior), Niger-Congo (Bantu), and Khoi-San (a language with click consonants).

Africa's Largest Urban Areas:

Lagos, Cairo, Kinshasa, Johannesburg, Abuja, Khartoum, Dar es Salaam, Alexandria, Abidjan, Algiers, Kano, Casablanca, Ibadan, Nairobi, Addis Ababa, and Accra.

5.3 Physical Features of Africa:

Africa is the most tropical continent. Its climate and vegetation range from equatorial rainforests, tropical deserts, and savanna grassland to the Mediterranean. The Sahara Desert, the largest of its kind worldwide, is approximately 10.4 million km2 from North to south. Africa covers six percent of the world's total surface area, roughly 30,244,000 km² (11,700,000 mi²). Including its adjacent islands, the continent occupies about 20 percent of Earth's total land area. Africa's largest country is Algeria, followed by the Democratic Republic of the Congo (Kinshasa) and Sudan.

Africa, the second-largest continent, is bordered by the Mediterranean, Red, Indian, and Atlantic Oceans. It is divided into two halves and is almost equally divided by the Equator.

Africa's physical geography, environment, resources, and human geography can be considered separately.

Africa has eight major physical regions: the Sahara, the Sahel, the Ethiopian Highlands, the savanna, the Swahili Coast, the rain forest, the African Great Lakes, and Southern Africa. Some of these regions cover large bands of the continent, such as the Sahara and Sahel, while others are isolated areas, such as the Ethiopian Highlands and the Great Lakes. Each of these regions has unique animal and plant communities.

Sahara:

The Sahara is the world's largest hot desert, covering 8.5 million square kilometres (3.3 million square miles), about the size of the South American country of Brazil. The Sahara defines Africa's northern bulge, making up 25 percent of the continent.

The Sahara has several distinct physical features, including ergs, regs, hamadas, and oases. Ergs, which cover 20 percent of the Sahara, are dunes that stretch for hundreds of kilometres at heights of more than 300 meters

(1,000 feet). Ergs covers most of Algeria, Libya, Mali, and Nigeria. Ergs can contain large quantities of salt sold for industrial and food use.

Sahel:

The Sahel is a narrow band of semi-arid land that forms a transition zone between the Sahara to the north and the savannas to the south. It comprises flat, barren plains stretching roughly 5,400 kilometres (3,300 miles) across Africa, from Senegal to Sudan.

The Sahel contains the fertile delta of Niger, one of Africa's longest rivers. Unfortunately, Sahel's fertile land is rapidly deserted due to drought, deforestation, and intensive agriculture. This process is known as desertification.

The Sahel's animal communities are constantly scavenging for scarce water and vegetation resources. The Senegal gerbil, the most common mammal in the Sahel and measuring only a few centimetres, consumes as much as 10 percent of the Sahel's plants.

Ethiopian Highlands:

The Ethiopian Highlands began to rise 75 million years ago, as magma from Earth's mantle uplifted a broad dome of ancient rock. This dome was later split as Africa's continental crust pulled apart, creating the Great Rift Valley system. Today, this valley cuts through the Ethiopian Highlands from the southwest to the northeast. The Ethiopian Highlands are home to 80 percent of Africa's tallest mountains.

The highland's craggy landscape is perfect for nimble animal species. Native species such as the Walia ibex, an endangered wild goat, and the gelada baboon live in the ledges and rocky outposts of the Simien Mountains. The most emblematic highlands species is probably the Ethiopian wolf, now on the brink of extinction.

Important plant species native to the Ethiopian Highlands include the Ethiopian rose, Africa's only native rose, and the ensete, a tall, thick, rubbery plant that is a close relative of the banana.

Savanna:

Savannas, or grasslands, cover almost half of Africa, more than 13 million

square kilometres (5 million square miles). These grasslands comprise most of central Africa, beginning south of the Sahara and the Sahel and ending north of the continent's southern tip.

The Serengeti (or Serengeti Plains) is the most well-known among Africa's many savanna regions. The Serengeti is a vast, undulating plain that stretches 30,000 square kilometres (11,583 square miles) from Kenya's Maasai-Mara game reserve to Tanzania's Serengeti National Park. The Serengeti is home to one of the continent's highest concentrations of large mammal species, including lions, hyenas, zebras, giraffes, and elephants. More than 1 million wildebeests travel in a circular migration, following seasonal rains, across the Serengeti Plains each year. Their grazing and trampling of grass allow new grasses to grow, while their waste helps fertilize the soil.

Swahili Coast:

The Swahili Coast stretches about 1,610 kilometres (1,000 miles) along the Indian Ocean, from Somalia to Mozambique. The nearby coral reefs and barrier islands protect the coast from severe weather. There is not a lot of animal life on the sandy Swahili Coast. The golden-rumped elephant shrew, an insect-eating rodent with a long snout, is common. A small, primitive species of primate known as the bush baby inhabits vegetated areas of the Swahili Coast. Bush babies, which have enormous eyes for hunting at night, feed primarily on insects, fruit, and leaves.

Rain Forest:

Most of Africa's native rainforest has been destroyed by development, agriculture, and forestry. Today, 80 percent of Africa's rainforest is concentrated in central Africa, along the Congo River basin. Africa's rain forests have a rich variety of animal life; a 6-kilometre (4-mile) patch could contain up to 400 bird species, 150 butterfly species, and 60 amphibians. Important mammals include African forest elephants, gorillas, the black colobus monkey, and the okapi, a donkey-like giraffe.

The driver ant is one of Africa's most aggressive rainforest species. Driver ants move in columns of up to 20 million across the rainforest floor and will eat anything from toxic millipedes to reptiles and small mammals.

African Great Lakes:

The Great Lakes are located in nine countries surrounding the Great Rift Valley. As the African continent separated from Saudi Arabia, large, deep cracks were created on the Earth's surface. These cracks were later filled with water. This geologic process created some of the largest and deepest lakes in the world.

There are seven central African Great Lakes: Lake Albert, Lake Edward, Lake Kivu, Lake Malawi, Lake Tanganyika, Lake Turkana, and Lake Victoria. Lake Victoria, the largest lake in Africa, is the southern source of the Nile River, the longest river in the world.

The African Great Lakes region has diverse aquatic and terrestrial animal life. Fish include the 45-kilogram (100-pound) Nile perch and the 2.5-centimetre (1-inch) cichlid. Migrating savanna animals, such as wildebeest, use the lakes as watering holes. Hippos and crocodiles call the region their home.

The Great Lakes is about everything from rainforest to savanna plant communities. However, invasive species like the water hyacinth and papyrus have begun to take over entire shorelines, endangering animals and plants.

Southern Africa:

The region of Southern Africa is dominated by the Kaapvaal craton, a shelf of bedrock that is more than 2.6 billion years old. Rocky features of Southern Africa include plateaus and mountains, such as the Drakensberg range.

Southern Africa is the epicentre of Africa's well-known reserves, which protect animal species such as lions, elephants, baboons, white rhinos, and Burchell's zebras. Other essential animal species include the impala, a type of deer, and the springbok, a type of gazelle that can spring several feet into the air to avoid predators.

5.4 Climatic Features of Africa:

The climate of Africa is a range of climates such as the equatorial climate, the tropical wet and dry climate, the tropical monsoon climate, the semi-arid climate (semi-desert and steppe), the desert climate (hyper-arid and arid), and the subtropical highland climate. Temperate climates are rare across the continent except at very high elevations and along the fringes. The climate of Africa is more variable by rainfall amount than by consistently high temperatures. African deserts are the sunniest and driest parts of the continent, owing to the prevailing presence of the subtropical ridge with subsiding, hot, dry air masses. Africa holds many heat-related records: the continent has the hottest extended region year-round, the areas with the hottest summer climate, the highest sunshine duration, and more.

Due to Africa's position across equatorial and subtropical latitudes in the northern and southern hemispheres, several different climate types can be found within it. The continent mainly lies within the intertropical zone between the Tropic of Cancer and the Tropic of Capricorn, hence its attractive density of humidity. Precipitation intensity is always high, and it is a hot continent. Warm and hot climates prevail over Africa, but the northern part is mainly marked by aridity and high temperatures. Only the continent's northernmost and southernmost fringes have a Mediterranean climate. The equator runs through the middle of Africa, as do the Tropic of Cancer and the Tropic of Capricorn, making Africa the most tropical continent.

The already hot and dry climate that straddles the equator makes it the most vulnerable continent to climate change.

5.5 Check Your Progress:

- **How do Climatic conditions of the African Continent affect the tourist movement? Give your answer with suitable examples.**

- **Highlight the physical characteristics of Africa.**

5.6 Summary:

Thus, based on the above-detailed study, it is clear that the African continent is unlike any other part of the world you have experienced before. This vast land, comprising 54 countries and 144 UNESCO World Heritage Sites, allows visitors to experience various cultures, fascinating history, natural scenery, incredible wildlife, and some of the most famous landmarks worldwide. These landmarks in Africa, both natural and artificial, offer a glimpse into both the well-known and the untold stories of Africa.

5.8 Glossary:

- **Continent:** Large area of land usually covered by Oceans and Seas.
- **UNESCO:** United Nations Educational, Scientific and Cultural Organization.

5.8 Self-Assessment Questions:

- How do the physical features of Africa differ from those of any other continent?
- Discuss the best time to visit the Northern countries of Africa.

5.9 References and Suggested Reading:

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Unit-6
Asia: General Geographical Features; Physiography, Climate, main Countries, Capitals & and their Tourist Attractions

Structure:

6.0 Objectives:

The essential objectives of the present unit are given below:

- To know the physical features of Asia
- To learn the political features and Climatic conditions of Asia

6.1 Introduction:

Asia is Earth's largest and most populous continent, primarily in the Eastern and Northern Hemispheres. It shares the continental landmass of Eurasia with the continent of Europe and the continental landmass of Afro-Eurasia with both Europe and Africa. Asia covers an area of 44,579,000 square kilometres (17,212,000 sq. mi), about 30% of Earth's total land area and 8.7% of the Earth's total surface area. The continent, which has long been home to most of the human population, was the site of many first civilisations. Asia is notable not only for its large population but also for its dense, large settlements and vast, sparsely populated regions. It is 4.5 billion people (as of June 2019), constituting roughly 60% of the world's population. In general terms, Asia is bounded on the east by the Pacific Ocean, on the south by the Indian Ocean, and the north by the Arctic Ocean. The border of Asia with Europe is a historical and cultural construct, as there is no clear physical and geographical separation between them. It is somewhat arbitrary and has moved since its conception in classical antiquity. The division of Eurasia into two continents reflects East-West cultural, linguistic, and ethnic differences, some of which vary on a spectrum rather than with a sharp dividing line. The most commonly accepted boundaries place Asia to the east of the Suez Canal, separating it from Africa and to the east of the Turkish Straits, the Ural Mountains and Ural River, and to the south of the Caucasus Mountains and the Caspian and Black Seas, separating it from Europe.

China and India alternated in being the largest economies in the world from 1 to 1800 CE. China was a significant economic power and attracted many to the East, and for many, the legendary wealth and prosperity of India's ancient culture personified Asia, attracting European commerce,

exploration and colonialism. The accidental discovery of a trans-Atlantic route from Europe to America by Columbus while searching for a route to India demonstrates this deep fascination. The Silk Road became the main east-west trading route in the Asian hinterlands, while the Straits of Malacca stood as a major sea route. Asia has exhibited economic dynamism (particularly East Asia) and robust population growth during the 20th century, but overall population growth has since fallen.

Asia was the birthplace of most mainstream religions, including Hinduism, Judaism, Jainism, Buddhism, Islam and Sikhism.

Here in the present unit, the focus will be given to the physical, political, and climatic conditions of the Asian continent because these characteristics affect the tourism industry. Being the largest continent in the world, this continent has a variety of landscapes, the maximum number of countries, and different climactic conditions. Asian continent attracts the cultural lovers of the world. Tourism professionals should know about these characteristics to better serve their customers.

6.2 Physical Features of Asia:

Asia is the largest of the world's continents. It covers about 30 percent of the Earth's land area. It also has more people than the rest of the world, roughly 60 percent of the population. Asia makes up the eastern portion of the Eurasian supercontinent. Europe occupies the western portion. Most geographers define Asia's western border as a zigzagging line that follows the Ural Mountains, the Caucasus Mountains, and the Caspian and Black Seas.

Mountain Systems:

The Himalayan Mountains extend for about 1,550 miles, separating the Indian subcontinent from the rest of Asia. The Himalayas formed about 50 million to 55 million years ago and are still growing about 2 inches every year.

The Himalayas cover more than 236,000 square miles, passing through northern India and most of Nepal and Bhutan. The Himalayas are composed of three different mountain belts. The northernmost belt, known as the Great

Himalayas, has the highest average elevation at 20,000 feet. The belt contains nine of the highest peaks in the world. This belt includes the tallest mountain in the world, Mount Everest, which stands at 29,035 feet. The Tien Shan mountain system stretches for about 1,500 miles on the border between Kyrgyzstan and China. The highest peak in the Tien Shan is Victory Peak, which stands at 24,406 feet. Tien Shan also has more than 3,900 square miles of glaciers. The largest glacier is about 37 miles long. The Ural Mountains run for about 1,550 miles in a north-south line from Russia to Kazakhstan. The Ural Mountains are some of the world's oldest, 250 million to 300 million. Their average elevation is between 3,000 and 4,000 feet.

Plateaus:

Asia is home to many plateaus, areas of level high ground. The Iranian plateau covers more than 1.4 million square miles, covering most of Iran, Afghanistan, and Pakistan. The plateau is not entirely flat. The highest mountain peak is Damavand, at 18,410 feet. The Deccan Plateau makes up most of the southern part of India. The plateau's average elevation is about 2,000 feet. The Tibetan Plateau is the largest and highest area ever to exist in the history of Earth. It covers an area about half the size of the United States and averages more than 16,400 feet above sea level. The Tibetan Plateau's glaciers contain the most ice outside the poles. The ice and snow from these glaciers feed Asia's largest rivers. About 2 billion people depend on the rivers fed by the plateau's glaciers.

Plains, Steppes and Deserts:

The West Siberian Plain, located in central Russia, is one of the world's largest flatland areas. It extends from north to south about 1,500 miles and from west to east about 1,200 miles. The plain contains some of the world's most extensive swamps and floodplains. A steppe, a large flat grassland area, primarily covers Central Asia. Mongolia can be divided into a mountain forest zone, a dry zone, and a desert zone. The Rub' al Khali desert covers an area larger than France. It stretches across Saudi Arabia, Oman, the United Arab Emirates and Yemen in the Middle East. It holds roughly half as much sand as Africa's Sahara Desert, although it is 15 times smaller.

Freshwater:

Lake Baikal, located in southern Russia, is the world's deepest lake, reaching a depth of 5,315 feet. The lake contains 20 percent of the world's unfrozen freshwater. It is also the world's oldest lake, at 25 million years old. The Yangtze is the longest river in Asia and the third-longest in the world, at 3,915 miles. The Yangtze drains one-fifth of China's land area and is home to one-third of its population. The Tigris and Euphrates Rivers begin in the highlands of eastern Turkey and flow through Syria and Iraq before emptying into the Persian Gulf. The land between the two rivers was known as Mesopotamia. It was the centre of the earliest civilisations.

Saltwater:

The Persian Gulf has an area of more than 90,000 square miles. Eight Middle Eastern countries border it. The Gulf is shallow and highly salty. The seabed contains about half of the world's oil reserves. The Sea of Okhotsk covers 611,000 square miles between the Russian mainland and the Kamchatka Peninsula. Large ice floes make winter navigation almost impossible. The Bay of Bengal is the largest in the world. It covers almost 839,000 square miles and borders Bangladesh, India, Sri Lanka and Myanmar. Many large rivers empty into the bay, forming the largest delta in the world.

Terrestrial Flora and Fauna:

China has more flowering plant species than North and South America combined. Many flowers, like roses, most likely came from northern China. China is likely the origin of fruit trees such as peaches and oranges. In the Himalayas, communities use yaks for work. Yaks are large cattle-like animals with thick coats of fibre and the ability to survive at high altitudes. Yaks are used for transportation and for pulling ploughs. Their coats are a source of warm fibre for clothing. Yak milk is used for butter and cheese. In the Mongolian steppe, the two-humped Bactrian camel is used for work. The camel's humps store nutrient-rich fat. Some camels are slow, but Bactrians can outrun horses over long distances.

Aquatic Flora and Fauna:

Lake Baikal is a unique site. Marine life has been able to evolve for millions of years, relatively undisturbed. The lake has 1,340 animal species and 570 plant species.

Hundreds of Lake Baikal's species are found nowhere else on Earth. The Baikal seal, for instance, is one of the few freshwater seal species in the world. The Bay of Bengal, on the Indian Ocean, is one of the world's largest tropical marine ecosystems. The bay is home to many fish, dolphins, whales, and other sea animals. The Sundarbans is a wetland area located at the mouth of the Bay of Bengal. The Sundarbans is a vast mangrove forest. Mangroves are vigorous trees that grow in wet, marshy places. Hundreds of species of fish, shrimp, crabs and snails live in the exposed roots of the mangrove trees. The Sundarbans support more than 200 species of birds. Wild boars, macaque monkeys, monitor lizards and Bengal tigers also exist.

6.3 Political Features of Asia:

Asia is rich in diverse races, cultures, and languages. Many of the world's major religions came out of Asia, including Christianity, Judaism, Islam, Hinduism, and Buddhism. Asia has a significant influence on world culture and the world's economy. Countries such as Russia, China, Japan, and India produce products and services used by every nation in the world. Asia is also abundant in natural resources. Oil in the Middle East is a significant supplier of much of the world's energy.

Population: 4,164,252,000 (Source: 2010 United Nations) Area: 17,212,000 square miles Ranking: It is the largest and most populous continent Major Biomes: desert, grasslands, temperate forest, taiga Major cities: Tokyo, Japan Jakarta, Indonesia Seoul, South Korea Delhi, India Mumbai, India Manila, Philippines Shanghai, China Osaka, Japan Kolkata, India Karachi, Pakistan.

North Asia:

Like Northern Asia, North Asia consists of the Russian Federation east of the Ural Mountains: the Ural region, Siberia, and the Russian Far East. North Asia covers an area of 13.1 million km², about 77% of Russia's territory. In

the sparsely populated region, four times the size of India, about 34 million people live there.

Central Asia:

In the modern standard definition, the region is home to the 'stan-countries,' all former Soviet republics, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Some definitions also include Afghanistan. Central Asia has an area of 4 million km² and a population of 73 million. By far, the largest country is Kazakhstan (2,724,900 km²). The most populous of all the nations in Central Asia is Uzbekistan (34.2 million inhabitants).

South Asia:

The region of South Asia, or Southern Asia, includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. South Asia is among the world's most populated regions; 1.8 billion people live in an area of more than 5 million km². The country with the largest population is India, with nearly 1.4 billion people.

East Asia:

The eastern region of Asia consists of the Asian nations of China (including the particular administrative regions of Hong Kong, Macau, and Tibet), Japan, Mongolia, North Korea (Democratic People's Republic of Korea), South Korea (Republic of Korea), and Taiwan (Republic of China). East Asia covers an area of 11.8 million km² (4.5 million sq mi). 1.68 billion People live in East Asia. The most populous country is China, with 1.44 billion inhabitants.

Southeast Asia:

Southeast Asia consists of two geographic regions:

I. Mainland Southeast Asia, or the Indochinese peninsula, includes Myanmar (Burma), Thailand, Laos, Vietnam, Cambodia, and Peninsular Malaysia.

II. Maritime Southeast Asia, also known as the Malay Archipelago, includes the world's two largest island countries, Indonesia and the Philippines. There are an estimated 25,000 islands in Maritime Southeast Asia.

The largest islands in the Malay Archipelago by area are New Guinea, Borneo, Sumatra, Sulawesi (Celebes), Java, Luzon, and Mindanao. The region is also home to India's Andaman and Nicobar Islands, Singapore, Brunei (surrounded by East Malaysia) on Borneo, and East Timor (Timor-Leste) on Timor. Indonesia shares the island of New Guinea with Papua New Guinea.

Southeast Asia has a land area of 4.5 million km²; an estimated 668 million people live there (in 2020).

Western Asia:

West Asia, Western Asia, Southwest Asia, the Middle East, or the Near East are all designations for Asia's southwestern territory. West Asia is home to several geographical and historical regions, including Asia Minor or Anatolia (peninsula), the Caucasus region, the Eastern Mediterranean or the Levant, the historical region of Mesopotamia, the Armenian Highlands, the historical region of Syria, the geographical and historical region of Palestine, the Sinai Peninsula, the Arabian Peninsula with the Arabian desert ecoregion, and the Iranian Highlands.

There are 20 independent countries in Western Asia: Armenia, Azerbaijan, Bahrain, Cyprus, the northeastern part of Egypt (Sinai), Georgia, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman , the State of Palestine (Gaza Strip and West Bank), Qatar, Saudi Arabia, Syria, Turkey, the United Arab Emirates, and Yemen. Western Asia has a land area of about six million km² and is home to 280 million people (in 2020).

6.4 Climatic Features of Asia:

The climate of Asia is dry across the southeastern region and much of the interior. Some of Earth's largest daily temperature ranges occur in western Asia. The monsoon circulation dominates across southern and eastern regions due to the Himalayas forcing the formation of a thermal low, which draws in moisture during the summer. The continent's southwestern region experiences low relief due to the subtropical high-pressure belt; it is hot in summer, warm to cool in winter, and may snow at higher altitudes.

Siberia is one of the coldest places in the Northern Hemisphere and can act as a source of Arctic air mass for North America. The most active place on Earth for tropical cyclone activity lies northeast of the Philippines and south of Japan, and the phase of the El Nino-Southern Oscillation modulates where landfall is more likely to occur in Asia.

6.5 Countries Situated in Asia:

There are 48 countries in Asia today, according to the United Nations. The table below shows the full list, with the current population and sub-region (based on the United Nations official statistics). Not included in this total of "countries" and listed separately are:

Sr. No.	Country	Population (2020)	Subregion
1.	China	1,439,323,776	Eastern Asia
2.	India	1,380,004,385	Southern Asia
3.	Indonesia	273,523,615	South-Eastern Asia
4.	Pakistan	220,892,340	Southern Asia
5.	Bangladesh	164,689,383	Southern Asia
6.	Japan	126,476,461	Eastern Asia
7.	Philippines	109,581,078	South-Eastern Asia
8.	Vietnam	97,338,579	South-Eastern Asia
9.	Turkey	84,339,067	Western Asia
10.	Iran	83,992,949	Southern Asia
11.	Thailand	69,799,978	South-Eastern Asia
12.	Myanmar	54,409,800	South-Eastern Asia
13.	South Korea	51,269,185	Eastern Asia
14.	Iraq	40,222,493	Western Asia
15.	Afghanistan	38,928,346	Southern Asia
16.	Saudi Arabia	34,813,871	Western Asia
17.	Uzbekistan	33,469,203	Central Asia
18.	Malaysia	32,365,999	South-Eastern Asia
19.	Yemen	29,825,964	Western Asia
20.	Nepal	29,136,808	Southern Asia
21.	North Korea	25,778,816	Eastern Asia
22.	Sri Lanka	21,413,249	Southern Asia
23.	Kazakhstan	18,776,707	Central Asia
24.	Syria	17,500,658	Western Asia
25.	Cambodia	16,718,965	South-Eastern Asia
26.	Jordan	10,203,134	Western Asia

27.	Azerbaijan	10,139,177	Western Asia
28.	United Arab Emirates	9,890,402	Western Asia
29.	Tajikistan	9,537,645	Central Asia
30.	Israel	8,655,535	Western Asia
31.	Laos	7,275,560	South-Eastern Asia
32.	Lebanon	6,825,445	Western Asia
33.	Kyrgyzstan	6,524,195	Central Asia
34.	Turkmenistan	6,031,200	Central Asia
35.	Singapore	5,850,342	South-Eastern Asia
36.	Oman	5,106,626	Western Asia
37.	State of Palestine	5,101,414	Western Asia
38.	Kuwait	4,270,571	Western Asia
39.	Georgia	3,989,167	Western Asia
40.	Mongolia	3,278,290	Eastern Asia
41.	Armenia	2,963,243	Western Asia
42.	Qatar	2,881,053	Western Asia
43.	Bahrain	1,701,575	Western Asia
44.	Timor-Leste	1,318,445	South-Eastern Asia
45.	Cyprus	1,207,359	Western Asia
46.	Bhutan	771,608	Southern Asia
47.	Maldives	540,544	Southern Asia
48.	Brunei	437,479	South-Eastern Asia

6.6 Important Tourist Attractions in Asia:

Asia is situated in the eastern part of the World. It is the world's largest continent in terms of area and population. It houses thousands of tourist attractions, but some important tourist attractions are listed below:

Bali:

Whether you are soul-searching or just looking for a place to unwind and ditch reality, Bali is a spiritual oasis. Bali is the kind of place you do not just visit once. Thanks to its proximity to Australia, I have been to Bali a handful of times.

Kyoto:

Kyoto was once the capital of Japan and, as such, has an incredible amount of history and culture to discover. You will need at least a few days to

discover all this city offers, from the Bamboo Forest to the famous Fushimi Inari shrine, which features a seemingly endless line of torii gates.

Tokyo:

The capital of Japan, **Tokyo**, has built a reputation as one of the quirkiest capital cities in the world. From cat cafes to robot dance parties, there is nothing that has not been thought of. Moreover, the crazier the idea, the more popular it becomes!

Hong Kong:

No other Asian city blends the East and West quite as seamlessly as Hong Kong. You will only need 48 hours in Hong Kong to taste what the city offers. More time is, of course, recommended, but I still had a fun time during fleeting visits.

First-time visitors could easily pass a week in this vibrant city. Indeed, I stayed for nine days the first time I visited Hong Kong. There are endless Buddhist temples to explore, Mongkok's famous street markets and Hong Kong's island's impeccable views from the Peak! Moreover, you can even add a short day trip to China (Shenzhen) for some retail therapy.

Phuket, Thailand:

The mountainous island of Phuket has quickly become one of Asia's most sought-after travel destinations, and for good reason. Crystal-blue waters, epic day hikes, and incredible Thai cuisine make Phuket a dream destination for many. Phuket is full of **luxury villas with epic views** over the Andaman Sea. All of them are within arm's reach of the beautiful beaches and vibrant nightlife of Phuket.

Siem Reap:

Thanks to the Tomb Raider film, this once-sleepy resort town in Cambodia became a tourist hot spot. You may remember the scene where Lara Croft runs through these very temples. Angkor Wat is the most famous of the temples. However, there is a handful to explore. You can easily spend a day wandering through all of them.

Maldives:

I still think the **Maldives** is the most romantic destination I have been to. It is everything you would expect and more. With crystal clear waters and some of the best snorkelling I have seen worldwide! There are endless hotels to choose from, and many of them are on private islands.

Bhutan:

In recent years, Bhutan has been building a name for itself as one of the world's bucket list destinations, and one look at this epic scenery will leave little to the imagination as to why this is a photographer's dream destination. This is one of the few remaining countries with no Western influence (i.e. no McDonald's or Starbucks) and is known as the last of the Himalayan Buddhist kingdoms.

Hoi An:

One of Asia's most popular small towns that has somehow managed to retain its culture and charm despite the influx of tourism, **Hoi An** is hands down one of the prettiest destinations in Asia to visit.

Chiang Mai:

Situated in the North of Thailand, **Chiang Mai** has become a traveller's favourite destination for visitors to Thailand. Known for its incredible cultural sights and thriving coffee shop scene, Chiang Mai has become a quick favourite among young travellers backpacking Asia seeking a cultural experience beyond the beautiful beaches of Phuket or Koh Samui.

Sri Lanka:

Tourism in Sri Lanka is undergoing a significant revival, with travellers flocking to the small island country to experience what has been dubbed "India lite". Here, you can enjoy an Asian safari, board a train to the beautiful tea plantations in Kandy or spend your days on a beach learning to surf at one of the many recently emerged surf and yoga schools.

Seoul:

The capital of South Korea, Seoul has become a hot spot for young travellers looking to experience a thriving city of skyscrapers, subways, K-pop culture and incredible food.

Dubai:

Dubai has become one of Asia's most popular stopover cities for travellers heading across the globe, thanks to its unique location at the centre of travel routes. The city is a thriving metropolis, but you will find tranquillity in the dunes a short drive out of the city.

Laos:

Renowned for its authenticity, mountainous terrain, and friendly locals, Laos has quickly become a destination for travellers' Southeast Asian itineraries. The location of Laos makes it a great combination to visit with neighbouring Cambodia, Thailand and Vietnam.

Pangkor Laut, Malaysia:

If you are looking for an Asian honeymoon destination that is more budget-friendly (over, say, the Maldives), then look no further than the idyllic Pangkor Laut in Malaysia. Here, you can score an overwater bungalow for a fraction of the price you would pay in the Maldives, where the phenomenon began in Bora Bora, Tahiti.

Jaipur:

India is a dream destination for many, and if you were to travel all that way, you could not visit without stepping foot in Jaipur and marvelling at the incredible architecture.

Agra:

Another must-visit on any traveller's India itinerary would be to visit the Taj Mahal in Agra – an ivory-white mausoleum commissioned in 1632 by the Mughal emperor, Shah Jahan, to house the tomb of his favourite wife, Mumtaz Mahal.

Abu Dhabi:

Known most famously for the mesmerising

Grand Mosque, Abu Dhabi, is another of Asia's most popular stopover cities. Located on the Persian Gulf, the city is also a popular spot for expats, making it a lively city to explore over a few days and nights.

Boracay, Philippines:

If white sandy beaches and endless shades of blue are what you have in mind for your romantic getaway, then look no further than Boracay in the Philippines. This area is renowned for its resorts and water activities, making it one of Southeast Asia's most popular honeymoon destinations.

Ha Long Bay, Hanoi:

Known for its limestone islands topped by wild rainforests, Ha Long Bay is a must-visit in Asia for those seeking the surreal. The area is home to many junk boats that tour the epic scenery daily, but if you want something more adventurous, you can also try a kayak tour, rock climbing, or hiking.

6.7 Check Your Progress:

- **Discuss the critical Tourist Attractions of North Asia:**

- **How do the climatic conditions of India affect the tourism industry?**

6.8 Summary

Asia is the world's largest continent in terms of area and population. Asia has about 50 countries that host some of the world's unique cultures. Asia's highest mountain range offers hill stations, adventure sports, Himalayan

flora and fauna, lakes, and a pleasant climate. Some famous deserts of the world include the Gobi Desert, Thar Desert, and Taklamakan Desert, all located in Asia and offering different tourist attractions. All types of climatic conditions exist in Asia. Every country has a unique natural climate.

6.9 Glossary:

- **Desert:** A large piece of land covered with sand.
- **Mountain:** A high part of the land is higher than a hill and is covered with snow and forests.

6.10 Self-Assessment Questions:

- Highlight the essential natural attractions of Asia.
- How are the physical features of Asia different from those of the African continent?

6.11 Reference and Suggested Readings:

- https://www.britannica.com/place/Asia
- https://www.nationsonline.org/oneworld/asia.htm
- https://wikitravel.org/en/Asia
- https://www.nationalgeographic.org/encyclopedia/asia/

Unit-7
Australia: Political, Physical, Climatic Features

Structure:

7.0 Objectives:

The essential objectives of the present unit are listed below:

- To learn the physical and political features of Australia
- To know the essential tourist attractions of Australia

7.1 Introduction:

Australia is the smallest of the seven continents on Earth. Aboriginal Australians' ancestors were the first to discover and settle in Australia about 50,000 years ago.

The discovery by the Europeans took a long time to come. It was not until 1606 that Dutch and Spanish explorers landed on the continent. In 1770, James Cook, a colourful figure in British colonial history, was searching for the predicted Great South Land. He came across a vast stretch of unknown land when he arrived on the east coast of Australia, and in the usual blunt British fashion, he claimed the territory for the British Crown. Between 1788 and 1868, the British used Australia as a penal colony. Australia became independent from the UK in several stages, and it achieved complete independence from Britain only on the 3rd of March 1986. It includes the adjacent island of Tasmania, Australia covers an area of 7,692,024 km² (2,969,907 sq mi), corresponding to about 5.6% of Earth's landmass. In comparison, Australia is slightly smaller than the contiguous United States. One country, Australia, occupies the continent.

7.2 Physical Features of Australia:

Australia is the smallest continent and the largest island in the world. Hence, it is also called the 'Island continent'. It comprises mainland Australia, Tasmania, New Guinea, New Britain, and small neighbouring islands (such as Misool and Waigeo, just to the northeast of the Maluku Islands at the edge of its continental shelf). It was discovered in 1770 by James Cooke, an English sailor. It lies entirely in the Southern Hemisphere.

Important Geographical Facts of Australia:

- The northern half of Australia is in the tropical zone, and the southern half is in the temperature zone.

- The Tropic of Capricorn passes through the middle of this continent.
- Two-thirds of Australia is covered with a plateau known as the 'Western Plateau', where rainfall is very scanty and deserts have developed.
- The eastern part of Australia is covered by a chain of highlands, from Cape York to the island of Tasmania, known as the 'Great Dividing Range'.
- There is a Coral Reef along the eastern coast of Australia. It is known as the 'Great Barrier Reef'. It is more than 1900 km long. The northern part of the eastern side of this coral reef is hazardous for the vessels.
- Mt. Kosciusko is the highest peak in Australia. Mt Cook is the highest peak in New Zealand.
- Major Rivers: Murray River, Murrumbidgee River, Darling River, Lachlan River, Warrego River, Cooper Creek, and Paroo River.
- The River Murray is the longest river in Australia. Waikato River is the longest river in New Zealand.
- Major Waterfalls: Montezuma Falls, Tia Falls, Russel Falls, Mackenzie Falls, Blencoe Falls, Fitzroy Falls, Ellenborough Falls, Mitchel Falls, Wallaman Falls, and Jim Jim Falls.
- The continent has 41 major lakes and over 4000 smaller lakes. Lake Taupo is a crater lake and one of the most beautiful lakes in New Zealand. A violent volcanic eruption formed it. Lake Eyre, officially named Kati Thanda-Lake Eyre, is a large saltwater lake in Australia.
- Major Plateaus: Arnhem Plateau, Atherton Tableland, Australian Shield, Dorrigo Plateau, Einasleigh Uplands, Mawson Plateau, Mount Carbine Tableland, Narrow Neck Plateau, Northern Tablelands, Shipley Plateau, Western Plateau, and Woronora Plateau.
- Major Deserts: Great Victoria Desert, Great Sandy Desert, Tanami Desert, Simpson Desert, Gibson Desert, Little Sandy Desert, Strzelecki Desert, Sturt Stony Desert, Tirari Desert, and Pedirka Desert.
- Major Food Crops: wheat, barley, canola, sorghum, oats, rice, pulses, and corn (maize).

- Major Cash Crops: Coffee, cocoa, tea, sugarcane, cotton, and spices
- Major Strait: Barker Passage, Bass Strait, Clarence Strait (Northern Territory), Dundas Strait, Endeavour Strait, Investigator Strait, The Rip, South Passage (Houtman Abrolhos), Suda Bay Passage, and Torres Strait.
- Time Zone: There are three central time zones. It is equal to Greenwich Meantime plus 10 hours (GMT +10).
- Climate: The northern section of Australia has a more tropical-influenced climate, hot and humid in the summer and relatively warm and dry in the winter, while the southern parts are more relaxed with mild summers and cool, sometimes rainy winters.
- Ethnic Groups and Language: 90% are European, 7% are Asian, 2% are Aboriginal, and the rest are related to the people of Papua New Guinea, Indonesia, and others from Southeast Asia and Australasia. 80% are English speakers.
- Port City: Newcastle, Sydney, Melbourne, Adelaide and Perth.
- Main trees: Palm, bamboo, Birch, Deodar and Eucalyptus.
- There are two types of grasslands found on the continent: tropical and temperate. These are called 'Savana'and 'Downs, respectively. In the Savanna grasslands, Salt Bush and Mulga bushes are found. Also, Eucalyptus trees grow here and there in the Downs. Hence, the Downs are called the 'Parkland of Australia'.

7.3 Political features of Australia:

Covering an area of 3,269,000 square miles, Australia is the smallest continent in the world.

The Australia Continent Political Map shows the major cities, states and their capitals, islands and other political divisions of the continent. Geological and geopolitical information about the continent of Australia has never been accurate, and as a result, there have been significant disputes over the continent's political divisions.

Generally, the Australian continent comprises the mainland of Australia and its proximate islands, including Tasmania, New Guinea, the Aru Islands, and the Raja Ampat Islands. Parts of Indonesia also make up the continent. The continent of Australia is geo-politically termed Oceania by the United Nations. Historically, the region was called Australasia, encompassing Australia, New Zealand, and, at times, Papua New Guinea. Geologically speaking, New Zealand is not part of the Australian continent.

The Commonwealth of Australia has six states - New South Wales, Queensland, South Australia, Tasmania, Victoria, and Western Australia and two significant territories - the Northern Territory and the Australian Capital Territory.

Canberra, the national capital, is clearly shown on the map. As Australia's capital, Canberra is home to Parliament House, the High Court, and numerous government departments and agencies.
Sydney is the largest and most populous city in Australia and the state capital of New South Wales. It is an international centre for commerce, arts, fashion, culture, entertainment, music, education and tourism. Australia is a federal parliamentary constitutional monarchy. Tony Abbot is the country's current Prime Minister, while Elizabeth II is the Monarch.

Division	Population	Area(km.²)	Area(mi.²)	Capital
Australian Capital Territory	323,665	2,365	913	Canberra
Jervis Bay Territory	369	67	26	Canberra
New South Wales	6,549,177	801,425	309,432	Sydney
Northern Territory	192,898	1,356,170	523,620	Darwin
Queensland	3,904,532	1,736,587	670,500	Brisbane
South Australia	1,514,337	984,377	380,070	Adelaide
Tasmania	476,481	68,127	26,304	Hobart
Victoria	4,932,422	227,619	87,884	Melbourne
Western Australia	1,959,088	2,527,621	975,920	Perth
Ashmore and Cartier Islands	0	5	2	Darwin
Coral Sea Islands Territory	0	3	1	Kingston
11 divisions	**19,855,288**	**7,704,366**	**2,974,672**	

7.4 Climatic Conditions of Australia:

Australia is the smallest continent in the world. It is also the lowest, the flattest and (apart from Antarctica) the driest.

The highest point on the Australian mainland is Mount Kosciuszko, New South Wales, at 2228 metres above sea level. The lowest point is the dry bed of Lake Eyre, South Australia, which is 15 metres below sea level.

The mainland and Tasmania are surrounded by thousands of small islands and numerous larger ones. Nearly 40 per cent of the total coastline length comprises island coastlines. Coastlines are essential in defining an island nation's national, state, and territory boundaries.

Nearly 20 per cent of Australia's land mass is classified as desert. As well as having a low average annual rainfall, rainfall across Australia is also variable. The rainfall pattern is concentric around the continent's extensive arid core, with high rainfall intensity in the tropics and some coastal areas.

Climatic zones range from tropical rainforests, deserts and cool-temperature forests to snow-covered mountains.

Within this climate, our plants and animals have evolved on a geographically isolated continent, with a slowly drying climate and ongoing high variability. The uniqueness of much of Australia's flora and fauna is thus at least partly due to these features of our climate.

7.5 Important Tourist Attractions of the Australian Continent:

Tourism is essential to the Australian economy, bringing billions annually. The unique landscapes, beaches and wildlife make Australia one of the finest tourist destinations in the world. The following are ten popular and must-visit places in Australia.

1. Cradle Mountain, Tasmania:

Cradle Mountain is located within the Tasmanian World Heritage Site, standing at 5069 feet. The Cradle Mountain features a wide variety of rock formations, beautiful landscapes and a rich biodiversity of plants and animals. Lake St Clair, the deepest freshwater lake in Australia, is also located within this mountain range.

Walking the Dove Lake Loop track offers visitors cool temperatures and a fantastic view of the Ballroom Forest. Visitors can also see many glacial formations in this mountain range. Many ancient plants and rare animal species also live in the Cradle Mountain area.

2. Daintree Rainforest, Queensland:

One of the main tourist attractions in Queensland, Australia, spanning 1200 square kilometres, it is home to many rare species of plants and insects. The Daintree forest is the oldest tropical lowland forest in the world, estimated to be 135 million years old. The Daintree rainforest range is also listed on UNESCO's World Heritage sites, and over four million people visit this site every year.

Walking through the Daintree rainforest with experienced guides gives you all the sights and sounds of nature. The cruise along the Daintree River also brings a close view of wildlife. The fast-flowing streams, Cassowary waterfalls, and magnificent views of white sandy beaches also make for the best part of Daintree rainforest exploration.

3. Bondi Beach, Sydney

1-kilometre-long Bondi Beach attracts thousands of visitors around the year. Bondi Beach offers sunbathing, swimming and surfing. There are particular areas for surfing, swimming and surfing. The experienced trainers at Bondi Beach also help tourists who do not have experience surfing. The nearby restaurants also offer the tastiest seas foods for tourists.

4. Kakadu National Park, Darwin

Kakadu National Park is located in Darwin, in the northern territory of Australia. This national park is spread across a vast area of 20000 square kilometres, known for the richness of aboriginal cultural sites. Aboriginal people, the oldest culture on Earth, occupied the Kakadu area for more than 40000 years. This national park's thousands of art forms raise its cultural importance globally and are listed among UNESCO's world heritage sites.

It is also home to 280 species of birds and 2000 species of plants. Tourists can also see the high population of crocodiles in Kakadu National Park. The 20000-year-old rock art provides enchanting info about aboriginal life. It is

the longest historical record of any culture in this world. The Jim Falls also makes this site more beautiful, and it becomes dry in the summer season.

5. Fraser Island, Queensland:

Fraser Island is the largest sand island in the world, covers an area of 184000 hectares and stretches over 200 kilometres. It is the only place in the world where you can see tall rain forests within the sand because of mycorrhizal fungi present in the sand of Fraser Island. There are 100 different lakes linked with this island. Some have tea-coloured water, some have deep blue water, and some have clear water.

The coastal walk on Fraser Island offers a spectacular view of the ocean and different species of birds. The cruise tour brings a close view of dolphins, turtles and sharks. From August to October, you can also see migrating humpback whales. The eco-friendly resorts become one of the main attractions on Fraser Island, and sea-view offering villas are also available.

6. Great Ocean Road, Victoria:

Great ocean road stretches along the southeastern coast of Australia, having a length of 243 kilometres. This surf coast highway was built by a team of retired soldiers and took 13 years to complete in memory of soldiers who lost their lives in World War I, another world heritage site in Australia.

The gigantic limestone formations in the Southern Ocean are the main attraction while driving along the Great Ocean Road. View of the most beautiful beaches of Australia, like Torquay, Jan Juc, Bells Beach, Anglesea, Point Roadknight, Fairhaven, Apollo Bay, Johanna, and Kennett River, also make a drive along the Great Ocean Road worthwhile.

Some surf training centres are available along the side of Great Ocean Road. Surf competitions, swimming, scuba diving and biking are also available there. Sometimes, animals like kangaroos, koalas, snakes, wombats, and foxes make their presence known before you.

7. Uluru, Central Australia:

Uluru is a large sandstone formation located in the Northern Territory of Australia. It is 3.6 kilometres in length and 1.9 kilometres in width, and it is said to be 2.5 kilometres of the mass of Uluru buried in the ground. Uluru

was formed 600 million years ago and is situated at the bottom of the sea. It is a holy place for the Anagu tribe within the country's northern territory.

Because of its cultural and geological importance, Uluru is listed as one of UNESCO's World Heritage Sites. The oxidation of the iron content of Uluru produces a brilliant orange-red hue. Visitors can also see several rock caves and ancient paintings near Uluru sandstone.

8. Sydney Harbour Bridge:

Sydney Harbour Bridge is the largest steel arch bridge in the world, connecting Sydney's business district with the North Shore. The bridge has a length of 3770 feet and a height of 440 feet, and carries eight road lanes, two railway lines, and cycleways. It took nine years to construct this bridge, starting in 1923. Today, this bridge has become one of the most photographed sites in Australia, attracting thousands of visitors for bridge climbing.

Bridge climbing for tourists began in 1998. The authorities will take safety precautions, such as testing blood alcohol content and using a climbing simulator. Visitors can choose the day, twilight, or night section for climbing the Sydney Harbour Bridge and will get stunning views of surrounding cities from the top.

9. Sydney Opera House:

Australia's most recognisable landmark and icon, the Sydney Harbour Bridge, is the focal point of Sydney Harbour. It offers a stunning view from all four parts of the building. The shell-shaped sails roofs of the Sydney Opera House made it an architectural icon of the 20th century. It is a multi-venue art centre in Australia, and it is listed among UNESCO's World Heritage sites.

There are 1,500 performances at the Sydney Opera House each year, attracting millions of visitors. It features a concert hall, a drama theatre, a playhouse, a studio, and a forecourt. The interior of this opera house has brilliant colouration and design. The theatre was designed to absorb all unwanted sounds and offer perfect acoustical properties.

Due to millions of years of isolation, Australia is home to many unique species of plants.

10. Great Barrier Reef, Queensland:

Great Barrier Reef is the most extensive coral reef system in the world. It is one of seven natural wonders visible from space. It is Australia's most popular tourist attraction and an icon of Queensland, attracting 2 million visitors every year. Tiny microorganisms formed this coral reef system over millions of years. This most extensive coral reef system, stretching over 2300 kilometres, comprises 2900 individual reef systems.

There are 1500 species of fish, 3000 species of molluscs, six species of sea turtles and thirty species of whales and dolphins living within the Great Barrier Reef. Snorkelling and scuba diving are the best ways to experience a close view of the Great Barrier Reef's reef system and marine life. The glass-bottom boats, cruises, submarines, and helicopters are also available to visitors.

7.6 Check Your Progress:

- **Discuss the essential natural tourist attractions of the Australian continent.**

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- **Discuss the physical features of the Australian continent.**

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7.7 Summary:

Australia is the smallest continent in the world. It houses only 0.55% of the population of the world. It offers various natural tourism resources, including sea, beaches, flora and fauna species, islands, national parks, etc. The Australian continent is a dream tourist destination because of its scenic beauty, pleasant climate and wide variety of flora and fauna species. Its island countries and pollution-free cities attract thousands of international tourists every year.

7.8 Glossary

- **Flora:** Different species of trees and plants.
- **Fauna:** Different species of animals

7.9 Self-Assessment Questions:

- How do natural tourism resources on the Australian continent differ from other continents?
- Discuss wildlife tourism on the Australian continent.

7.10 Reference and Suggested Readings

- https://www.britannica.com/place/Australia
- https://www.planetware.com/tourist-attractions/australia-aus.htm
- https://www.nationsonline.org/oneworld/oceania.htm
- https://info.australia.gov.au/about-australia/our-country/the-australian-continent

Unit-8

Important Countries: Geographical Features, Climate, Tourist Attractions of USA, Japan, France, United Kingdom and Spain

Structure:

8.0 Objectives:

After reading the present unit, the learners will be able to:

- Describe the physical and climatic features of the essential countries of the World.
- Discuss the essential tourist attractions of different countries.

8.1 Introduction:

Here, a focus will be given on some of the most popular countries in the world regarding tourist destinations. These countries attract large numbers of international tourists. All these countries are among the ten most popular destinations in the world. The USA is where most outbound tourists travel to other nations. India also receives the second maximum number of international tourists from the USA.

Similarly, the USA is third in terms of the maximum number of tourist arrivals. Therefore, it is clear that the USA has an outstanding contribution to the world tourism industry. Similarly, Japan is in the 12th position in terms of the maximum no. of international tourist visits (2.24%) in India. Japan is the third most visited country in the Asia Pacific region. Here, learners will also study the tourism industry of France because this country is the most visited in the world. Its World Heritage Sites and culture attract tourists from around the world. France is in fifth place regarding the maximum number of World Heritage Sites. It is also the 11th source country for inbound tourists in India. The UK also has a good role in the world's travel and tourism industry. It has a total of 32 World Heritage Sites. The United Kingdom is the third top source country for India. It is also the world's 10th most visited country. Finally, Spain is second in terms of the maximum number of inbound tourists. It may be possible because it has the third most World Heritage Sites. All the above countries play a good role in the tourism industry. The movement of tourists from these countries affects the world's tourism industry. Understanding the tourism industry of these countries helps professionals in inbound and outbound tourism activities.

8.2 USA: Physical Features, Climatic Conditions and Important Tourist Attractions:

America is three times larger than India and houses various tourist attractions. Tourism in the United States of America is the largest industry that serves millions of international and domestic tourists every year. Foreigners visit the U.S. to see the natural wonders, cities, historic landmarks and entertainment venues. Americans seek similar attractions, as well as recreation and vacation areas.

Tourism in the United States overgrew in the form of urban tourism during the late nineteenth and early twentieth centuries. By the 1850s, tourism in the United States was well established as a cultural activity and industry.

New York City, Los Angeles, Chicago, Boston, Philadelphia, Washington, D.C., and San Francisco, all major U.S. cities, attracted numerous tourists since the 1890s. By 1915, city touring had marked significant shifts in how Americans perceived, organised, and moved.

Democratisation of travel occurred during the early twentieth century when the automobile revolutionised travel. Similarly, air travel revolutionised travel from 1945 to 1969, contributing significantly to tourism in the United States. Purchases of travel and tourism-related goods and services by international visitors travelling in the United States totalled $10.9 billion during February 2013.

The travel and tourism industries in the United States were among the first economic sectors negatively affected by the September 11, 2001 attacks.

In the U.S., tourism is among the three largest employers in 29 states, employing 7.3 million people in 2004 to take care of 1.19 billion trips tourists took in 2005. As of 2007, 2,462 registered National Historic Landmarks (NHL. As of 2018, New York City is the most visited destination in the United States, followed by Los Angeles, Orlando, Las Vegas, and Chicago.

Tourists spend more money in the United States than in any other country, while attracting the third-highest number of tourists after France and Spain. Longer stays in the US may explain the discrepancy.

Physical Features of USA:

The conterminous United States may be divided into seven broad physiographic divisions: from east to west, the Atlantic–Gulf Coastal Plain; the Appalachian Highlands; the Interior Plains; the Interior Highlands; the Rocky Mountain System; the Intermontane Region; and the Pacific Mountain System. An eighth division, the Laurentian Uplands, a part of the Canadian Shield, dips into the United States from Canada in the Great Lakes region. It is an area of little local relief, with an irregular drainage system, many lakes, and some of the oldest exposed rocks in the United States.

The terrain of the N United States was formed by the great continental ice sheets that covered N North America during the late Cenozoic Era. The southern edge of the ice sheet is roughly traced by a line of terminal moraines extending west from E Long Island and then along the course of the Ohio and Missouri rivers to the Rocky Mts.; land north of this line is covered by glacial material. Alaska and the mountains of NW United States had extensive mountain glaciers that were heavily eroded. Large glacial lakes (see Lake Bonneville under Bonneville Salt Flats; Lahontan, Lake) occupied sections of the Basin and Range province; the Great Salt Lake and the other lakes of this region are remnants of the glacial lakes.

The Atlantic–Gulf Coastal Plain extends along the east and southeast coasts of the United States from E Long Island to the Rio Grande; Cape Cod and the islands off SE Massachusetts are also part of this region. Although narrow in the north, the Atlantic Coastal Plain widens in the south, merging with the Gulf Coastal Plain in Florida. The Atlantic and Gulf coasts are essentially coastlines of submergence, with numerous estuaries, embayments, islands, sandspits, and barrier beaches backed by lagoons. The northeast coast has many fine natural harbours, such as those of New York Bay and Chesapeake Bay, but there are few large bays south of the great capes of the North Carolina coast (Fear, Lookout, and Hatteras). A principal feature of the lagoon-lined Gulf Coast is the great delta of the Mississippi River.

The Atlantic Coastal Plain rises west to the rolling Piedmont (the falls along which were an early source of waterpower), a hilly transitional zone leading to the Appalachian Mountains. These ancient mountains, a once towering system now worn low by erosion, extend southwest from SE Canada to the Gulf Coastal Plain in Alabama. In E New England, the Appalachians extend in a few places to the Atlantic Ocean, contributing to a rocky, irregular coastline. The Appalachians and the Adirondack Mountains of New York (which are geologically related to the Canadian Shield) include all the chief highlands of the United States; Mt. Mitchell (6,684 ft/2,037 m high), in the Black Mts. of North Carolina, is the highest point of E North America.

Extending more than 1,000 mi (1,610 km) from the Appalachians to the Rocky Mts. and lying between Canada (into which they extend) in the north and the Gulf Coastal Plain in the south are the undulating Interior Plains. Once covered by a great inland sea, the Interior Plains are underlain by sedimentary rock. Almost all of the region is drained by one of the world's most outstanding river systems—the Mississippi-Missouri. The Interior Plains may be divided into two sections: the fertile central lowlands, the agricultural heartland of the United States, and the Great Plains, a treeless plateau that gently rises from the central lowlands to the foothills of the Rocky Mts. The Black Hills of South Dakota form the region's only upland area.

The Interior Highlands are located just W of the Mississippi River between the Interior Plains and the Gulf Coastal Plain. This region consists of the rolling Ozark Plateau (see Ozarks) to the north and the Ouachita Mountains, similar in structure to the ridge and valley section of the Appalachians to the east.

West of the Great Plains is the lofty Rocky Mountains. This geologically young and complex system extends into the NW United States from Canada and runs S into New Mexico. The Rockies have numerous high peaks; the highest is Mt. Elbert (14,433 ft/4,399 m). The Rocky Mts. is divided into four sections—the Northern Rockies, the Middle Rockies, the Wyoming (Great Divide) Basin, and the Southern Rockies. Along the crest of the Rockies is

the Continental Divide, separating Atlantic-bound drainage from that heading for the Pacific Ocean.

Between the Rocky Mts. and the ranges to the west is the Intermontane Region, an arid expanse of plateaus, basins, and ranges. The Columbia Plateau, in the north of the region, was formed by volcanic lava and is drained by the Columbia River and its tributary, the Snake River, both of which have cut deep canyons into the plateau. The enormous Colorado Plateau, an area of sedimentary rock, is drained by the Colorado River and its tributaries; there, the Colorado River has entrenched itself to form the Grand Canyon, one of the world's most impressive scenic wonders. West of the plateaus is the Basin and Range province, an area of extensive semi-desert.

The lowest point in North America, Death Valley (282 ft/86 m below sea level), is there. The largest basin in the region is the Great Basin, an area of interior drainage (the Humboldt River is the most significant stream) and numerous salt lakes, including the Great Salt Lake. Between the Intermontane Region and the Pacific Ocean is the Pacific Mountain System, a series of ranges generally paralleling the coast, formed by faulting and volcanism. The Cascade Range, with its numerous volcanic peaks, extends S from SW Canada into N California and, from there, is continued south by the Sierra Nevada, a great fault block. Mt. Whitney (14,495 ft/4,418 m), in the Sierra Nevada, is the highest peak in the conterminous United States.

West of the Cascades and Sierra Nevada, separated from them by a structural trough, are the Coast Ranges, which extend along the length of the U.S. Pacific coast. The Central Valley in California, the Willamette Valley in Oregon, and the Puget Sound lowlands in Washington are part of the trough. The San Andreas Fault, a fracture in the earth's crust, parallels the trend of the Coast Ranges from San Francisco Bay SE to NW Mexico; earthquakes are common along its entire length. The Pacific Coastal Plain is narrow, and in many cases, the mountains plunge directly into the sea. A coastline of emergence, it has few islands, except for California's Channel

Islands and those in Puget Sound; there are few good harbours besides Puget Sound, San Francisco Bay, and San Diego Bay.

Alaska may be divided into four physiographic regions; they are, from north to south: the Arctic Lowlands, the coastal plain of the Arctic Ocean; the Rocky Mountain System, of which the Brooks Range is the northernmost section; the Central Basins and Highlands Region, which is dominated by the Yukon River basin; and the Pacific Mountain System, which parallels Alaska's southern coast and which rises to 20,310 ft (6,190 m) at Denali (Mt. McKinley), the highest peak of North America. The islands of SE Alaska and those of the Aleutian Islands chain are partially submerged portions of the Pacific Mountain System and are frequently subjected to volcanic activity and earthquakes. Like Hawaii, these islands are the tops of volcanoes that rise from the floor of the Pacific Ocean. Mauna Kea and Mauna Loa in Hawaii are active volcanoes; the other Hawaiian Islands are extinct volcanoes.

The United States has an extensive inland waterway system, much of which has been improved for navigation and flood control and developed to produce hydroelectricity and irrigation water by such agencies as the U.S. Bureau of Reclamation, the U.S. Army Corps of Engineers, and the Tennessee Valley Authority. Some of the world's giant dams, artificial lakes, and hydroelectric power plants are on U.S. Rivers. The Mississippi-Missouri River system (c.3,890 mi/6,300 km long) is the longest in the United States and the second longest globally. With its hundreds of tributaries, chief among which are the Red River, Ohio, and the Arkansas, the Mississippi basin drains more than half of the nation. The Yukon, Columbia, Colorado, and Rio Grande also have huge drainage basins. Other notable river systems include Connecticut, Hudson, Delaware, Susquehanna, Potomac, James, Alabama, Trinity, San Joaquin, and Sacramento.

The Great Salt Lake and Alaska's Iliamna are the most significant U.S. lakes outside the Great Lakes and Lake of the Woods, which are shared with Canada (Lake Michigan and Iliamna are the largest freshwater lakes entirely within the United States). The Illinois Waterway connects the Great Lakes

with the Mississippi River, and the New York State Canal System links them with the Hudson. The Intracoastal Waterway provides sheltered passage for shallow draft vessels along the Atlantic and Gulf Coasts.

Climatic Features of the USA:

Being a vast country, the contiguous United States is home to various climates. However, it generally has a continental climate, with cold winters (often frigid) and hot summers (sometimes very hot), with a different season duration depending on latitude and distance from the sea. There are, however, some exceptions: on the west coast overlooking the Pacific Ocean, the climate is cool and damp in the northern part and Mediterranean in the southern part; on the coast of the Gulf of Mexico, the climate is mild in winter and hot and muggy in summer, while in Florida, it is almost tropical; the mountainous areas are cold in winter and cool to cold even in summer; and finally, there are deserts which are mild in winter and scorchingly hot in summer.

Since there are no obstacles to cold air masses from Canada, almost all the country can experience sudden cold waves in winter, but they have different intensities and duration depending on the area. Cold spells last a few days in the south, where the temperature drops a few degrees below freezing (0 °C or 32 °F) in winter, while they are intense and sometimes long in inland areas, in the highlands and the northeast. The summer heat waves can also be intense, especially in inland areas. In general, the western half of the country is arider than the eastern one, except for the north-central coast of the Pacific, which is rainy.

While the Western United States is occupied mainly by mountains and plateaus, with vast arid and desert areas, the central-eastern part is primarily flat or covered by hills and low mountains, and its climate is generally more humid and rainy. Given the vastness of the territory, the climatic differences are also remarkable here.

In the central-eastern part, clashes of air masses are remarkable and frequent, making the climate unstable in most of the territory, and meteorological phenomena may be violent (storms, hail, blizzards,

tornadoes). Air masses from Canada are cold and dry (but pick up moisture when passing over the Great Lakes), while those from the Gulf of Mexico are warm and moist.

The Great Plains experience higher temperature variations but are less humid and rainy than the East Coast, especially in winter.

Important Tourist Attractions of the USA:

The US is home to some of the most spectacular scenery in the world and some of the most recognisable icons on the planet. Many of the top attractions in the United States are bucket list destinations, drawing visitors worldwide. The USA receives the third most international tourists and has 24 UNESCO World Heritage Sites. Some of the most visited tourist attractions of the USA are listed below:

1. Grand Canyon:

Carved by the Colorado River, the Grand Canyon is a steep canyon located in Arizona. It is 277 miles (365km) long and nearly 18 miles (29km) wide. Native Americans who considered it a holy site inhabited it for thousands of years. Because of its steep formation, extreme weather components and often foggy views, there have been more than 600 deaths at the Grand Canyon since the 1870s. The cause of these deaths ranges from falls to heat stroke to drowning in the Colorado River. In 2016, the first Grand Canyon Skydiving operation opened on the South Rim of the Grand Canyon National Park Airport.

2. Niagara Falls:

Situated along the Canada-U.S. border, Niagara Falls is one of the most famous waterfalls in the world. The water from Lake Erie flows into Lake Ontario over these massive waterfalls, known for the great quantity of water constantly tumbling over the vertical drop.

3. Statue of Liberty:

Designed by French sculptor Frédéric Auguste Bartholdi, the copper Statue of Liberty was a gift from the people of France to the United States. The female figure represents the Roman goddess Libertas and has become a symbol of freedom and a way to welcome immigrants from abroad. The

statue is located on Liberty Island in New York City. Due to safety reasons, public access to the balcony surrounding the torch has been banned since 1916.

4. White House:

Starting with President John Adams in 1800, the White House has been the official residence of every US president. It includes an Executive Residence, West Wing, East Wing, and the Eisenhower Executive Office Building. The National Park Service owns the property and offers free weekly self-guided tours. However, all public tour requests must be submitted through a member of Congress. Those wishing to visit the White House from another country must contact their embassy in Washington, DC.

5. Walt Disney World Resort:

The most visited vacation resort in the world, Walt Disney World, opened in 1971 and is located near Orlando, Florida. The attraction is part of Walt Disney World Resort, which has 27 themed hotels, four theme parks and two water parks. The first theme park to open at the resort was Magic Kingdom, followed by Epcot and Disney's Animal Kingdom. Each park offers plenty of family-friendly entertainment, including rides, live shows, tours and special events.

6**. Las Vegas Strip:**

Even though it is not technically located in Las Vegas (south of the city), the Las Vegas Strip is considered a top spot to visit in Nevada. The Strip is a popular destination for adult travellers, with resorts, hotels and casinos lining the stretch of 4.2 miles (6.7km). Some of the most popular hotels (which have casinos inside) that tourists visit are Caesars Palace, MGM Grand, Excalibur, and The Bellagio. Many high-profile performers like Elvis Presley, Elton John and Celine Dion have performed at venues in Las Vegas, attracting millions of visitors annually.

7. Times Square:

In 1907, Times Square became where the New Year's Eve ball would drop each year. The tradition still lives on. Times Square is the most visited place in the world and the second most visited tourist attraction after the Las

Vegas Strip. The entertainment centre is located in the Midtown Manhattan area of New York City and is sometimes called "The Crossroads of the World". There are high-rise buildings, interactive billboards, major retail shops, restaurants, museums and entertainment venues.

8. Yellowstone National Park:

Yellowstone National Park is home to a vast ancient volcano, which has resulted in a dramatic landscape and extraordinary natural phenomena. Geysers, hot springs, and incredible waterfalls along the Yellowstone River are just some of the attractions drawing in vast numbers of tourists annually. The park, the oldest national park in the USA, is also home to all kinds of wildlife, with free-roaming bison, bighorn sheep, antelope, black bears, and grizzly bears.

9. Mount Rushmore:

It was initially known as "The Six Grandfathers" and was renamed in 1885 after prominent New York lawyer Charles E Rushmore. The Mount Rushmore National Memorial is located in Keystone, South Dakota and features 60-foot (18m) sculptures of the heads of four US presidents: George Washington, Thomas Jefferson, Theodore Roosevelt and Abraham Lincoln. Construction on the memorial began in 1927 and was completed in 1939. Each president was originally going to be depicted from head to waist, but lack of funds forced construction to end before completion.

8.3 Japan: Physical Features, Climatic Conditions and Important Tourist Attractions:

Japan is an island country in East Asia, located in the northwest Pacific Ocean. It is bordered on the west by the Sea of Japan and extends from the Sea of Okhotsk in the north toward the East China Sea and Taiwan in the south. Part of the Ring of Fire, Japan spans an archipelago of 6852 islands covering 377,975 square kilometres (145,937 sq mi); the five main islands are Hokkaido, Honshu, Shikoku, Kyushu, and Okinawa. Tokyo is Japan's capital and largest city; other major cities include Yokohama, Osaka, Nagoya, Sapporo, Fukuoka, Kobe, and Kyoto.

Japan is the eleventh-most populous country in the world and one of the most densely populated and urbanized. About three-fourths of the country's terrain is mountainous, concentrating its population of 125.48 million on narrow coastal plains. Japan is divided into 47 administrative prefectures and eight traditional regions. The Greater Tokyo Area is the most populous metropolitan area in the world, with more than 37.4 million residents.

Physical Features of Japan:

Japan is an archipelago, or string of islands, on the eastern edge of Asia. There are four main islands: Hokkaido, Honshu, Shikoku, and Kyushu. There are also nearly 4,000 smaller islands! Japan's nearest mainland neighbours are the Siberian region of Russia in the north and Korea and China farther south.

Almost four-fifths of Japan is covered with mountains. The Japanese Alps run down the centre of the largest island, Honshu. The highest peak is Mount Fuji, a cone-shaped volcano considered sacred by many Japanese.

Japan can be a dangerous place. Three of the tectonic plates that form Earth's crust meet nearby and often move against each other, causing earthquakes. More than a thousand earthquakes hit Japan every year. Japan also has about 200 volcanoes, 60 of which are active.

Climatic Features of Japan:

Japan lies in the northeast tip of the Asian Monsoon Zone, which encompasses India, China, Korea, and Southeast Asian countries. The weather is generally mild and humid with considerable variation from north to south, between the Pacific Ocean side to the east of the central mountain ranges and the Japan Sea side to the west.

The country's four distinct seasons feature three periods of heavy precipitation: Heavy winter snowfalls blanket the Japan Sea side in deep layers of snow, Particularly in the north (although the Pacific Ocean side remains typically clear and dry); tsuyu (the rainy season) brings continuous heavy rains to most of the archipelago during the second annual wet period in June and July; and typhoons that originate in the southern Pacific assault

the country - especially the southern portions - during the third wet period in September and October. These three wet periods shove the nation's annual precipitation almost double the world average.

Generally, precipitation occurs mainly during the Tsuyu and typhoon seasons on the Pacific Ocean side, during the typhoon season, and in winter (in the form of heavy snow) on the Japan Sea side.

Important Tourist Attractions in Japan:

India receives the 12th most international visitors from Japan. This tiny country is known worldwide for its technology, such as bullet trains and capsule hotels. Tourists visit here to see its beauty and technology. Japan has survived a nuclear attack and is now spreading peace and unity. Some of the most visited natural and man-made tourist attractions are listed below:

1. Mount Fuji:

Without a doubt, Japan's most recognizable landmark, majestic Mount Fuji (Fuji-san), is also the country's highest mountain peak. Towering 3,776 meters over an otherwise essentially flat landscape to the south and east, this majestic and fabled mountain is tall enough to be seen from Tokyo, more than 100 kilometres away.

Mount Fuji has been celebrated in art and literature for centuries and is now considered so important an icon that UNESCO recognized its world cultural significance in 2013. Part of the Fuji-Hakone-Izu National Park, Mount Fuji is climbed by more than a million people each summer as an act of pilgrimage, culminating in watching the sunrise from its summit.

2. Historic Kyoto:

One of Japan's most visited cities, lovely Kyoto - one of the few cities in the country to be spared the devastation of WWII - attracts more than 10 million visitors annually. Most are here to explore Kyoto's fine old streets and architecture, much of it unchanged since the Imperial family took up residence here more than 1,000 years ago.

Even then, the city was Japan's most important cultural centre. This legacy continues today with many museums and art galleries, each bursting with essential sculptures, paintings, and other art forms.

3. Osaka Castle:

Built in 1586 by famous Japanese warrior and politician Toyotomi Hideyoshi, Osaka Castle was the country's most prominent fortress. Although destroyed and rebuilt some times since, the present structure, built in 1931, remains faithful to the original.

Highlights of a visit include the huge five-story, 42-meter-tall central tower. Built on an imposing 14-meter-tall stone base, the tower is home to several displays detailing the history of the castle and the city. Be sure to visit the top floor for its superb views over Osaka, which are beautiful as the sun sets.

4. Hiroshima Peace Memorial:

The Hiroshima Peace Memorial is a haunting tribute to the lives lost when the atomic bomb was dropped on Hiroshima on August 6, 1945. Set in a park, the memorial features Genbaku Dome, the only building left standing in the vicinity after the bomb dropped. This harsh reminder of a world at war reminds visitors of the importance of human life and honours the victims so they will never be forgotten.

5. Great Buddha of Kamakura

The Great Buddha of Kamakura is a colossal outdoor representation of Amida Buddha, one of Japan's most celebrated Buddhist figures. Cast in bronze, the Great Buddha stands over 13 meters (40 feet) high and weighs nearly 93 tons. The statue reportedly dates from 1252. Although it originally was housed in a small wooden temple, the Great Buddha now stands in the open air as the original temple was washed away in a tsunami in the 15th century.

8.4 France: Physical Features, Climatic Conditions and Important Tourist Attractions:

France, officially the French Republic (French: République française),[1] is a country primarily located in Western Europe, consisting of metropolitan France and several overseas regions and territories. The metropolitan area of France extends from the Rhine to the Atlantic Ocean and from the Mediterranean Sea to the English Channel and the North Sea. The

overseas territories include French Guiana in South America and several islands in the Atlantic, Pacific and Indian Oceans.

Franceborders Belgium, Luxembourg, and Germany to the northeast, Switzerland, Monaco and Italy to the east, Andorra and Spain to the south, the Netherlands, Suriname and Brazil in the Americas. The country's eighteen integral regions (five of which are situated overseas) span a combined area of 643,801 km² (248,573 sq mi) and a total population of 67.4 million (as of March 2021). France is a unitary semi-presidential republic with its capital in Paris, the country's largest city and main cultural and commercial centre. Other major urban areas include Lyon, Marseille, Toulouse, Bordeaux, Lille and Nice. France, including its overseas territories, has the most time zones of any country, with twelve.

Physical Features:

When people think of France, they likely think of Paris, the Eiffel Tower, or French cuisine, but these are all examples of France's human geography or culture. The country's physical geography focuses on its natural features and spatial aspects. Let us learn more about France's unique physical geography. France is located on the mainland of the European continent and is the second-largest country in Europe, with an area of 551,500 square kilometres. While it shares borders with several other countries, a feature of human geography, it has four natural borders formed by the Atlantic Ocean, the English Channel, the North Sea, and the Mediterranean Sea. The mean elevation of France is 375 meters above sea level. Its highest point is Mont Blanc, a mountain peak 4,807 meters above sea level.

Mountain Ranges:

Mont Blanc is France's highest mountain and is 4807 metres high. Its name means 'white mountain' because it is always covered in snow, even in summer. Mont Blanc is part of a vast mountain range called the Alps, extending east to Albania across Europe**.** France has lots of other mountain ranges, too. Some of the main ones are the Jura Mountains, along the border with Switzerland, and the Pyrenees Mountains, on the border with Spain. In

the middle of France is the Massif Central, which means 'central mountains'. Some of the mountains in the centre of France are ancient volcanoes. Nevertheless, do not worry – they have not erupted for over 6000 years.

Rivers:

Rivers are the lifeline of any country because they provide farmers with drinking water and irrigation facilities and attract tourists from different parts of the world. Tourists visit River banks to indulge in boating, fishing or water-based adventure sports activities. There are thousands of small and big Rivers in France, all recognized for their beauty. Some critical rivers in France are the Loire, Rhone, Seine, Garonne, Dordogne, etc.

Climatic Conditions of France:

France generally enjoys cool winters and mild summers except along the Mediterranean, where mild winters and hot summers are the norm. Average winter temperatures range from 32° F to 46° F, and average summer temperatures from 61° F to 75° F. For the most warmth and sunshine, go to the country's south. The Provence and Languedoc regions have mild winters and blisteringly hot summers. Paris has cool and reasonably rainy winters along the north and central regions, though summers here are usually hot. Winters are much colder in the eastern regions of Alsace-Lorraine and in the mountainous regions of the Alps, the Pyrénées, and the Massif Central.

Bordering the Atlantic Ocean and the English Channel, western France has a temperate Atlantic climate characterized by relatively mild winters (with average temperatures of 45° F). The chance of sea fog and fine rain is a regular feature of the climate. This area gets an average of 200 days of rainfall per year. In the far west, Brittany is the rainiest location, especially between October and November. Summers here are not overly hot either, with the average temperature being 61° F. As you travel south along the Atlantic Coast, the weather gets milder and more pleasant. Spring rainfall is still plentiful, but summers are more likely to be warm and dry. Here, sunny days are plentiful throughout the fall. Farther east, toward the Alsace region, the country enjoys a drier, sunnier climate, but winters can be frigid. In the Massif Central, the climate is harsh and cold.

France's Mediterranean coastline rejoices in hot summers and is usually very mild throughout winter. The region does, however, get battered by the mistral wind. Cold in winter, warm in summer, this blustery wind blasts down the Rhône Valley toward the Riviera. Winters here are the warmest you will find in France. Abundant winter snow, yes, but the weather in the French Alps varies from north to south. The northern Savoy Alps can get quite a lot of rain year-round, and temperatures stay relatively low. During the warmer season, winds blow along this region's valleys and by midday, clouds have formed around most mountain summits. The Southern Alps bordering Provence have a more typical Mediterranean climate, with lots of sunshine, dry weather, clear skies, and no mist or fog. Storms may occasionally occur, but sunny spells always follow them.

Important Tourist Attractions in France:

France is the most visited country in the world. Its UNESCO World Heritage Sites, festivals, cuisines, bullet train and natural attractions force tourists to visit. For almost a decade, France has remained in the top position globally. Some of the most popular tourist attractions in France are listed below:

- **Eiffel Tower:**

The Eiffel Tower is a wrought iron lattice tower on the Champ de Mars in Paris, France. It is named after the engineer Gustave Eiffel, whose company designed and built the tower. Locally nicknamed "La dame de fer", it was constructed from 1887 to 1889 as the entrance to the 1889 World's Fair and was initially criticized by some of France's leading artists and intellectuals for its design, but it has become a global cultural icon of France and one of the most recognizable structures in the world. The Eiffel Tower is the most-visited monument in the world; 7 million people ascended it in 2020.

The tower is 324 metres (1,063 ft) tall, about the same height as an 81-storey building, and the tallest structure in Paris. Its square base measures 125 metres (410 ft) on each side.

The tower has three visitor levels, with restaurants on the first and second levels. The top level's upper platform is 276 m (906 ft) above the ground– the highest observation deck accessible to the public in the European Union.

Tickets can be purchased to ascend by stairs or lift to the first and second levels. The climb from ground level to the first level is over 300 steps, as is the climb from the first to the second. Although there is a staircase to the top level, it is usually accessible only by lift.

- **Basilica of Sacred Heart of Paris:**

  One of the most beautiful churches in the world is dedicated to the Sacred Heart of Jesus. Built in 1914, the Basilica is situated on Montmartre Hill and is a signature landmark of this iconic district. The Basilica is always naturally white despite the weather and pollution because of the travertine stone, which has this exceptional quality to preserve its colour. It is open all year round and is visited by thousands of tourists daily.

- **Saint Michel, Normandy:**

  The Mont-Saint-Michel is one of Europe's most unforgettable sights. Set in a mesmerizing bay shared by Normandy and Brittany, the mount draws the eye from a great distance. Mont Saint Michel is considered by many to be one of France's most breathtaking sights. It has been listed as a UNESCO World Heritage Site since 1979.

- **The Louvre, Paris:**

  The Louvre , or the Louvre Museum, is the world's largest art museum and a historic monument in Paris, France. It is best known for being the home of the Mona Lisa. A central landmark of the city, it is located on the Right Bank of the Seine in its first arrondissement (district or ward). Approximately 38,000 objects from prehistory to the 21st century are exhibited over 72,735 square meters (782,910 square feet). Due to the COVID-19 pandemic, the museum was closed for 150 days in 2020, and attendance plunged by 72 percent to 2.7 million. Nonetheless, the Louvre still topped the list of most-visited art museums worldwide in 2020.

- **Disneyland Paris:**

  Disneyland Paris, formerly Euro Disney Resort, is an entertainment resort in Chessy, France, located 32 km (20 mi) east of the centre of Paris. It encompasses two theme parks, many resort hotels, Disney Nature Resorts, a shopping, dining, entertainment complex, a golf course, and several

additional recreational and entertainment venues. Disneyland Park is the original theme park of the complex, opening with the resort on 12 April 1992. A second theme park, Walt Disney Studios Park, opened in 2002, 10 years after the original park. Disneyland Paris celebrated its 25th anniversary in 2017. Within 25 years of opening, 320 million people visited Disneyland Paris, making it the most visited theme park in Europe. The Parisian resort is the second Disney park to open outside the United States following the opening of the Tokyo Disney Resort in 1983, and it is the largest Disney resort to open outside of the United States. Disneyland Paris is also the only Disney resort outside of the United States to be wholly owned by The Walt Disney Company.

- **Berck Sur Mer Kite Festival:**

  Every year, the little town of Berck-sur-Mer on the Opal Coast of northern France hosts an international Kite Festival of immense proportions! Every other year (even numbers), the World Kite Championships occur there, and teams from around the globe arrive to pit their skills against each other in the spring winds on the sandy beach.

- **Menton Lemon Festival:**

  The Fête du Citron is a carnival event organized by the tourist office of the city of Menton, France, and held every year at the end of winter. It is also sometimes called Carnaval de Menton (Carnival of Menton).

  The festival celebrates the annual production of speciality lemons and other citrus fruits in Menton. All the floats and sculptures at the carnival are created from lemons and oranges.

  The celebration takes place every year in mid-February. It has been recognised by the Ministry of Culture of France and entered the inventory of intangible cultural heritage in 2019.

8.5 United Kingdom: Physical Features, Climatic Conditions and Important Tourist Attractions

Physical Features:

The United Kingdom, also called the U.K., consists of a group of islands off the northwest coast of Europe. It is a unique country comprising four nations:

England, Wales, Scotland, and Northern Ireland. England, Wales, and Scotland also make up Great Britain. The United Kingdom is located in Western Europe, northwest of France. Its capital and largest city is London, but other large cities are Glasgow, Birmingham, Liverpool, and Edinburgh. The UK has 94,058 square miles (243,610 sq km). Much of the north and west of the U.K. is covered in high ground, knife-edged mountain ridges separated by deep valleys. This terrain was shaped in the last Ice Age when thick glaciers covered the land. Much of the topography of the UK consists of rugged, undeveloped hills and low mountains, but there are flat and gently rolling plains in the eastern and southeastern areas of the country. The highest point in the UK is Ben Nevis at 4,406 feet (1,343 m), located in the northern UK in Scotland.

Climatic Conditions:

Most of the United Kingdom has a temperate climate, with generally cool temperatures and plentiful rainfall all year round. The temperature varies with the seasons, seldom dropping below −20 °C (−4 °F) or rising above 35 °C (95 °F). Some parts, away from the coast of upland England, Wales, Northern Ireland and most of Scotland, experience a subpolar oceanic climate (Cfc). Higher elevations in Scotland experience a continental subarctic climate (Dfc), and the mountains experience a tundra climate (ET). The prevailing wind is from the southwest and bears frequent spells of mild and wet weather from the Atlantic Ocean. Although the eastern parts are mostly sheltered from this wind since most of the rain falls over the western regions, the eastern parts are the driest. Atlantic currents, warmed by the Gulf Stream, bring mild winters, especially in the west, where winters are wet and even more so over high ground. Summers are warmest in the southeast of England and most extraordinary in the north. Heavy snowfall can occur in winter and early spring on high ground and occasionally settles to great depths away from the hills.

The Environmental Performance Index ranks 4 out of 180 countries in the Environmental Performance Index. A law has been passed that says that UK greenhouse gas emissions will be net zero by 2050.

Important Tourist Attractions:

The United Kingdom includes England, Scotland, Wales, and Northern Ireland. The United Kingdom (UK) has long been one of Europe's most popular tourist destinations. The country's appeal has much to do with its diverse scenery and rich cultural heritage. The best places to visit in the UK include everything from beautifully preserved country estates and castles to its many world-class art galleries and museums.

1. **Stonehenge:**

Stonehenge is a prehistoric monument on Salisbury Plain in Wiltshire, England, two miles (3 km) west of Amesbury. It consists of an outer ring of vertical Sarsen standing stones, each around 13 feet (4.0 m) high, seven feet (2.1 m) wide, and weighing around 25 tons, topped by connecting horizontal lintel stones. Inside is a ring of smaller bluestones. Inside are free-standing trilithons, two bulkier vertical Sarsens joined by one lintel. The monument, now ruinous, is oriented towards the sunrise on the summer solstice. The stones are set within earthworks in the middle of the densest complex of Neolithic and Bronze Age monuments in England, including several hundred tumuli (burial mounds).

2. **Tower of London:**

The Tower of London, officially Her Majesty's Royal Palace and Fortress of the Tower of London, is a historic castle on the north bank of the River Thames in central London. It lies within the London Borough of Tower Hamlets, separated from the eastern edge of the square mile of the City of London by the open space known as Tower Hill. It was founded towards the end of 1066 as part of the Norman Conquest. The White Tower, which gives the entire castle its name, was built by William the Conqueror in 1078 and was a resented symbol of oppression inflicted upon London by the new ruling elite. The castle was also used as a prison from 1100 (Ranulf Flambard) until 1952 (Kray twins), although that was not its primary purpose.

3. **The Roman Baths and Georgian City of Bath:**

The Roman Baths are a well-preserved thermae in Bath, Somerset, England. A temple was constructed between 60-70 CE in the first few decades of

Roman Britain. Its presence led to the development the small Roman urban settlement known as Aquae Sulis around the site. The Roman baths—designed for public bathing—were used until the end of Roman rule in Britain in the 5th Century CE. According to the Anglo-Saxon Chronicle, the original Roman baths were ruined a century later. The area around the natural springs was redeveloped several times during the Early and Late Middle Ages.

The Roman Baths are preserved in four main features: the Sacred Spring, the Roman Temple, the Roman Bath House, and a museum which holds artefacts from Aquae Sulis. However, all buildings at street level date from the 19th century. It is a significant tourist attraction in the UK, and together with the Grand Pump Room, it receives more than 1.3 million visitors annually. Visitors can tour the baths and museum but cannot enter the water.

4. The British Museum:

The British Museum, in the Bloomsbury area of London, England, is a public institution dedicated to human history, art and culture. Its permanent collection of some eight million works is among the largest and most comprehensive in existence, having been widely collected during the era of the British Empire. It documents the story of human culture from its beginnings to the present. It was the first public national museum in the world. The Museum was established in 1753, primarily based on the collections of the Irish physician and scientist Sir Hans Sloane. It first opened to the public in 1759 in Montagu House, on the site of the current building. Its expansion over the following 250 years was primarily a result of expanding British colonisation and has resulted in the creation of several branch institutions, the first being the Natural History Museum in 1881.

5. York Minster and Historic Yorkshire:

The Cathedral and Metropolitical Church of Saint Peter in York, commonly known as York Minster, is the cathedral of York, England, and one of the largest in Northern Europe. The minster is the seat of the Archbishop of York, the third-highest office of the Church of England (after the monarch as Supreme Governor and the Archbishop of Canterbury), and is the mother

church for the Diocese of York and the Province of York. It is run by a dean and chapter under the Dean of York. The title "minster" is attributed to churches established in the Anglo-Saxon period as missionary teaching churches and serves now as an honorific title. Services in the minster are sometimes regarded as being in the High Church or Anglo-Catholic end of the Anglican continuum.[6

6. Lake District National Park:

The Lake District National Park is a national park in North West England that includes all of the central Lake District, though the town of Kendal, some coastal areas, and the Lakeland Peninsulas are outside the park boundary.

The area was designated a national park on 9 May 1951 (less than a month after the first UK national park designation — the Peak District). It retained its original boundaries until 2016 when it was extended by 3% in the direction of the Yorkshire Dales National Park to incorporate areas such as the land of high landscape value in the Lune Valley. It is the most visited national park in the United Kingdom, with 16.4 million visitors annually.

7. Canterbury Cathedral:

Canterbury Cathedral in Canterbury, Kent, is one of England's oldest and most famous Christian structures. It forms part of a World Heritage Site. It is the cathedral of the Archbishop of Canterbury, currently Justin Welby, leader of the Church of England and symbolic leader of the worldwide Anglican Communion. Its formal title is the Cathedral and Metropolitical Church of Christ at Canterbury.

Founded in 597, the cathedral was completely rebuilt between 1070 and 1077. The east end was greatly enlarged at the beginning of the 12th century and largely rebuilt in the Gothic style following a fire in 1174, with significant eastward extensions to accommodate the flow of pilgrims visiting the shrine of Thomas Becket, the archbishop who was murdered in the cathedral in 1170. The Norman nave and transepts survived until the late 14th century, when they were demolished to make way for the present structures.

Before the English Reformation, the cathedral was part of a Benedictine monastic community known as Christ Church, Canterbury, and the archbishop's seat.

8.6 Spain: Kingdom: Physical Features, Climatic Conditions and Important Tourist Attractions

Physical Features of Spain:

The physical geography of Spain is varied. Spain is located mainly on the Iberian Peninsula, along with neighbouring Portugal. The other countries and territories bordering Spain are France, Andorra, and Gibraltar (the latter claimed by Great Britain). The Mediterranean Sea and the Atlantic Ocean provide the country with natural borders. The Spanish mainland is around 195,124 square miles, and the country's interior is drier and warmer than the coastal areas.

- **Plateaus and Plains:**

  Plateaus and plains are the dominant geographical features in Spain. Almost half of Spain is covered by the Meseta Plateau, an arid stretch of land that measures approximately 81,000 square miles and is considered the oldest of Spain's geographical features. The Andalusian Plain is another important physical feature, and it provides rich soil for Spain's agricultural production. Additional coastal plains in Spain create a buffer zone between the sea and the mountains.

- **Coasts:**

  Spain has over 3,000 square miles of coastline dotted with bays, cliffs, and beaches. One of the bays, the Bay of Biscay, is known for its challenging weather and rough waters. The bay is located in northern Spain and is shared with France. To the south of Spain is the Strait of Gibraltar, which separates the country from North Africa.

- **Mountains:**

  After Switzerland, Spain is the most mountainous country in Europe. Numerous mountain chains cross the landscape like protruding ribs, mainly in an east-west direction.

The Pyrenees form a natural border with France in the north, with several peaks rising over 3.000 metres (9.842 feet). To the west of the Pyrenees and running parallel with the north coast, the Cordillera Cantábrica is home to some of Spain's most endangered wildlife. Two mountain ranges, the Sierra de Guadarrama and the Sierra de Gredos, cut across the peninsula's centre, just north of Madrid.

Towards the south, the Sierra Morena forms a natural barrier between Castilla-La Mancha and Andalusia. Finally, along the south coast, the Sierra Nevada (which provides some of the best skiing in Spain) includes the highest mountain in the peninsula (Mulhacen 3.479 metres: 11.414 feet). The highest mountain in Spain is Teide in the Canary Islands, 3718 metres: 12.198 feet.

There are countless smaller ranges often linked to each other in systems. For example, the Sistema Ibérico follows the River Ebro south of Zaragoza from the Cordillera Cantábrica, almost to the Mediterranean. It includes the Sierras de Moncayo, de la Virgen, de Algairén, and de Cucalón. In the south, the Sistema Penibético contains the Serranía de Ronda, the Sierra Nevada, the Sierras de Segura, de Alcaraz, and several others.

The mountains are one reason why there are probably more "wild" places in Spain than in any other country in Europe. Mountains restrict surface communication and urban development, and in the case of Spain, easy passage through the ranges is very limited. Isolated valleys and steep gorges make for a rugged landscape which protects flora and fauna.

Climatic Conditions of Spain:

Spain's climate varies from temperate in the north to dry and hot in the south. As it is a big country with varying terrain and altitudes, the climate can be highly distinctive from one corner to another. Overall, the country has three main climate zones:

- The Mediterranean climate from the southern Atlantic coastal region to Andalusia. Blessed with mild temperatures and long days, these places are excellent to visit all year round.
- The semi-arid climate in the southeastern quarter of the country.

- The oceanic climate in the Atlantic region

The best time to visit depends on the region and type of travel experience you are seeking. The best months for guaranteed sunshine for a beach vacation are June to August. Naturally, these are also the busiest months for tourism along the coast and on the Spanish islands. Months between April to May and October to November are off-seasons. Ski lovers can visit Spain from January to February.

Important Tourist Attractions in Spain:

1. **The Alhambra and Generalife Gardens, Granada:**

It occupied the slopes of the Hill of the Sun (Cerro del Sol), from which there is a complete view over the city and the valleys of the rivers Genil and Darro. Its name has different interpretations: the Governor's Garden, the Architect's (clarify) Garden, the Vegetable Garden of the Gypsy Festivity Organiser, etc. The Generalife became a leisure place for the kings of Granada when they wanted to get away from the official affairs of the palace.

It was built in the 13th century and redecorated by King Abu I-Walid Isma'il (1313-1324), as is explained by an inscription from 1319. This means that the Generalife was built before the Comares Palace. Despite its close relationship to Alhambra and its close relationship with the two complexes, it is considered to be outside the city. A rebellion against Mohammed V broke out in Alhambra while he was in the Generalife.

2. **Barcelona's Sagrada Familia and Gaudi Sites:**

The Sagrada Familia (Basílica I Temple Expiatori de la Sagrada Família) is a large Roman Catholic church in Barcelona, Catalonia, Spain. It was designed by architect Antoni Gaudi (1852–1926).

Although it is not finished, the church is a UNESCO World Heritage Site. In November 2010, it was consecrated (dedicated to a special purpose) and made into a minor basilica by Pope Benedict XVI.

The building of the Sagrada Familia began in 1882. Gaudi started working on it in 1883. He took over the project and changed it with his ideas on architecture and engineering.

Gaudi worked on it until he died. At his death in 1926, less than a quarter of the building was finished. The Sagrada Familia's building was slow. It needed private donations (people giving money to it). It was stopped by the Spanish Civil War—only to start again in the 1950s. The building was more than halfway done after 2010. Some of the project's most significant problems remain.

3. **The Great Mosque of Cordoba (Mezquita):**

The TheMosque–Cathedral of Córdoba, officially known by its ecclesiastical name, the Cathedral of Our Lady of the Assumption, is the cathedral of the Roman Catholic Diocese of Córdoba dedicated to the Assumption of Mary and located in the Spanish region of Andalusia. Due to its status as a former Islamic mosque is also known as the Great Mosque of Córdoba (Spanish: Mezquita de Córdoba), or the Mezquita.

4. **The Prado and Paseo del Artes, Madrid:**

The Prado Museum, officially known as Museo Nacional del Prado, is central Madrid's main Spanish national art museum. It is widely considered to have one of the world's finest collections of European art, dating from the 12th century to the early 20th century, based on the former Spanish Royal Collection and the single best collection of Spanish art. Founded as a museum of paintings and sculpture in 1819, it also contains important collections of other works.

5. **Guggenheim Museum, Bilbao:**

The Guggenheim Museum Bilbao is a museum of modern and contemporary art designed by Canadian-American architect Frank Gehry and located in Bilbao, Basque Country, Spain. The museum was inaugurated on 18 October 1997 by King Juan Carlos I of Spain, with an exhibition of 250 contemporary works of art. Built alongside the Nervion River, which runs through Bilbao to the Cantabrian Sea, it is one of several museums belonging to the Solomon R. Guggenheim Foundation and features permanent and visiting exhibits of works by Spanish and international artists. It is one of the largest museums in Spain.

8.7 Check Your Progress:

- **Highlight the physical features of Europe:**

- **Discuss the important museums of Europe:**

8.8 Summary:

Based on the above-detailed study, it can be said that here we discussed some of the best tourist countries in the world. France receives the maximum number of inbound tourists from the USA and the maximum number of outbound tourists travelling to other nations. France and Spain are among the world's top three destinations regarding the maximum number of UNESCO World Heritage Sites. Japan is well recognized for its technology, viz. bullet train and capsule hotels. Knowledge of these countries' physical, political and climatic features helps travel professionals satisfy tourists.

8.9 Glossary:

- **Inbound Tourist:** A tourist who comes to our country from any other country.
- **Heritage:** Any cultural or natural attraction that preserves glorious past.

8.10 Self-Assessment Questions:

- Highlight the climatic features of Europe.
- Throw a light on the world heritage sites of Europe.
- How do the physical features of Europe differ from other continents of the world?

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Unit-9

Europe: General Geographical Features; Physiography, Climate, main Countries, Capitals & and their Tourist Attractions

Structure:

9.0 Objectives:

After reading the present unit, the learners will be able to:

- Understand the physical and political features of Europe
- Identify the climatic conditions and the best time to visit Europe.

9.1 Introduction:

Europe is the second smallest continent in the world and covers about 2% of the Earth's surface, but this small continent receives the most significant number of tourists. It is located in the Northern Hemisphere. Europe is well recognised for its heritage monuments, scenic beauty, and pleasant climate. The Arctic Ocean and the Atlantic Ocean surround this beautiful continent. If we look at the tourism statistics for the year 2019, we find that out of the world's top 10 most visited countries, a total of 6 countries are from Europe. Similarly, the top 10 countries have the majority of the UNESCO World Heritage Sites, so it turns out that five belong to the European continent. Everybody wishes to visit this continent once in their lifetime. A Schengen Visa helps you visit 26 countries in Europe with a single visa. Some important tourist attractions in Europe are the Colosseum (Rome), the Eiffel Tower (Paris), St. Basil's Cathedral (Moscow), and the Learning Tower of Pisa (Pisa). Europe primarily attracts tourists who wish to see artificial attractions. Only a few of them travel to see natural attractions, which means Europe is the most crucial country in the world, and those who wish to do outbound tour packaging work must have good knowledge of the European continent.

9.2 Physical Features of Europe:

Europe is the second smallest continent. It is located in the Northern and midland hemispheres of the Earth. It has an area of about 104,98,000 sq. km of total land. Europe stretches from 35N to 71N latitude and 24W to 65N longitude. The average length of the continent from east to west is 6400 km, and the average width is 4800 from south to north. Oceans and seas surround it from three sides. The essential attractions of the continent are the

longest coastlines among all the continents, which have oceans, seas, islands, bays, and gulfs.

Sometimes, Europe is also described as the peninsula of peninsulas. A peninsula is a piece of land surrounded by water on three sides. It is the peninsula of the Eurasian supercontinent bordered by the Arctic Ocean to the north, the Mediterranean, the Black and the Caspian Seas to the south, and the Atlantic Ocean to the west. The Gibraltar Strait has a width of 14km between Spain and the Mediterranean, separating the continent of Africa, the Ural Mountains and the Ural River from Asia.

Based on its landform, Europe is divided into three major physical divisions.

- The Southern Mountain: In the southern part of Europe, many mountains and plains exist. The southern mountain of Europe is a young fold mountain during the Alpine season, when the Himalayas were formed. This region includes the Pyrenees, Apennines, Dinaric Alps, etc. The highest mountain peak, Mountain Elbrus, is the highest mountain in the Caucasus Mountains of Russia.
- The North-Western Highlands: The highlands of north and north-west from Norway and Sweden in the east and Scotland in the west. The western edge of Europe defines the physical landscape of Scandinavia—Norway, Sweden, Denmark etc. Complex ancient European fjords define these highlands in Iceland and Scandinavia.
- The Central European Plain: The Central European Plain extends from Scotland, United Kingdom to the east of Russia. Most of the European plain lies below 152 meters in elevation. It is home to many navigable rivers, including the Rhine, Oder, and the Vistula. The Danube is the largest river in Europe. Due to its favourable and good production, this is the most populous region in Europe.

9.3 Climatic Conditions of Europe:

A temperate climate generally characterises Europe. Most of Western Europe has an Oceanic climate, in the Köppen climate classification, featuring cool to warm summers and cool winters with frequent overcast

skies. Southern Europe has a distinctively Mediterranean climate, which features warm to hot, dry summers, cool to mild winters and frequent sunny skies. Central and eastern Europe is classified as having a Continental climate, which features warm to hot summers and cold winters. The climate of Western Europe is strongly conditioned by the Gulf Stream, which keeps mild air (for the latitude) over Northwestern Europe in the winter months, especially in Ireland, the United Kingdom and coastal Norway.

Parts of the central European plains have a hybrid oceanic/continental climate. Four seasons occur in most of Europe, away from the Mediterranean. The coastal lowlands of the Mediterranean Basin have more of a wet and dry season pattern. The rainy season extends from October to February, while the dry season is mainly noticeable in the summer months, where precipitation can, in some years, become highly scarce.

Best Time to Visit Europe:

If you are in holiday planning mode, Europe should be at the top of the list. The best time to visit Europe is during the summer months of June to September. This is when the sun is high, the beaches are warm, and the weather is sunny. Temperatures are known to touch the higher side of the thirties, and it is advisable to check the conditions before you head out. This is also when most countries boast of cultural events, galas and even end-of-season fashion sales. This is also ideal for hikes, road trips and adventure activities.

If you have planned for a winter vacation, keep in mind that there are possibilities of showers and snow.

9.4 Countries and their Capitals:

As already discussed, Europe is an important tourist destination for the rest of the world because it receives the maximum number of international tourists. The United Kingdom (U.K.), France, Germany, Italy, Portugal and many other countries are the most advanced countries in the world. Norway, Sweden, Belgium and Hungary are countries that topped almost all the good indexes in the world. Check the full list of European countries.

A complete understanding is necessary for every travel agent. Knowledge of its essential countries and capitals helps many people working in the industry.

Country	Capital city
Albania	Tirana
Andorra	Andorra la Vella
Armenia	Yerevan
Austria	Vienna
Azerbaijan	Baku
Belarus	Minsk
Belgium	Brussels
Bosnia and Herzegovina	Sarajevo
Bulgaria	Sofia
Croatia	Zagreb
Cyprus	Nicosia
Czechia	Prague
Denmark	Copenhagen
Estonia	Tallinn
Finland	Helsinki
France	Paris
Georgia	Tbilisi
Germany	Berlin
Greece	Athens
Hungary	Budapest
Iceland	Reykjavik
Ireland	Dublin
Italy	Rome
Kazakhstan	Nur-Sultan
Kosovo	Pristina
Latvia	Riga
Liechtenstein	Vaduz
Lithuania	Vilnius
Luxembourg	Luxembourg (city)
Malta	Valletta
Moldova	Chisinau
Monaco	Monaco
Montenegro	Podgorica
Netherlands	Amsterdam

North Macedonia (formerly Macedonia)	Skopje
Norway	Oslo
Poland	Warsaw
Portugal	Lisbon
Romania	Bucharest
Russia	Moscow
San Marino	San Marino
Serbia	Belgrade
Slovakia	Bratislava
Slovenia	Ljubljana
Spain	Madrid
Sweden	Stockholm
Switzerland	Bern
Turkey	Ankara
Ukraine	Kyiv (also known as Kiev)
United Kingdom	London
Vatican City (Holy See)	Vatican City

9.5 Important Tourist Attractions:

Important tourist attractions of the European Continent are listed below:

1. **Leaning Tower of Pisa:**

   The world-famous Leaning Tower is known around the globe for its incredible four-degree tilt that makes it seem as if the tower is about to topple over. The unique slanted bell tower sits behind Pisa Cathedral, built in Romanesque style.

   Dating back to the 12th century, the tower took 199 years to complete but began to slant during its construction due to soft ground on one side. Today, the tower –a wonky 55.86 meters tall – attracts tourists from far and wide who want to catch sight of the tower and snap pictures of themselves in front of it.

2. **Tower Bridge:**

   Often mistakenly thought to be London Bridge, Tower Bridge is a late Victorian masterpiece showcasing the height of London's standing on the world stage. Opened in 1894, the bridge crosses the Thames close to the Tower of London, another London landmark.

The bridge is a drawbridge powered by engine rooms in the neo-Gothic north and south towers, making this a feat of 19th-century engineering. The bridge is still in use today and has even been modernised with lights that glimmer in the evening.

3. **Canals of Amsterdam:**

Amsterdam is well known for its canals. More than 100 kilometres of canals weave around the Netherlands' capital, forming around 90 islands and requiring 1,500 bridges. The waterways lead to Amsterdam being labelled the 'Venice of the North.'

The Grachtengordel is Amsterdam's canal district, where the four main canals form concentric rings around the city centre. In the 17th century, canals were used for transportation, sewers, and drinking water – a small quantity of everything. In modern cities, the canals make up the charming cityscape that Amsterdam is known for. The canals are backed by 17th-century townhouses, adding even more to the charm factor.

4. **Eiffel Tower:**

Named after Gustave Eiffel, the unmistakable symbol of Paris is a sight that must be witnessed when visiting the French capital. Constructed between 1887 and 1889, the tower was initially built to be the impressive entrance to the 1889 World's Fair. The tower stands 324 meters tall and was, amazingly the world's tallest artificial structure until the Empire State Building took the title in 1930.

Take the lift to the tower's observation deck and marvel at the views of the Parisian boulevard and the pattern of parks below. Alternatively, marvel at the lattice structure on the Champ de Mars.

5. **Canals of Venice:**

Venice is the original canal city; every other city is compared to Venice. The enigmatic waterlogged city is the site of more than 150 waterways and 400 bridges, including the famous Bridge of Sighs.

The central canal in Venice is the two-mile-long Grand Canal, which flows past St Mark's Square and is lined with some of Venice's historic architecture – from the Medieval to the Baroque. Gondoliers punt visitors around

wearing striped shirts and wide-brimmed hats, but boats on the river are not just for tourists; they are also used for everyday jobs such as rubbish collection.

6. **Colosseum:**

The Colosseum is the perfect symbol of the power of the Roman Empire at its height. Dating back to 72 AD, it was designed to hold 50,000 spectators and was, at the time, the largest amphitheatre ever built. All public spectacles were shown here – from animal hunts and executions to gory gladiator battles; it was even filled with water for mock sea battles.

Although practically a ruin, the Colosseum is still an icon of Rome. Step inside the arches and take a tour of the structure. Imagine yourself as a spectator in Roman times and the grand displays and spectacles inside the ring.

7. **Acropolis:**

The Acropolis in Athens is a simply stunning sight. This monumental hill is the location of several ancient sites that date back to the 5th century BC. Some attractions that crown the Acropolis include the Temple of Athena Nike, the Erechtheion, and the Parthenon.

Constructed at the peak of the Athenian Empire in 447 BC, the Parthenon is a symbol of Greece and impresses with its innumerable columns. Dedicated to Athena, it became a Christian church in the 6th century AD and a mosque in the 1460s after the Ottoman invasion. After nightfall, the Acropolis is lit with a glow that can be seen around Athens.

8. **Palace of Versailles:**

Versailles is a monument like no other; when it comes to palaces, Versailles takes first place. This grandiose building was the primary residence for French royalty from 1682 until the 1789 French Revolution.

The castle's exterior is ornate, but its interiors are less impressive. Some rooms inside the building are as famous as the palace, such as the Hall of Mirrors' opulent gilded decoration. The geometric Garden of Versailles is punctuated with conical trees woven as canals and fountains.

9.6 Check Your Progress:

- **Which time of the year is best to visit the European Continent and Why?**

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- **Throw light on World Heritage Sites of Europe:**

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9.7 Summary:

Europe is one of the world's most beautiful and technologically advanced continents. Every Indian wishes to visit this continent once in their lifetime. It includes some of the most visited countries in the world, such as France, Spain, Germany, Italy, etc. The best time to visit Europe is in the summer, which starts in June and continues until September. During this period, its temperature was hardly 24˚C. A Schengen Visa is the best option for visiting 26 different countries in Europe.

9.6 Glossary:

- **Continent:** A large piece of land usually covered with Oceans and Seas.
- **Visa:** A Stamp on a passport allows us to enter a country.

9.9 Self-Assessment Questions:

- Discuss the climatic features of Europe
- Why Europe receives the maximum number of international tourists

9.10 Reference and Suggested Readings:

- https://kullabs.com/class-9/social-studies-9/our-earth-1/the-physical-features-of-europe
- https://www.careerpower.in/countries-and-capitals.html
- https://www.touropia.com/tourist-attractions-in-europe/

Unit-10
North America: Political, Physical and Climatic Features

Structure:

10.0 Objectives:

After reading the present unit, the learners will understand:

- The physical and political features of North America
- The climatic conditions and the best time to visit the North American continent.

10.1 Introduction:

The North American continent is located in the Western part of the World. It includes some developed countries, including the USA and Canada. It is located in the Northern Hemisphere and the Western Hemisphere. In the north, it is bounded by the Arctic Ocean, in the west by the Pacific, in the East by the Atlantic Ocean, and in the South, it is covered by the South American continent. Its total area is about 24,709,000 square kilometres, about 16.5% of Earth's land area and about 4.8% of its surface. North America is the third-largest continent in the world. The three big countries in North America are Canada, the USA, and Mexico. The two countries in North America, i.e., Canada and the USA, are about three times larger than India. The USA (24), Mexico (35), and Canada (20) are among the top 15 countries that have the maximum number of UNESCO World Heritage Sites. Among the countries that receive the maximum number of international tourists, the USA stands in third place, and Mexico in seventh place. Some important tourist attractions of North America are Yellowstone National Park (USA), the Statue of Liberty (USA), Times Square (USA), Grand Canyon (USA), Las Vegas (USA), Chichen Itza (Mexico), Tulum (Mexico), El Arco (Mexico), Niagara Falls (Canada) etc.

So, North America plays a good role in the world's tourism industry. A good number of Indians visit this continent; therefore, learners will understand North America's physical, political, and climatic features, which will help learners to understand this continent better.

10.2 Political Features of North America:

Most of North America consists of three large nations and one large island territory. They are Canada, the United States of America (USA), Mexico and Greenland.

There are also seven smaller nations at its southern extreme (collectively known as Central America), around two dozen island nations and territories of various sizes in the Caribbean, and one isolated French territory (Saint-Pierre and Miquelon) off the Canadian Atlantic coast.

Although the Central American and the Caribbean regions are technically part of the North American continent, they are commonly listed separately from their larger neighbours to the north, hence the distinctive region names for cultural and geographical reasons.

Canada:

Canada certainly has vast expanses of breathtaking, unspoiled wilderness, but it also features some of the world's most modern, cosmopolitan cities. Canada has something for everyone, from the majestic Pacific coast to the laid-back beauty of the Atlantic coast, which is more than 5,000 km.

Caribbean:

White sandy beaches, crystal-clear water, and laid-back island culture make the Caribbean one of the world's top vacation spots.

Central America:

The seven small nations of this isthmus connecting North and South America blend elements of both continents; you will find bustling cities, long coastlines, ancient jungle ruins, and Spanish-tinged mestizo and Afro-Indian cultures.

Greenland:

A self-governing country but officially still part of Denmark, Greenland is a vast island of stark landscapes and midnight sun.

Mexico:

Mexico is a big tourist attraction for sun-seekers and historians alike; the former flock to Mexico's tropical beaches, while the latter find the artefacts of the ancient Aztec and Mayan civilisations fascinating.

United States of America:

One of Earth's largest, most ethnically diverse and multicultural nations includes some of the world's most famous cities, natural parks of unspeakable beauty, and virtually everything in between.

10.3 Physical Features of North America:

North America is a triangular-shaped continent located in the Western Hemisphere. It extends between 7° N latitude and 84° N latitude and between 20° W longitude and 180° W longitude. It is the third-largest continent in the world.

The Arctic Circle runs through the north of the continent. The Tropic of Cancer passes through the southern part of the continent. It is surrounded by the Arctic Circle in the north, the Atlantic Ocean in the east, the Pacific Ocean in the west and the continent of South America in the south. The North American continent is divided into three major physical divisions. They are

- The Western Cordilleras
- The Great Central Plains.
- The Eastern Highlands
- **The Western Cordilleras:**

  The Western Cordilleras are young fold mountain ranges spread from Alaska to Mexico. It consists of the Rocky Mountain range in the east, the Sierra Nevada range at the centre of the continent, the Coastal range in the west and the Alaska range in the north. The highest peak in North America is Mount Mickinely.

  The plateaus surrounded by mountain ranges are the Columbia Plateau, the Colorado Plateau and the Mexican Plateau. The Great Basin also lies in the Western Cordilleras.

The plateau of Colorado lies to its south. There are many gorges in the Colorado Plateau, which are almost 1,800 metres deep. Profound gorges with wall-like sides are called canyons. The Canyon of Colorado is the largest in the world. This area consists of the Appalachian Mountains and their extension to Labrador and New Foundland.

The Great Central Plains:

The Great Central Plains are located between the Western Cordilleras and the Eastern Highlands and have various physical features. The North American Great Central Plains also contains the hot deserts of Arizona and Mexico towards the south and the famous Niagara Falls.

The Crater Lake is a spectacular mountain lake in the Cascade Mountains of the United States of America. Crater Lake is the deepest in the United States and the seventh in the world. It is known to terrify visitors with its oppressive stillness.

These plains also host the five prominent lakes of North America: Lake Superior, Lake Michigan, Lake Huron, Lake Erie and Lake Ontario. These provide the plains with an ample supply of fresh water. The Great Central Plains contain the vast and flat Mississippi River basin in its central and southern parts.

The Eastern Highlands:

The Eastern Highlands include the Appalachian ranges and the Labrador plateau. The Piedmont and the Atlantic coastal plains are located east of the Appalachian. The St. Lawrence Valley separates the Appalachian ranges and the Labrador Plateau.

10.4 Climatic Features of North America:

North America, the third largest continent, is spread over 24,346,000 sq km. North America includes the mainland and related offshore islands lying north of the Isthmus of Panama, which connects it to South America. It has a variety of climates, from the dry, bitter cold of the Arctic to the steamy heat of the tropics. An icecap permanently covers the interior of Greenland, always at subzero temperatures. The North American tundra, the vast

treeless plain of the far north, has temperature rises above freezing for only a short period each summer. In the far south, low-lying areas are always hot and rainy.

Most of North America is cold in the winter and warm in the summer, with moderate precipitation. Some areas have mild winters and long, hot summers, while others have harsh and short summers. North America extends to within 10° of latitude of both the equator and the North Pole and embraces every climatic zone, from tropical rain forest and savanna on the lowlands of Central America to areas of permanent ice cap in central Greenland. Subarctic and tundra climates prevail in N Canada and N Alaska, and desert and semiarid conditions are found in interior regions cut off by high mountains from rain-bearing westerly winds. Fortunately, many of the continents have temperate climates that are favourable to human settlement and agriculture.

Best Time to Visit North America:

Whether you want to plan a visit to Mexico or stick to the good old USA, travel to North America will be nothing less than excellent. However, if you think that the climate on the continent is pretty much homogenous, then you have some misleading information. The best time to visit North America depends on various attractions and weather patterns. This continent has everything from snow-capped mountains to one of the earth's hottest deserts and vast forests to long coastlines!

North America is a large expanse of land that roughly extends to within 10 degrees of latitude of both the equator and the North Pole. That being said, the climate in the continent is rather varied. The weather conditions dramatically differ in the northern cities of the continent than in those closer to the equator. Climatic conditions vary, ranging from Arctic cold to hot equatorial temperatures and everything in between. The precipitation and humidity levels also vary broadly.

According to what people say about travelling to North America, the best time to visit the continent is by far the summer and the springtime. While it mainly depends on the cities or regions you plan to cover in your itinerary,

summers are more pleasant across the continent than winters. However, that does not always apply, as there are some places on the continent that are ideal for winter travel.

10.5 Check Your Progress:

- **Which time is perfect to travel to North America?**

- **Highlight the climatic features of North America:**

10.6 Summary:

North American continent is located in the Northern and Western Hemispheres of the world. Some of the best tourist countries are located here—every Indian wishes to visit the USA once in their lifetime. The best time to visit this continent is between May and September because you can find pleasant temperatures during these months. Due to the heavy cold, it is not considered the best time to visit in other months.

10.7 Glossary:

- **Hemisphere:** Hemisphere means the half part of the Earth.
- **Ocean:** The largest water body on Earth.

10.8 Self-Assessment Questions:

- North America's geographical features are different from other continents of the world. Justify your answer with suitable examples.
- Discuss the climatic features of North America.

10.9 References and Suggested Readings:

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- https://traveltriangle.com/north-america-tourism/best-time-to-visit.
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Unit-11
South America: Political, Physical and Climatic Features

Structure:

11.0 Objectives:

After completing the present unit, you will learn:

- The natural resources of South America
- Political and climatic features of South America

11.1 Introduction:

South America is mainly located in the Southern Hemisphere and Western Hemisphere. It is the fourth-largest continent of the world by area. The North is surrounded by the Arabian Sea, the West by the Pacific Ocean and the East by the Atlantic Ocean. This continent is rich in natural resources such as Rivers, flora, fauna, minerals, etc. Amazon is the second-longest river in the world. The Amazon rainforest produces about 6% of the world's total oxygen. This continent includes 12 countries, 10 of which have coastal areas. Brazil is the largest country and borders nine other countries on the continent. The world's most extensive mountain range, the Andes, forms the continent's western border, starting in the North from Colombia to Chile in the South. Three countries from South America are among the top 10 soccer countries in the world: Argentina, Brazil, and Uruguay. No country in South America is among the world's top 10 most visited countries. In South America, Argentina receives the maximum no. of international tourists, followed by Brazil and Chile. Among all 12 countries, Brazil has the maximum 22 UNESCO World Heritage Sites, followed by Peru (12) and Argentina (11). Some of the best tourist attractions in South America are the Amazon River, the Atacama Desert, the Amazon rainforest, Lake Titicaca, Easter Island, Cristo Redentor, etc.

11.2 Political Features of South America:

South America is the fourth largest continent, the southernmost of the two continents of the Western Hemisphere. It is divided politically into 12 independent countries. Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela and the overseas department of French Guiana. The continent extends c.4,750 mi (7,640 km) from Punta Gallinas, Colombia, in the north to Cape Horn, Chile,

in the south. At its broadest point, near where the equator crosses it, the continent extends c.3,300 mi (5,300 km) from east to west. South America is connected to North America by the Isthmus of Panama; it is washed on the N by the Caribbean Sea, E by the Atlantic Ocean, and west by the Pacific Ocean. Brazil is the largest country on this continent and is about three times larger than India. Ten other countries border it on the continent. Chile is situated on the Andes mountain range.

11.3 Physical Features of South America:

South America is a continent entirely in the Western Hemisphere and mostly in the Southern Hemisphere, with a relatively small portion in the Northern Hemisphere. It can also be described as the southern subcontinent of the Americas. The reference to South America instead of other regions (like Latin America or the Southern Cone) has increased in recent decades due to changing geopolitical dynamics (in particular, the rise of Brazil).

South America is bordered on the west by the Pacific Ocean and on the north and east by the Atlantic Ocean. North America and the Caribbean Sea lie to the northwest. The continent generally includes twelve sovereign states: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Parag uay, Peru, Suriname, Uruguay, and Venezuela; two dependent territories: the Falkland Islands and South Georgia and the South Sandwich Islands; and one internal territory: French Guiana. In addition, the ABC islands of the Kingdom of the Netherlands, Ascension Island (dependency of Saint Helena, Ascension and Tristan da Cunha, a British Overseas Territory), Bouvet Island (dependency of Norway), Panama, and Trinidad and Tobago may also be considered parts of South America.

Most of the population lives near the continent's western or eastern coasts, while the interior and the far south are sparsely populated. The Andes mountains, in contrast, contain both highland regions and vast lowlands where rivers such as the Amazon, Orinoco, and Paraná flow. Most of the continent lies in the tropics, except for a large part of Chile, Argentina,

southern Paraguay, southern Brazil and the entire territory of Uruguay, which in turn are located below the tropic of Capricorn, located in the temperate zone.

11.4 Climatic Features of South America:

The continent of South America is located primarily in the Southern Hemisphere. The climate of South America is predominantly wet and humid. However, the large size of the continent makes the climate of South America vary with each region, depending on factors such as geographical location, ocean currents and winds.

The Amazon River basin has a typical hot and wet climate, suitable for the growth of dense rainforests—the temperatures in the Amazon basin range between 70 and 90 degrees Fahrenheit. The snowcapped Andes range, on the other hand, remains colder than tropical lowlands throughout the year.

The desert region of Chile is the driest part of South America. The westerly winds, which carry moisture, shed their moisture on the western parts of the Andes, thus leaving them responsible for the dry coastal parts of Peru and northern Chile. The cold current is less likely to hold moisture than warm currents.

The highest temperature in South America has been recorded in Gran Chaco in Argentina, with temperatures going up to 110˚F. The wettest place on the continent is Quibdo in Colombia, which receives an annual rainfall of 350 inches or 890 centimetres.

The four regions of South America that receive heavy rainfall are the Amazon River Basin, the coastal parts of French Guiana, Guyana, and Suriname, and the southwestern coasts of Chile, Colombia, and Ecuador.

A unique feature of South America's climate is the EI Nino. Every two to seven years, the cold, dry Peru Current weakens and warm waters from the south rush along the coast in a southward direction. The EI Nino affects the climate of South America and causes heavy rainfall in the dry parts of South America. The countries in northern South America, such as Colombia, Ecuador and Venezuela, have more constant high temperatures and high

rainfall throughout the year. The countries in Southern South America, such as Chile and Argentina, have lower temperatures and less rainfall.

Best Time to visit:

The best time to visit South America depends on where you go. It is an enormous continent, ranging from the world's driest desert to towering Andean peaks and the lush forests of the Amazon. Because of that, weather variations are often regional rather than seasonal.

Some places can be visited year-round, such as Brazil, which has temperatures between the mid-20s and mid-30s. Others have defined wet and dry seasons. These are generally not severe enough to deter travel, although the Falkland Islands are best avoided during its winter months between May and August due to the rain.

Whether you want to track wildlife, see glaciers, visit ancient ruins or party all night long, there will be ideal conditions somewhere on the continent whenever you want to go.

11.5 Check Your Progress:

- **Throw a light on the physical features of South America:**

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- **How are the physical features of South America different from those of other continents?**

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11.6 Summary:

South America is the world's fourth-largest (by area) and fifth-largest (by population) continent. No country on this continent is among the world's top 10 most visited countries. Most of India's dream destinations do not belong to the South American continent, but the South American continent is still essential for the world's tourism industry. Its UNESCO World Heritage Sites, Sea beaches, rainforests, Rivers, and Wildlife species attract a large number of international tourists. For Indians, the best time to visit South America is between October and November.

11.7 Glossary:

- **Continent:** A large piece of land covered by oceans and seas.
- **Rainforest:** A dense forest in a tropical area that receives heavy rainfall.

11.8 Self-Assessment Questions:

- Throw light on water bodies situated in the South American Continent.
- Throw a light on the best time to visit South America.

11.9 References and Suggested Readings:

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Unit-12

Indian Geography: Physical and Political features of Indian Subcontinent, climatic conditions prevailing in India

Structure:

12.0 Objectives:

The objectives of the present unit are listed below:

- To know the physical and political features of India
- To understand the climatic conditions of India

12.1 Introduction:

The geography of India is highly diverse, with landscapes ranging from snow-capped mountain ranges to deserts, plains, hills and plateaus. India comprises most of the Indian subcontinent on the Indian Plate, the northerly portion of the Indo-Australian Plate. Having a coastline of over 7,000 km (4,300 miles), most of India lies on a peninsula in southern Asia that protrudes into the Indian Ocean. India is bounded in the southwest by the Arabian Sea and southeast by the Bay of Bengal.

The fertile Indo-Gangetic plain occupies most of northern, central and eastern India, while the Deccan Plateau occupies most of southern India. To the west of the country is the Thar Desert, a mix of rocky and sandy deserts. India's east and northeastern border consists of the high Himalayan range. The highest point in India is disputed due to a territorial dispute with Pakistan; according to India's claim, the highest point (located in the disputed Kashmir territory) is K2, at 8,611 m (28,251 feet). The highest point in undisputed Indian territory is Kangchenjunga, at 8,598 m (28,208 feet). Climate ranges from equatorial in the far south to tundra in the Himalayan altitudes.

Pakistan, China, Bangladesh, Myanmar, Nepal, Bhutan, and Afghanistan are India's neighbouring countries. Two island countries, Sri Lanka and Maldives, are situated in the southern side of India. India is divided into 28 states and eight union territories, including Capital Delhi. In India, states are divided based on language and cultural dissimilarities rather than geographical transitions.

Domestic tourism is one of the forms of tourism. A large no. of tourists travel to different destinations in India; therefore, understanding the different landscapes, states and climatic features of all parts of India is necessary for

a travel agent. India's physical, political, and climatic conditions will be emphasized here.

12.2 Physical Features of India

India is divided into seven geographic regions. These are:

1. The northern mountains include the Himalayas and the northeast mountain ranges.
2. Indo-Gangetic plains
3. Thar Desert
4. Central Highlands and Deccan Plateau
5. East Coast
6. West Coast
7. Bordering seas and islands

Mountains:

A great arc of mountains, composed of the Himalayas, Hindu Kush, and Patkai ranges, define the Indian subcontinent. These mountains were formed by the ongoing tectonic collision of the Indian Plate with the Eurasian Plate, which started some 50 million years ago. These mountain ranges are home to some of the tallest mountains in the world and provide a natural barrier against the cold polar winds. They also facilitate the monsoons that drive climate in India. The protection and climatic control they have provided have been a geographical quality that has assisted India's position as a Great power. The numerous rivers in these mountains provide water to the fertile Indo-Gangetic plains. Biogeographers recognise these mountains as the boundary between two of the earth's great ecozones: the temperate Palearctic that covers most of Eurasia and the tropical and subtropical Indomalaya ecozone that includes the Indian subcontinent and extends into Southeast Asia and Indonesia. Historically, these ranges have served as barriers to invaders.

India has seven principal mountain ranges, having peaks of over 1,000 m (3,300 feet). The Himalayas are the only mountain ranges that have snow-capped peaks. These ranges are:

1. Aravalli
2. Eastern Ghats
3. Himalayas
4. Patkai
5. Vindhyas
6. Sahyadri or Western Ghats
7. Satpuras
8. Karakoram

The Himalayan mountain range is the highest in the world. It forms India's northeastern border and separates it from China, Bhutan and Nepal. The Himalayas mountain range is the world's youngest mountain range and extends almost uninterrupted for a distance of 2,500 km (1,550 miles), covering an area of 500,000 km² (193,000 square miles).

The **Himalayas** spread from the state of Jammu and Kashmir in the west to Arunachal Pradesh in the east. Along with Himachal Pradesh, Uttaranchal and Sikkim lie primarily in the Himalayan range. Some of the Himalayan peaks range over 7,000 m (23,000 feet), and the snow line ranges between 6,000 m (19,600 feet) in Sikkim and around 3,000 m (9,850 feet) in Kashmir. Kangchenjunga is the highest point in India, and it lies in Sikkim State. Most peaks of the Himalayas remain snowbound throughout the year.

The **Shivalik**, also known as the lower Himalayas, consists of smaller hills on the Indian side. Most rock formations are young and highly unstable, with landslides being a regular phenomenon during the rainy season. Many of India's hill stations are in the Shivalik range or lower Himalayas. The climate differs from sub-tropical in the foothills to tundra at the higher elevations of these mountain ranges.

The mountains on India's eastern border with Myanmar are called the **Patkai** or the **Purvanchal**. They were created by the same tectonic processes that resulted in the formation of the Himalayas. The features of the Patkai ranges are conical peaks, steep slopes and deep valleys. The Patkai ranges are not as rugged or tall as the Himalayas. Three hill ranges come

under the Patkai: The Patkai-Bum, the Garo-Khasi-Jaintia, and the Lushai hills. The Garo-Khasi range is in the Indian state of Meghalaya. The climate ranges from temperate to alpine due to altitude. Cherrapunji, which lies on the windward side of these hills, is the wettest place in the world and receives the highest annual rainfall.

The **Vindhya** range runs across most of central India, covering a distance of 1,050 km (652 miles). The average elevation of these hills is 300 m (1,000 feet). They are believed to have been formed by the wastes created due to the weathering of the ancient Aravalli Mountains. It geographically separates northern India from southern India. The western end of the range lies in eastern Gujarat, near its border with the state of Madhya Pradesh, and the range runs east and north, nearly to the Ganges River at Mirzapur.

The **Satpura Range** is a range of hills in central India. It begins in eastern Gujarat near the Arabian Sea coast, then runs east through Maharashtra, Madhya Pradesh and ends in Chhattisgarh. It extends for a distance of 900 km, with many of its peaks rising above 1000 m (3,300 feet). It is angular, with its vertex at Ratnapuri and the two sides parallel to the Tapti and Narmada Rivers. It runs parallel to the Vindhya Range, which lies to the north, and these two east-west ranges divide the Indo-Gangetic plain of northern India from the Deccan Plateau in the south. The Narmada runs in the depression between the Satpura and Vindhya ranges and drains the Satpura range's northern slope, running west towards the Arabian Sea.

The **Aravalli Range** is the oldest mountain range in India, running from northeast to southwest across Rajasthan in western India, extending approximately 500 km (310 miles). The northern end of the range continues as isolated hills and rocky ridges into Haryana, ending near Delhi. The highest peak is Mount Abu, rising to 1,722 m (5,653 feet), lying near the southwestern extremity of the range, close to the border with Gujarat. The city of Ajmer, which has a lake, lies on the southern slope of the range in Rajasthan. The Aravalli Range is the eroded stub of an ancient folded mountain system that was once snow-capped. The range rose in

a Precambrian event called the Aravalli-Delhi orogen. The range joins two ancient segments of the Indian craton: the Marwar segment to the northwest of the range and the Bundelkhand segment to the southeast. The present Aravalli range is only a remnant of the gigantic system that existed in prehistoric times, with several of its summits rising above the snow line and nourishing glaciers of stupendous magnitude that feed many great rivers.

The **Western Ghats** or **Sahyadri** mountains run along the western edge of India's Deccan Plateau and separate the Deccan Plateau from a narrow coastal plain along the Arabian Sea. The range starts south of the Tapti River near the border of Gujarat and Maharashtra and runs approximately 1,600 km (1,000 miles) through the states of Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu, almost to the southern tip of the Indian peninsula. The average elevation is around 1,000 m, with higher peaks occurring in the southern section of Nilgiris and Kerala. The Anai Mudi in the Cardamom Hills at 2,695 m (8,841 feet) in Kerala is the highest peak in the Western Ghats.

The **Eastern Ghats** are a discontinuous range of mountains eroded and cut through by the four major rivers of southern India, the Godavari, Mahanadi, Krishna, and Kaveri. These mountain ranges extend from West Bengal in the north through Orissa and Andhra Pradesh to Tamil Nadu in the south. They run parallel to the Bay of Bengal and are not as tall as the Western Ghats, though some of its peaks are over 1000 m.

The Eastern and Western Ghats meet at the Nilgiri or Malay knot in Tamil Nadu. The Anai Mudi in the Cardamom Hills at 2,695 m (8,841 feet) in Kerala is the highest peak in the Western Ghats. The Nilgiris are considered to be a part of the Western Ghats.

Indo-Gangetic plain:

The **Indo-Gangetic plains** are extensive floodplains of the Indus and the Ganga- Brahmaputra river systems. They run parallel to the Himalaya Mountains, from Jammu and Kashmir in the west to Assam in the east, draining the states of Punjab, Haryana, eastern Rajasthan, Uttar Pradesh, Bihar, Jharkhand and West Bengal. The plains encompass an area

of 700,000 km² (270,000 mile²) and vary in width through their length by several hundred kilometres. Major rivers forming this system are the Ganga (Ganges) and Indus Rivers, along with their tributaries: Beas, Yamuna, Gomti, Ravi, Chambal, Sultej and Chenab. The Indo-Gangetic belt is the world's most extensive expanse of uninterrupted alluvium formed by the deposition of silt by numerous rivers. The plains are flat and mostly treeless, making it conducive for irrigation through canals. The area is also rich in groundwater sources.

The plains are one of the world's most intensely farmed areas. Crops grown on the Indo-Gangetic Plain are primarily rice and wheat, grown in rotation. Other crops include maize, sugarcane and cotton. She was also known as the Great Plains, the Indo-Gangetic Plains rank among the world's most densely populated areas. The water bodies of India are the Indian Ocean, the Arabian Sea, and the Bay of Bengal.

Thar Desert:

The **Thar Desert** (also known as the **Great Indian Desert**) is a hot desert that forms a significant portion of western India. Spread over four states in India – Punjab, Haryana, Rajasthan, and Gujarat it covers an area of 208,110 km² (80,350 mile²). The desert continues into Pakistan as the Cholistan Desert. Most of the Thar Desert is situated in Rajasthan, covering 61% of its area. Most of the desert is rocky, with a small part of the extreme west of the desert being sandy.

The origin of the Thar Desert is uncertain. Some geologists consider it to be 4,000 to 10,000 years old, whereas others state that aridity began in this region much earlier. The area is characterised by extreme temperatures above 45 ° C (113 ° F) in summer to below freezing in winter. Rainfall is precarious and erratic, ranging from below 120 mm (4.72 in) in the extreme west to 375 mm (14.75 in) eastward. The lack of rainfall is mainly due to the unique position of the desert concerning the Aravalli range. The desert lies in the rain shadow area of the Bay of Bengal arm of the southwest monsoon. The parallel nature of the range to the Arabian Sea arm also means that the desert does not receive much rainfall.

The desert can be divided into two regions: the Great Desert and the Little Desert. The great Desert extends northwards from the edge of the Rann of the Kutch region of Gujarat. The little desert extends from the River Luni between the towns of Jodhpur and Jaisalmer up to the northern areas. The soils of the arid region are generally sandy to sandy-loam in texture. The consistency and depth vary according to the topographical features. The low-lying loams are heavier and may have a hard clay pan, calcium carbonate or gypsum. Due to the low population density, the effect of the population on the environment is relatively less compared to the rest of India.

Highlands:

The Central Highlands comprise three prominent plateaus – the Malwa Plateau in the west, the Deccan Plateau in the south (covering most of the Indian peninsula), and the Chota Nagpur Plateau in Jharkhand towards the east.

The **Deccan** plateau is a large triangular plateau, bounded by the Vindhyas to the north and flanked by the Eastern and Western Ghats. The Deccan covers a total area of 1.9 million km² (735,000 mile²). It is primarily flat, with elevations ranging from 300 to 600 m (1,000 to 2,000 feet).

The name Deccan comes from the Sanskrit word dakshina, which means "the south". The plateau slopes gently from west to east, giving rise to several peninsular rivers such as the Godavari, the Krishna, the Kaveri and the Narmada. This region is primarily semi-arid as it lies on the leeward side of both Ghats. Much of the Deccan is covered by thorn scrub forest scattered with small regions of deciduous broadleaf forest. Climate ranges from hot summers to mild winters.

The **Chota Nagpur Plateau** in eastern India covers much of the Jharkhand state and adjacent parts of Orissa, Bihar, and Chhattisgarh. The total area of the Chota Nagpur Plateau is about 65,000 km² (25,000 mile²). The Chota Nagpur Plateau is made up of three smaller plateaus: the Ranchi, Hazaribagh, and Kodarma plateaus. The Ranchi plateau is the largest of the plateaus, with an average elevation of 700 m (2,300 feet). Much of the plateau

is forested, covered by the Chota Nagpur dry deciduous forests. The plateau is famous for its vast reserves of ores and coal.

Besides the Great Indian peninsula, the Kathiawar Peninsula in Gujarat is another large peninsula of India.

East coast:

The **Eastern Coastal Plain** is a vast stretch of land between the Eastern Ghats and the Bay of Bengal. It stretches from Tamil Nadu in the south to West Bengal in the north. Deltas of many of India's rivers form a significant portion of these plains. The Mahanadi, Godavari, Kaveri, and Krishna rivers drain these plains. The region receives both the Northeast and Southwest monsoon rains, with annual rainfall averaging between 1,000 mm (40 in) and 3,000 mm (120 in). The width of the plains varies between 100 to 130 km (62 to 80 miles).

The plains are divided into six regions: The Mahanadi Delta, the southern Andhra Pradesh plain; the Krishna Godavari deltas; the Kanyakumari coast; the Coromandel Coast; and the sandy littoral.

West Coast:

The **Western Coastal Plain** is a narrow strip of land between the Western Ghats and the Arabian Sea. The trip begins in Gujarat in the north and extends across Maharashtra, Goa, Karnataka and Kerala. The plains are narrow and range from 50 to 100 km (30 to 60 miles) in width.

Small rivers and numerous backwaters inundate the region. The rivers, which originate in the Western Ghats, are fast-flowing and are primarily perennial. The fast-flowing nature of the rivers results in the formation of estuaries rather than deltas. The Tapi, Narmada, Mandovi and Zuari are major rivers flowing into the sea.

The coast is divided into three regions. The northern region of Maharashtra and Goa is known as the Konkan Coast, the central region of Karnataka is known as the **Kanara Coast** and the southern coastline of Kerala is known as the Malabar Coast. Vegetation in this region is primarily deciduous. The Malabar Coast has its unique ecoregion known as its moist forests.

Islands:

India has two significant offshore island possessions: the Lakshadweep Islands and the Andaman and Nicobar Islands. The Union government of India administers these island groups as Union Territories.

The Lakshadweep islands lie 200 to 300 km (124 to 186 miles) off the coast of Kerala in the Arabian Sea. It comprises twelve coral atolls, three coral reefs, and five banks. Ten of these islands are inhabited.

The Andaman and Nicobar island chain lies in the Bay of Bengal near Myanmar. It is located 950 km (590 miles) from Kolkata (Calcutta) and 193 km (120 miles) from Cape Negrais in Myanmar. The territory consists of two island groups, the Andaman Islands and the Nicobar Islands. The Andaman Islands consist of 204 islands having a total length of 352 km (220 miles). The Nicobar Islands, which lie south of the Andamans, consist of twenty-two islands with a total area of 1,841 km² (710 mile²). The highest point is Mount Thullier at 642 m (2,140 feet). Indira Point, India's southernmost land point, is situated in the Nicobar Islands and lies just 189 km (117 miles) from the Indonesian island of Sumatra to the southeast.

Significant islands just off the Indian coast include Diu, a former Portuguese exclave; Majuli, Asia's largest freshwater island; Salcette Island, India's most populous island, on which Mumbai (Bombay) city is located; Elephanta in Bombay Harbour; and Sriharikota Barrier Island in Andhra Pradesh.

Rivers in India:

All major rivers of India originate from one of the three main watersheds. They are:

1. The Himalaya and the Karakoram ranges

2. Vindhya and Satpura range in central India

3. Sahyadri, or Western Ghats in Western India

The Himalayan river networks are snow-fed and continuously flow throughout the year. The other two networks depend on the monsoons and shrink into rivulets during the dry season.

Twelve of India's rivers are classified as significant, with the total catchment area exceeding 2,528,000 km² (976,000 mile²).

Himalayan rivers, or the northern rivers that flow westward into Pakistan, are the Indus, Beas, Chenab, Ravi, Sutlej, and Jhelum.

The Ganga-Brahmaputra-Meghana system has the largest catchment area of 1,100,000 km² (424,700 mile²). The river Ganga originates at the Gangotri Glacier in Uttaranchal. It flows in a south-easterly direction, draining into Bangladesh. The Yamuna and Gomti Rivers also arise in the Western Himalayas and join the Ganga River in the plains. The Brahmaputra, another tributary of the Ganga, originates in Tibet and enters India in the far eastern state of Arunachal Pradesh. It then proceeds westwards, unifying with the Ganga in Bangladesh.

The Chambal, another tributary of the Ganga, originates from the Vindhya-Satpura watershed. The river flows eastward. Westward-flowing rivers from this watershed are the Narmada (also called Nerbudda) and Tapti (also spelt Tapi) rivers that drain into Gujarat's Arabian Sea. The river network that flows from east to west constitutes 10% of the total outflow.

The Western Ghats are the source of all Deccan Rivers. Major rivers in the Deccan include the Mahanadi River through the Mahanadi River Delta, Godavari River, Krishna River, and Kaveri River (also spelt Cauvery), draining into the Bay of Bengal. These rivers constitute 20% of India's total outflow.

Bodies of water:

Major gulfs include the Gulf of Cambay, the Gulf of Kutch and the Gulf of Mannar. Straits include the Palk Strait, which separates India from Sri Lanka and the Ten Degree Channel, separating the Andamans from the Nicobar Islands and the Eight Degree Channel, separating the Laccadive and Amindivi Islands from Minicoy Island towards the south. Important capes include Cape Comorin, the southern tip of mainland India. Indira Point is the southernmost location in India, along Rama's Bridge and Point Calimere. The Arabian Sea is to the west of India. The Bay of Bengal is to the eastern side of India, while the Indian Ocean is to the South of India.

Smaller seas include the Laccadive Sea and the Andaman Sea. Four coral reefs in India are located in the Andaman and Nicobar Islands, the Gulf of Mannar, Lakshadweep and the Gulf of Kutch.

Important lakes include Chilka Lake, the country's largest salt-water lake in Orissa; Kolleru Lake in Andhra Pradesh; Loktak Lake in Manipur—Dal Lake in Kashmir—Sambhar Lake in Rajasthan, and the Sasthamkotta Lake in Kerala.

Wetlands:

India's wetland ecosystem is widely distributed, from the cold and arid ones in the Ladakh region in the state of Jammu and Kashmir to the ones in the wet and humid climate of the peninsula. Most wetlands are directly or indirectly linked to India's river networks. The Indian government has identified a total of 22 wetlands for conservation. Among the protected wetlands are the tropical mangrove forests in peninsular India and the salt mudflats in western India.

Mangrove forests occur throughout the Indian coastline in sheltered estuaries, creeks, backwaters, salt marshes and mud flats. The mangrove area covers 6,740 km² (2,600 mile²), which comprises 7% of the world's total mangrove cover. The Andaman and Nicobar Islands; the Sundarbans Gulf of Kutch; deltas of the Mahanadi, Godavari and Krishna; and parts of Maharashtra, Karnataka and Kerala have large mangrove covers.

Most of the identified wetlands adjoin or are parts of sanctuaries and national parks and are thus protected.

The Sundarbans:

The Sundarbans Delta is the largest mangrove forest in the world. It lies at the mouth of the Ganges and is spread across areas of Bangladesh and West Bengal, India. The Bangladeshi and Indian portions of the jungle are listed in the UNESCO World Heritage list separately as the Sundarbans and Sundarbans National Park, respectively, though they are parts of the same forest. The Sundarbans are intersected by a complex network of tidal waterways, mudflats, and small islands of salt-tolerant mangrove

forests, and they present an excellent example of ongoing ecological processes.

The area is known for its wide range of fauna. The most famous among these is the Bengal Tiger, but numerous species of birds, spotted deer, crocodiles and snakes also inhabit it. It is estimated that there are now 400 Bengal tigers and about 30,000 spotted deer in the area.

Rann of Kutch:

The **Rann of Kutch** is a marshy region located in the Gujarat state of India, which borders the Sindh region of Pakistan. Rann comes from the Hindi word ran, meaning "salt marsh." It occupies a total area of 27,900 km² (10,800 mile²).

The region was originally a part of the Arabian Sea. Geologic forces, most likely by earthquakes, resulted in the damming up of the region, turning it into a sizeable salt-water lagoon. This area gradually filled with silt, turning it into a seasonal salt marsh. During the monsoon season, the area turns into a shallow marsh, often flooding to knee-depth height. After the monsoons, the region turns dry and becomes parched.

Climate:

The Himalayas and the Thar Desert strongly influence India's climate. The Himalayas and the Hindu Kush Mountains in Pakistan provide a barrier to the cold winds from central Asia. This keeps most of the Indian subcontinent warmer than most locations in similar latitudes. The Thar Desert attracts the moisture-laden monsoon winds that provide most of India's rainfall.

It is challenging to generalise India's climate. India's colossal size sees climatic conditions in Kashmir as having little relation to those in the extreme south. In addition, the land's varied topography shows many regions with microclimates. The climate in India ranges from tropical in the south to a temperate climate in the north. Parts of India in the Himalayas have a polar climate.

Meteorologists divide the year into four main seasons for most of the country: monsoon, summer, winter and withdrawal of the monsoons. Parts of India in the Himalayan region see five seasons: spring, summer,

monsoons, autumn and winter. Sustained snowfalls occur only in the elevated sections.

Summer lasts between March and June in most parts of India. Temperatures exceed 40 °C (104 °F) during the day. The coastal regions exceed 30 °C (86 °F) coupled with high humidity levels. In the Thar Desert area, temperatures can exceed 45 °C (113 °F).

Summer is followed by southwest monsoon rains, which provide most of India with rainfall. The rain-bearing clouds are attracted to the low-pressure system created by the Thar Desert. The official date for the arrival of the monsoon is 1 June, when the monsoon crosses the Kerala coast. The southwest monsoon splits into two arms: the Bay of Bengal arm and the Arabian Sea arm. The Bay of Bengal arm moves north-wards, crossing northeast India in early June. It then progresses eastwards, crossing Delhi by June 29. The Arabian Sea arm moves northwards and deposits much of its rain on the windward side of the Western Ghats. By early July, most of India receives rain from the monsoons.

The monsoons start retreating in August from northern India and in October from Kerala. This short period after the retreat is known as the retreat of the monsoons and is characterized by still weather. By November, winter starts setting in the northern areas.

Winters start in November in northern India and late December in southern India. Winters in peninsula India see mild to warm days and cool nights. Further north, the temperature is more relaxed. Temperatures in some parts of the Indian plains sometimes fall below freezing. Most of northern India is plagued by fog during this season.

The highest temperature in India was 50.6 °C (123.08 °F) in Alwar in 1955. The lowest was −45 °C (−49 °F) in Kashmir. Recent claims of temperatures touching 55 °C (131 °F) in Orissa have been met with some scepticism by the Indian Meteorological Department, mainly on recording such data.

Salient Physical Features of India:

- **The Himalayan mountains-** Are divided into three main parallel ranges. The northernmost is the Great Himalayas or Himadri. The world's highest

peaks are located in this range. Middle Himalaya or Himachal lies to the south of Himadri. The Shiwalik is the southernmost range.

- **Northern Indian plains-** They lie to the south of the Himalayas. They are generally level and flat.
- **Great Indian desert-** They lie in the western part of India. It is a dry, hot and sandy stretch of land. It has very little vegetation.
- **Peninsular plateau-** It lies to the south of the northern plains. It is triangular. The relief is highly uneven. This is a region with numerous hill ranges and valleys.
- **The Vindhyas and the Satpuras** are essential ranges. The rivers Narmada and Tapi flow through these ranges. These are west-flowing rivers that drain into the Arabian Sea. The Western Ghats or Sahyadris border the plateau in the west, and the Eastern Ghats provide the eastern boundary.
- **Coastal plains** lie to the West of the Western Ghats and the East of the Eastern Ghats. Western coastal plains are very narrow. The eastern Coastal plains are much broader.
- **Islands** -Two groups of islands also form part of India. Lakshadweep Islands are located in the Arabian Sea. These are coral islands located off the coast of Kerala. The Andaman and the Nicobar Islands lie southeast of the Indian mainland in the Bay of Bengal.

12.3 Political Features of India:

India is divided into twenty-eight States and eight union territories, including the National capital territory (i.e., Delhi). India's borders run a total length of 15,200 km (9,400 mi).

Its borders with Pakistan and Bangladesh were delineated according to the Radcliffe Line, which was created in 1947 during the Partition of India. Its western border with Pakistan extends up to 3,323 km (2,065 mi), dividing the Punjab region and running along the boundaries of the Thar Desert and the Rann of Kutch. This border runs along the Indian states of Jammu and Kashmir, Rajasthan, Gujarat, and Punjab. Both nations delineated a Line of Control (LoC) as the informal boundary between the Indian and Pakistan-administered areas of Jammu and Kashmir. India claims the whole state

of Jammu and Kashmir, which includes Pakistan-administered Kashmir and China-administered Aksai Chin, which, according to India, are illegally occupied areas.

India's border with Bangladesh runs 4,096.70 km (2,545.57 mi). West Bengal, Assam, Meghalaya, Tripura and Mizoram are the states that share the border with Bangladesh. Before 2015, there were 92 enclaves of Bangladesh on Indian soil, and 106 enclaves of India were on Bangladeshi soil. These enclaves were eventually exchanged to simplify the border. After the exchange, India lost roughly 40 km^2 (10,000 acres) to Bangladesh.

The Line of Actual Control (LAC) is the adequate border between India and the People's Republic of China. It traverses 4,057 km along the Indian states of Jammu and Kashmir, Uttarakhand, Himachal Pradesh, Sikkim and Arunachal Pradesh. The border with Burma (Myanmar) extends up to 1,643 km (1,021 mi) along the southern borders of India's northeastern states.

Arunachal Pradesh, Nagaland, Manipur and Mizoram. Located amidst the Himalayan range, India's border with Bhutan runs 699 km (434 mi). Sikkim, West Bengal, Assam and Arunachal Pradesh are the states that share the border with Bhutan. The border with Nepal runs 1,751 km (1,088 mi) along the foothills of the Himalayas in northern India. Uttarakhand, Uttar Pradesh, Bihar, West Bengal and Sikkim are the states that share the border with Nepal. The Siliguri Corridor, narrowed sharply by the borders of Bhutan, Nepal and Bangladesh, connects peninsular India with the northeastern states.

12.4 Climatic Conditions of India:

Climate refers to the total of weather conditions and variations over a large area for an extended period (more than thirty years). Weather refers to the state of the atmosphere over an area at any time. The elements of weather and climate are the same, i.e. temperature, atmospheric pressure, wind, humidity and precipitation. You may have observed that the weather conditions occasionally fluctuate within a day. However, there is some

typical pattern over a few weeks or months, i.e. days are cool or hot, windy or calm, cloudy or bright, and wet or dry. The year is divided into winter, summer or rainy seasons based on the generalised monthly atmospheric conditions. The world is divided into several climatic regions. Do you know what type of climate India has and why it is so? We will learn about it in this chapter.

The climate of India is described as the 'monsoon' type. This type of climate in Asia is found mainly in the south and the southeast. Despite an overall unity in the general pattern, the country has perceptible regional variations in climatic conditions. Let us take two essential elements – temperature and precipitation, and examine how they vary from place to place and season to season. In summer, the mercury occasionally touches 50°C in some parts of the Rajasthan desert, whereas it may be around 20°C in Pahalgam in Jammu and Kashmir. On a winter night, the temperature at Drass in Jammu and Kashmir may be as low as minus 45°C. Thiruvananthapuram, on the other hand, may have a temperature of 22°C.

Climatic Controls: There are six primary climate control measures in any place. They are latitude, altitude, pressure and wind system, distance from the sea (continentally), ocean currents and relief features. Due to the earth's curvature, the amount of solar energy received varies according to latitude. As a result, air temperature generally decreases from the equator towards the poles. As one goes from the earth's surface to higher altitudes, the atmosphere becomes less dense, and temperature decreases. The hills are, therefore, more excellent during summer. Any area's pressure and wind system depends on the latitude and altitude of the place. Thus, it influences the temperature and rainfall pattern. The sea moderates climate: As the distance from the sea increases, its moderating influence decreases, and people experience extreme weather conditions. This condition is known as continentally (i.e. very hot during summers and cold during winters). Ocean currents and onshore winds affect the climate of the coastal areas. For example, any coastal area with warm or cold currents flowing past it will be warmed or cooled if the winds are onshore.

Finally, relief too plays a significant role in determining the climate of a place. High mountains act as barriers to cold or hot winds; they may also cause precipitation if they are high enough and lie in the path of rain-bearing winds. The leeward side of the mountains remains relatively dry.

Factors Affecting India's Climate:

Latitude, The Tropic of Cancer, runs through the country's centre from the Rann of Kuchchh in the west to Mizoram in the east. Almost half of the country south of the Tropic of Cancer belongs to the tropical zone. All the remaining area north of the Tropics lies in the sub-tropics. Therefore, India's climate has tropical and subtropical characteristics. Altitude India has mountains to the north, with an average height of about 6,000 metres. India also has a vast coastal area with a maximum elevation of about 30 metres. The Himalayas prevent the cold winds from Central Asia from entering the subcontinent. Because of these mountains, this subcontinent experiences comparatively milder winters than central Asia. Pressure and Winds The following atmospheric conditions govern the climate and associated weather conditions in India:

- Pressure and surface winds
- Upper air circulation
- Western cyclonic disturbances and tropical cyclones.

India lies in the region of northeasterly winds. These winds originate from the subtropical high-pressure belt of the northern hemisphere. They blow south, get deflected to the right due to the Coriolis force, and move towards the equatorial low-pressure area. Generally, these winds carry very little moisture as they originate and blow over land.

12.5 Check Your Progress:

- **How do climatic conditions affect India's tourism industry?**

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- **Why do international tourists prefer to visit India between October and February?**

12.6 Summary:

The majority of Indians prefer to visit domestic destinations only. It may be because of their low budget. India houses every category of natural tourism products, such as deserts, mountain ranges, islands, sea beaches, coastal areas and water-bodies. Different categories of tourists select destinations based on their interests, age, gender, paying capacity, etc. India houses 38 UNESCO World Heritage Sites, and these attractions attract not only foreigners but also domestic tourists. A customer can visit a travel agent at any time and ask for a particular tour package; therefore, a proper understanding of the different tourist destinations and their climatic conditions is necessary to serve better.

12.7 Glossary:

- **Domestic Destination:** Destinations within a country's boundaries are known as domestic destinations.
- **Domestic Tourist:** A tourist who travels within his country's boundary is known as a domestic tourist.

12.8 Self-Assessment Questions:

- **Which Indian destinations are best to visit in the summer season?**

- **Throw a light on the most-visited destinations in India during the winter season.**

12.9 References and Suggested Readings:

- https://www.cs.mcgill.ca/~rwest/wikispeedia/wpcd/wp/g/Geography_of_India.htm.
- https://ncert.nic.in/ncerts/l/iess104.pdf

Unit-13

Physiographic regions: The Northern Mountains, The Peninsular Plateaus, Indo-Gangetic Plain, Thar Desert, Coastal Plains and Islands

Structure:

13.0 Objectives:

The following are the essential objectives of the present unit:

- To know the natural resources available in India
- To understand the significance of natural resources in promoting and developing nature tourism in India.

13.1 Introduction:

India has a unique culture and is one of the oldest and greatest civilisations in the world. It stretches from the snow-capped Himalayas in the north to Sun-drenched coastal villages of the south and the humid tropical forests on the southwest coast, from the fertile Brahmaputra valley in its east to the Thar Desert in the west.

India shares its border with Afghanistan and Pakistan to the northwest, China, Bhutan, and Nepal to the north, Myanmar to the far East, and Bangladesh to the east. Sri Lanka is separated from India by a narrow channel of sea formed by the Palk Strait and the Gulf of Mannar. The country can be divided into six zones: the North, South, East, West, Central, and Northeast. It has 28 states and eight union territories.

Here, we are giving a summary of India's physiography as a quick revision capsule that is useful for tourism learners. It will help them to work as tourism professionals.

13.2 Salient Features Indian Physiography:

- The Geological Structure of India is very diverse because Indian rock belongs to different geologic periods, dating as far back as the Eoarchean Era. Its geographical land area can be classified into the Archaean System, Dharwar System, Cuddapah System, Vindhyan System, Gondwana System, Deccan Trap, Tertiary System, and Quarternary System.
- India is located latitudinally in the Northern Hemisphere and longitudinally in the Eastern Hemisphere. It extends from 8°4′ north and 37°6′ north in length (latitudes). And between 68°7′ East and 97°25′ East in width (longitudes). Because of this tremendous longitudinal extent, the difference

in local time between our country's eastern and western extremes is about two hours.

- The local time along 82° 30′ E longitudes is taken as the standard time of India, i.e. Indian Standard Time (IST). This meridian is known as the Standard Meridian of India. It has an area of 3.28 million square km. It is the seventh-largest country in the world. It accounts for nearly 2% of the world's total area. It is situated in the northern hemisphere.
- India has a coastline of 7516.6 km and a total land frontier of 15200 km. The Tropic of Cancer passes through its middle, crossing over Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, West Bengal, Tripura and Mizoram.
- India lies mainly on the Indian Plate, the northern portion of the Indo-Australian Plate, whose continental crust forms the Indian subcontinent. Physical divisions are marked by natural configuration. India is divided into six physiographic divisions based on the varied physiographic features: units as follows: Northern and North-eastern Mountain; Northern Plain; Peninsular Plateau; Indian Desert; Coastal Plains; and Islands.
- The Himalayas are one of the youngest fold mountain ranges in the world of tectonic origin and comprise mainly sedimentary rocks. They stretch from the Indus River in the west to the Brahmaputra River in the east. It consists of three parallel ranges: Himadri (Greater Himalayas), Himachal (Lesser Himalaya), and Shiwaliks (Outer Himalaya).
- Himadri (Greater Himalayas): It has an average elevation of 6100m and includes some of the highest peaks and some of the essential passes like Jalep La in the Chumbi Valley in Sikkim and Shipki La in the Sutlej Valley. Mt. Everest or Sagarmatha, the highest peak in the world, lies in Nepal.
- Himachal (Lesser Himalaya): It has an average height of 3700-4500 m. The essential ranges are Dhauladhar, Pir Panjal, Nag Tibba and Mussoorie. Shimla, Ranikhet, Almora, Nainital, and Darjeeling Valley plains are important hill resorts. 'Doon or Doar' are unique features of this range that border the outer Himalayas.

- Shiwaliks (Outer Himalaya): It is a recent origin with an average elevation of 900-1200 m, giving a hogback appearance with a relatively steeper slope towards the south.
- The Trans-Himalayan Zones lie to the North of the Great Himalayas bordering Tibet. Some significant ranges of this zone are Karakoram, Ladakh, and Zaskar. This is the largest snow field outside the polar region.
- The Northern Plains are formed by the alluvial deposits brought by the rivers – the Indus, the Ganga and the Brahmaputra. These plains extend approximately 3,200 km from the east to west. The average width of these plains varies between 150-300 km. The maximum depth of alluvium deposits varies between 1,000-2,000 m. These can be divided into three major zones from the north to the south: the Bhabar, the Tarai and the alluvial plains.
- The Indian Desert is located to the northwest of the Aravali hills, lies the Great Indian Desert. It is a land of undulating topography dotted with longitudinal dunes and barchans. This region receives low rainfall below 150 mm per year; hence, it has an arid climate with low vegetation cover. It is because of these characteristic features that this is also known as Marusthali.
- The Plateau of India is roughly triangular, with its base parallel to the Ganga Valley and its apex pointing towards the country's southern tip. The rugged old mass of igneous and metamorphic rocks is part of the Gondwanaland tectonic plate.
- The Peninsular Plateau is bordered by the Western Ghats in the west, the Eastern Ghats in the east and the Satpura, Maikal range and Mahadeo hills in the north. Western Ghats are locally known by different names, such as the Sahyadri in Maharashtra, Nilgiri hills in Karnataka, Tamil Nadu, Anaimalai hills, and Cardamom hills in Kerala.
- The Eastern Ghats Mountain Ranges are extending from Orissa to Tamil Nadu. It is more eroded than the Western Ghats. The Godavari and the Krishna Rivers drain it. Vishakhapatnam Peak is the highest peak of this range. Mahendragiri is the second-highest peak of this range. It continues as the Javadi and Shevaroy hills in the southwest of Chennai, beyond which they merge with the Western Ghats.

- The Western Ghat Mountain Range, or Sahyadri Range, is India's most extensive mountain range after the Himalayas, and it extends from the Tapi River valley to the Nilgiri. It is divided into the North Sahyadri and the South Sahyadri. This range is the home of many hill stations like Matheran, Lonavala-Khandala, Mahabaleshwar, Panchgani, Amboli Ghat, Kudremukh and Kodagu.
- The Western Ghats Coastal Plain extends from Surat to Kanyakumari which is divided into four parts: Gujarat Plain- the Coastal area of Gujarat; Konkan Plain- between Daman and Goa; Kannad Plain- between Goa and Mangalore; and Malabar Plain- between Mangalore and Kanyakumari.
- The Eastern Coastal Plains lies between the Eastern Ghats and the sea coast from the Subarnarekha River to Kanyakumari. Compared to the Western Coastal Plain, it is more expansive because rivers like the Godavari, the Krishna, and the Kaveri formed the delta there. The continental shelf extends up to 500 km into the sea, challenging the development of good ports and harbours. Kolleru Lake is situated in the Godavari and the Krishna Rivers delta region in the Eastern Coastal Plain. Chilka Lake and Pulicat Lake are the best examples of lagoons in this region.
- India has two major island groups – one in the Bay of Bengal and the other in the Arabian Sea.
- The Bay of Bengal island group consists of about 572 islands/islets. These are situated roughly between 6°N-14°N and 92°E -94°E. The two principal groups of islets include Ritchie's Archipelago and Labyrinth Island. The entire group of islands is divided into two broad categories – the Andaman in the north and the Nicobar in the south. A water body separates them called the 10° channel.
- The islands of the Arabian Sea include Lakshadweep and Minicoy. These are scattered between 8°N-12°N and 71°E -74°E longitude. These islands are located at a distance of 280 km-480 km off the Kerala coast. The entire island group is built of coral deposits. There are approximately 36 islands, of which 11 are inhabited. Minicoy is the largest island, with an area of 453 sq. km.

The entire group of islands is broadly divided by the 11° channel, north of which is Amini Island and to the south of Canannore Island.

13.3 The Northern Mountains:

The northern mountains in the north of India extend from northwest to northeast of India. The Himalayas, the Karakorum Mountains and the northeastern mountain ranges are together called the Northern Mountains Karakoram Range: The Karakoram Ranges lie to the northwest of the Himalayas. Mount Godwin Austin (K2) is the second-highest peak in the world. The Himalayas: The Himalayas extend in a long curve from Jammu and Kashmir in the west to Arunachal Pradesh in the east. It is about 2500 km in length. Its width varies from 150 to 400 km. The Himalayas are the highest mountain range in the world. It contains many high peaks. Mount Everest in the Himalayas is the highest mountain peak in the world, with a height of 8,848 metres.

Some of the highest peaks of the Himalayas are:

1. Everest 8848 metres

2. K2 8611 metres

3. Kanchenjunga 8586 metres

4. Makalu 8462 metres

5. Dhaulagiri 8167 metres

6. Nangaparbat 8126 metres

The Himalayas consist of three parallel ranges.

1. **The Greater Himalayas or Himadri** is the highest Himalayan range. Kanchenjunga is the highest peak in India. Many glaciers originate from this region. Indus, Ganga, Yamuna and Brahmaputra originate from such glaciers. River Ganga originates from the Gangotri Glacier, and river Yamuna originates from the Yamunotri Glacier.
2. **The Lesser Himalayas or Himachal–** This range lies south of Himadri. It has dense forests of pine and deodar on the mountain slopes. Beautiful hill stations like Darjeeling, Shimla, Mussoorie, Nainital and Kullu are in this range.

3. **The Outer Himalayas or Shivalik–** The southernmost range of the Himalayas is called the Shivaliks. This range is covered with thick forests home to many wild animals. Terrace farming is done on the slopes of the Shivaliks.

Purvanchal ranges- The Purvanchal ranges are the eastern extension of the Himalayas. They cover the states of Assam, Manipur, Tripura, Nagaland, Meghalaya and Mizoram. The prominent hills in this range are the Garo, Khasi, Jaintia, Naga, Mizo and Lushai. Mawsynram in the Khasi Hills, Meghalaya, is the wettest place on earth. Passes in the Northern Mountains - A pass is a route or path through two mountains. It is used for crossing the mountains.

Some important passes:

- Rohtang pass
- Zozi La
- Baralacha La
- Chang La
- Nathu La
- Shipki La
- Kharadung

La The word 'la' means a pass.

Climate: Greater Himalayas are icy. Lesser Himalayas are pleasant during summer. The Shivalik get heavy rainfall. **Vegetation:** The vegetation of the Himalayas varies with the altitude.

Greater Himalayas: The vegetation here is sparse. The only vegetation found here are shrubs, mosses, lichen and wildflowers like edelweiss and blue poppies.

Lesser Himalayas: Thick forests of pine, oak, fir, spruce, walnut, poplar, cypress and birch are the natural vegetation of this region.

Terai Region: The vegetation includes trees like sal, keekar and babool. Forests in the Terai region are being cleared to grow crops like wheat, rice and sugarcane.

Wildlife: Wildlife in the greater Himalayas includes yak and snow leopards, musk deer, wild sheep, and goats. Tigers, rhinoceros, leopards and many types of deer are found in the forests of the lesser Himalayas. The wildlife in the forests of Terai includes jackals, hyenas, elephants, and tigers. This region has national parks and wildlife sanctuaries like Jim Corbett National Park and Rajaji National Park.

Importance of Himalayas:

- They form a natural wall along the northern borders.
- They protect us from cold winds.
- The rivers originating from the Himalayas carry fertile soil from the mountains to the plains.
- These rivers help generate hydroelectricity.
- These mountains stop the rain-bearing monsoon winds from going further north.
- The forests provide valuable wood and herbs. They are also a natural home to many kinds of birds and animals.
- The Himalayan range provides us with different herbs
- Himalaya provides us with different herbs
- Himalaya is the home of different species of flora and fauna species
- The Himalaya is the best place to conduct many adventure sports activities.
- The Himalayas are the best place to see many flora and fauna species.

13.4 The Peninsular Plateaus:

The Peninsular Plateau of India is roughly triangular, with its base parallel to the Ganga Valley and its apex pointing towards the country's southern tip. The rugged old mass of igneous and metamorphic rocks is part of the Gondwanaland tectonic plate.

This is bordered by the Western Ghats in the west, the Eastern Ghats in the east and the Satpura, Maikal range and Mahadeo hills in the north. Western Ghats are locally known by different names, such as Sahyadri in Maharashtra, Nilgiri hills in Karnataka and Tamil Nadu, Anaimalai hills, and Cardamom hills in Kerala. Western Ghats are comparatively higher in

elevation and more continuous than the Eastern Ghats. Their average elevation is about 1,500 m, and their height is increasing from north to south. 'Anaimudi' (2,695 m), the highest peak of the Peninsular plateau, is located on the Anaimalai hills of the Western Ghats, followed by Dodabetta (2,637 m) on the Nilgiri hills.

Most of the Peninsular Rivers originate in the Western Ghats. The Eastern Ghats, which comprise the discontinuous and low hills, are highly eroded by rivers such as the Mahanadi, the Godavari, the Krishna, the Kaveri, etc. Some essential ranges include the Javadi Hills, the Palconda Range, the Nallamala Hills, the Mahendragiri Hills, etc. The Eastern and Western Ghats meet each other at the Nilgiri hills.

The Central Highlands of the Deccan Plateau regions are bounded to the west by the Aravali range. The Satpura range is formed by a series of scarped plateaus on the south, generally 600-900 m above the mean sea level. This forms the northernmost boundary of the Deccan plateau. It is a classic example of the relict mountains, which are highly denuded and form discontinuous ranges. The extension of the peninsular plateau can be seen as far as Jaisalmer in the West, where it has been covered by longitudinal sand ridges and crescent-shaped dunes called barchans. This region has undergone metamorphic processes in its geological history, and the presence of metamorphic rocks such as marble, slate, gneiss, etc., can corroborate this.

The general elevation of the Central Highlands ranges between 700-1,000 m above the mean sea level, and it slopes towards the north and north-eastern directions. Most of the tributaries of the river Yamuna originate in the Vindhyan and Kaimur ranges. Banas is the only significant tributary of the river Chambal that originates from the Aravalli in the west. An eastern extension of the Central Highland is formed by the Rajmahal hills, and to the south lies a large reserve of mineral resources in the Chotanagpur plateau.

13.5 Indo Gangetic Plain:

This is the largest unit of the Great Plain of India, stretching from Delhi to Kolkata in the states of Uttar Pradesh, Bihar and West Bengal, covering an area of about 3.75 lakh sq. km. The Ganga is the master river of this plain.

The Ganga, along with its large number of tributaries originating in the Himalayan ranges viz., the Yamuna, the Gomati, the Ghaghara, the Gandak, the Kosi, etc., have brought large quantities of alluvium from the mountains and deposited it here to build this extensive plain.

The peninsular rivers, such as Chambal, Betwa, Ken, Son, etc., joining the Ganga river system have also contributed to the formation of this plain. The general slope of the entire plain is to the east and southeast. Depending upon its geographical variations, this plain can be further subdivided into the following three divisions:

(a) The Upper Ganga Plain.

(b) The Middle Ganga Plain.

(c) The Lower Ganga Plain.

(a) The Upper Ganga Plain: Comprising the upper part of the Ganga Plain, this plain is delimited by the 300 m contour in Shiwaliks in the north, the peninsular boundary in the south and the course of the Yamuna River in the west. Its eastern boundary is relatively obscure and has become controversial among geographers.

L.D. draws the limit. Stamp and, later adopted by O.H.K. Spate, roughly corresponding with 100 cm isohyet, seems far from practical. Physiologically, the 100 m contour (line joining places of equal height) has been accepted by geographers as the most effective line of demarcation.

This plan is about 550 km long in the east-west direction and nearly 380 km wide in the north-south direction, covering an approximate area of 1.49 lakh sq km. Its elevation varies from 100 to 300 m above mean sea level.

The Ganga and its tributaries, like the Yamuna, the Ram Ganga, the Sarda, the Gomati and the Ghaghara rivers drain the plain. Almost all the rivers follow the NW-SE course concomitant with the lie of the land. The average

gradient of the land is about 25 cm per km. The gradient is comparatively steep in the northern part.

The rivers flow sluggishly in the plain as the gradient decreases. The monotony of this flat and featureless plain is broken by the Tarai-Bhabar submontane belt and on a micro level by the river bluffs, river meanders and oxbow lakes, levees, abandoned river courses, sandy stretches (Bhurs) and the river channels themselves.

The western part of this plain consists of comparatively higher Ganga-Yamuna Doab. East of this doab is the low-lying Rohilkhand plains, which merge into the Avadh plains further east. The Ghaghara is the mainstream of the Avadh Plains.

The khadar of this river is very wide because the river meanders through this area. Moreover, it often changes its course. At places, this khadar is 55 km wide. Consequently, there is a consistent fear of devastating floods.

(b) The Middle Ganga Plain:

To the east of the Upper Ganga Plain is the Middle Ganga Plain, which occupies the eastern part of Uttar Pradesh and Bihar. It measures about 600 km in the east-west and nearly 330 km in the north-south direction, accounting for a total area of about 1.44 lakh sq km. Its northern and southern boundaries are well-defined by the Himalayan foothills and the peninsular edge, respectively.

Its western and eastern boundaries are somewhat ill-defined, and the region is wide open on both sides, giving it the personality of the east-west continuum of the vast isotropic Ganga Plain. There is no physical boundary worth the name, and the plain imperceptibly opens up in the west from out of the upper Ganga Plain and so invisibly dies out into the lower Ganga Plain in the east.

As such, it is a transitional region par excellence, interposed in the enormity of the Ganga Valley. However, several efforts have been made to demarcate this transitional zone's western and eastern boundaries.

The most accepted boundaries are those made by a 100 m contour in the west, 75 m in the northeast and 30 m in the southeast. This is a shallow plain, no part exceeding 150 m in elevation.

This plain is drained by the Ghaghara, the Gandak and the Kosi rivers, all tributaries of the Ganga coming from the Himalayas. These rivers are responsible for filling up alluvial deposits of the 2,000-metre-deep trough at the foot of the Nepal Himalayas. They flow sluggishly in this flat land, as a result of which the area is marked by local prominences such as levees, bluffs, oxbow lakes, marshes, tals, ravines, etc. The kankar formation is comparatively less due to the preponderance of the khadar.

Almost all the rivers keep shifting their course, making this area prone to frequent floods. The Kosi River is very notorious in this respect. It used to flow near Purnea in 1736, and now its course is about 110 km west of it. On occasion, its water level has risen by 10 metres in a short span of 24 hours.

It has long been called the 'Sorrow of Bihar'. India and Nepal are making strenuous efforts to tame this river. The central units of this plain are the Ganga-Ghaghara doab, Ghaghara-Gandak doab and Gandak-Kosi doab (Mithila Plain).

Some rivers join the Ganga from the south, with the Son being the most important. Here, the gradient is a bit steeper, 45 cm per km, compared to 9-10 cm per km in east Uttar Pradesh and only 6 cm per km in the Mithila Plain. East of Son River is the Magadh Plain.

(c) The Lower Ganga Plain:

This plain includes the Kishanganj tehsil of Purnea district in Bihar, the whole of West Bengal (excluding the Purulia district and the mountainous parts of Darjeeling district) and most parts of Bangladesh. It measures about 580 km from the foot of the Darjeeling Himalaya in the north to the Bay of Bengal in the south and nearly 200 km from the Chotanagpur Highlands in the West to the Bangladesh border in the east.

The total area of this plain is about 81 thousand sq. km. Its width varies greatly and narrows to 16 km between the Rajmahal Hills and the

Bangladesh border. The 50 m contour roughly corresponds with its western boundary.

The northern part of this plain has been formed by the sediment deposited by the Tista, Jaldhaka and Torsa. Besides, this area is marked by the Duars (Darjeeling Tarai) and the Barind plain, a tract of old alluvium between the Kosi-Mahananda corridor in the west and the river Sankosh in the east.

The delta formation accounts for about two-thirds of this plain. This is the largest delta in the world. The Ganga River divides itself into several channels in the delta area. The slope of the land here is a mere 2 cm per km. Two-thirds of the area is below 30 m above mean sea level.

The entire land up to Kolkata would be completely submerged if the sea level rose only 7 metres. The delta's seaward face is studded with many estuaries, mud flats, mangrove swamps, sandbanks, islands and forelands. Thick, impenetrable tidal forests cover a large part of the coastal delta. These are called the Sunderbans because of the predominance of the Sundri tree here.

13.6 Thar Desert:

The origin of the Thar Desert is a controversial subject. Some consider it only 4000 to 10,000 years old, whereas others state that aridity started in this region much earlier. Also known as The Great Indian Desert, it is spread over four states in India, namely Punjab, Haryana, Rajasthan, and Gujarat, and two states in Pakistan and covers an area of about 4,46,000 square kilometres.

The average annual rainfall of the region varies from 100 to 500 mm. It is distributed very erratically, occurring primarily between July and September. The mean average temperature varies from a minimum of 24 to 26 degrees C in summer to 4 to 10 degrees C in winter. One unique feature of this desert is that there is neither an oasis in it nor any artesian well. No native cactus or palm tree breaks the monotony of the vast expanse.

Hillocks and sandy and gravel plains intersperse stretches of sand in the desert. Due to the diversified habitat, this arid region's vegetation and

animal life are vibrant. About 23 species of lizards and 25 species of snakes are found here, and several are endemic to the region.

Some wildlife species, which are fast vanishing in other parts of India, are found in the desert in large numbers, such as the great Indian bustard, the black buck, the Indian gazelle, and the wild ass in the Rann of Kutch. How these animals and insects survive in these harsh conditions, under such high temperatures and without drinking water and green vegetation is fantastic. They have evolved excellent survival strategies; their size is smaller than other similar animals living in different conditions, and they are mainly nocturnal. Certain other factors are responsible for these animals' survival in the desert. Due to the lack of water in this region, the transformation of the grasslands into cropland has been very slow. The protection provided to them by a local community, the Bishnois, is also a factor.

The increase in human and livestock population in the desert has led to a deterioration in the ecosystem, resulting in soil fertility and vegetation degradation.

13.7 Coastal Plain:

The Indian coastline, which is 7516.6 km long, covers 6100 km of mainland coastline along with the Andaman, Nicobar and Lakshadweep islands. The coastline of India touches 13 states and Union Territories. The western coastal plains are along the Arabian Sea, whereas the eastern coastal plains are along the Bay of Bengal.

Coastal Plains in India:

India is a country that is surrounded by the sea on three of its sides. India's coastal plains are along the country's west and east. Extending up to 7516.6 km, the coastal plains in India are of two types:

1. Eastern Coastal Plains of India

2. Western Coastal Plains of India

Eastern Coastal Plains of India:

The eastern coastal plains stretch from West Bengal north to Tamil Nadu south and pass through Andhra Pradesh and Odisha. Deltas of the rivers

Mahanadi, Krishna, Godavari and Cauveri are present in the eastern coastal plain. The deltas are very fertile and productive for agriculture. Therefore, the delta of the River Krishna is called the '**Granary of South India**'. The Eastern coast is again divided into three categories:

- **Utkal coast:** Extending between the Chilika Lake and Kolleru Lake, they are much more comprehensive than the western coastal plains and undergo immense rainfall. Some of the crops that are cultivated here are rice, coconut and banana.
- **Andhra coast:** Extending between the Kolleru Lake and Pulicat Lake, the Andra coast forms a basin area for the Krishna and the Godavari rivers.
- **Coromandel Coast:** The Coromandel Coast extends between Pulicat Lake and Kanyakumari in Tamil Nadu. This Indian coastline remains dry in summer and receives rainfall during the winters due to the northeast monsoons.

Western Coastal Plains of India:

Western Coastal Plains stretches from Kerala in the south to Gujarat in the north, passing through Karnataka, Goa and Maharashtra. The western coastal plains stretch for 1500 km north to south and its width ranges from 10 to 25 km. The West Continental Shelf is at its widest off the Bombay coast. This place is rich in oil. Along the Malabar Coast, many beautiful lagoons make the place a tourist destination. The western coast is narrower than the eastern coast.

The western coast is further divided into four categories:

- **Kachchh and Kathiawar coast:** Kachchh, formerly a gulf, is formed by silt deposition by the Indus. The area of Kachchh is covered with shallow water during the monsoon season and is divided into Great Rann in the north and Little Rann in the east. Meanwhile, Kathiawar is situated to the south of Kachchh.
- **Konkan coast:** It extends between Daman in the north to Goa in the south. Rice and cashews are the two essential crops in this region.
- **Kanada coast:** It extends between Marmagaon and Mangalore and is rich in iron deposits.

- **Malabar Coast:** Extending between Mangalore and Kanyakumari, the Malabar Coast is relatively broad. This region also consists of lagoons running parallel to the coast in southern Kerala.

Significance of Indian Coastlines:

The coastlines of India extend up to 7516.6 km, including the island groups Andaman and Nicobar and Lakshadweep. As a result, the areas covered under the Indian coastlines enjoy a favourable climate with no extreme temperature, which is ideal for human development. Some of the primary significance of the coastal plains in India are mentioned below:

1. The coastal plains in India are covered mainly by fertile soils, which are best for cultivation. Rice is the major crop that is cultivated in these regions.
2. The big and small ports along the Indian coastlines help carry out trade.
3. The sedimentary rocks of these coastal plains are said to contain large deposits of mineral oil, which can be used to boost the marine economy.
4. Fishing has become an essential occupation for people living in coastal areas.
5. The coastal plains in India are rich in coastal and marine ecosystems, including a wide range of mangroves, coral reefs, estuaries, and lagoons that serve as great tourist attractions.

13.8 Islands:

An island is any land area smaller than a continent and surrounded by water. Islands may occur in oceans, seas, lakes, or rivers. A group of islands is called an archipelago. Islands may be classified as either continental or oceanic. Oceanic islands rise to the surface from the floors of the ocean basins. Continental islands are unsubmerged parts of the continental shelf surrounded by water. Many of the larger islands of the world are of the continental type. Greenland (840,000 square miles (2,175,000 square km), the largest island, is composed of the same materials as the adjacent North American continent, from which a shallow and narrow sea separates it. Likewise, the world's second-largest island, New Guinea 309,000 square miles (800,000 square km), is part of the Australian continental platform and is separated from it only by the very shallow and narrow Torres Strait. A slight warping of the sea bottom in the vicinity of

Torres Strait would be sufficient to join New Guinea to Australia; conversely, a slight rise in sea level may submerge a hilly coast and leave the hilltops remaining as small islands just offshore (such as those off the coast near Boston and the islands off the Maine coast).

Indian Islands:

- The central island groups of India are the Andaman and Nicobar Archipelago (A chain of islands similar in origin) in the Bay of Bengal and the Lakshadweep Islands in the Arabian Sea.
- Andaman and Nicobar Islands were formed due to a collision between the Indian and Burma Minor plates.
- Andaman and Nicobar Islands are southward extensions of the Arakan Yoma range (Myanmar)
- Lakshadweep Islands are coral islands. These islands are a part of Reunion Hotspot volcanism.
- Besides these two groups, there are islands in the Indo-Gangetic Delta and between India and Sri Lanka.

Andaman and Nicobar Islands:

- This archipelago is composed of 265 big and small islands (203 Andaman Islands + 62 Nicobar Islands).
- The Andaman and Nicobar Islands extend from 6° 45′ N to 13° 45′ N and from 92° 10′ E to 94° 15′ E for a distance of about 590 km.
- The Andaman Islands are divided into three main islands: North, Middle, and South.
- Duncan's passage separates Little Andaman from South Andaman.
- The Ten Degree Channel separates the Great Andaman group of islands in the north from the Nicobar group in the south.
- Port Blair, the capital of Andaman Nicobar Islands, lies in the South Andaman.
- Among the Nicobar Islands, the Great Nicobar is the largest. It is the southernmost island and is very close to the Sumatra island of Indonesia. The Car Nicobar is the northernmost.

- Most of these islands are made of tertiary sandstone, limestone, and shale, which rest on primary and ultrabasic volcanoes.
- The Barren and Narcondam Islands, north of Port Blair, are volcanic islands.
- Some of the islands are fringed with coral reefs. Many of them are covered with thick forests. Most of the islands are mountainous.
- Saddle Peak (737 m) in North Andaman is the highest peak.

Lakshadweep Islands:

In the Arabian Sea, there are three types of islands.

1. **Amindivi Islands** (consisting of six main islands: Amini, Keltan, Chetlat, Kadmat, Bitra, and Perumul Par). [do not have to remember all these names]
2. **Laccadive Islands** (consisting of five major islands of Androth, Kalpeni, Kavaratti, Pitti and Suheli Par) and
3. **Minicoy Island:**

- At present, these islands are collectively known as Lakshadweep.
- The Lakshadweep Islands are a group of 25 small islands.
- They are widely scattered about 200-500 km southwest of the Kerala coast.
- Amendivi Islands are the northernmost, while the Minicoy Islands are the southernmost.
- All are tiny islands of coral origin and are surrounded by fringing reefs.
- The largest and the most advanced is Minicoy Island, with an area of 4.53 sq km.
- Most islands have low elevations and do not rise more than five metres above sea level (Extremely Vulnerable to sea level change).
- Their topography is flat, and relief features such as hills, streams, valleys, etc. are absent.

13.9 Check Your Progress:

- **Discuss the essential tourism products of Thar Desert:**

- **How natural resources of a destination help in the promotion and development of the tourism industry:**

13.10 Summary:

In the above line, we discussed the physiographical features of India because these come under natural tourism products. These factors also affect the culture of different states of India. Tourists travel to the mountain range, desert, area, and island to see their beauty, enjoy their climate, experience their culture and participate in adventure sports activities. A travel agent who profoundly understands the benefits of physiography can provide reliable and sufficient information.

13.11 Glossary:

- **Tourism Product:** A thing, person, place or event which can satisfy the needs or wants of a tourist.
- **Adventure Sports:** Sports activities full of risk, enthusiasm, fear etc.

13.12 Self-Assessment Questions:

- Tourists travel to India to enjoy cultural and natural attractions, but most visit India to experience its cultural beauty. Why? Give your answer with suitable examples.
- Highlight the different tourism products available in the Coastal region of India.
- Discuss the important natural attractions of the Thar Desert of India

13.13 Reference and Suggested Readings:

- https://www.jagranjosh.com/general-knowledge/summary-on-the-physiography-of-india-1483613142-1
- https://www.britannica.com/science/island

Unit-14
Water Bodies: Ocean, Seas, Rivers and Lakes

Structure:

14.0 Objectives:

The following are the primary objectives of the present unit:

- To recognize the different categories of water bodies located in India
- To know the significance of different water bodies in the promotion and development of the tourism industry

14.1 Introduction:

A body of water or water body is any significant water accumulation, generally on a planet's surface. These water bodies can be small or large. The term most often refers to oceans, seas, lakes or ponds, but it also includes wetlands or, more rarely, puddles. A body of water does not have to be still or contained; rivers, streams, canals, and other geographical features where water moves from one place to another are also considered bodies of water. Most are naturally occurring geographical features, but some are artificial.

Uttar Pradesh occupies first place with the total length of rivers and canals at 31.2 thousand km, which is about 17 percent of the total length of rivers and canals in the country. Other states following Uttar Pradesh are Jammu and Kashmir, and Madhya Pradesh. Among the remaining forms of inland water resources, tanks and ponds have a maximum area (2.9 M.Ha.), followed by reservoirs (2.1 M.Ha.).

Most of the area under tanks and ponds lies in the Southern States of Andhra Pradesh, Karnataka and Tamil Nadu. These states, along with West Bengal, Rajasthan and Uttar Pradesh, account for 62 percent of the total area under tanks and ponds in the country. As far as reservoirs are concerned, significant states like Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and Uttar Pradesh account for the more substantial portion of the area under reservoirs. The total area of inland water resources is, thus, unevenly distributed over the country, with five states, namely Orissa, Andhra Pradesh, Gujarat, Karnataka and West Bengal, accounting for more than half of the country's inland water bodies.

Water bodies play a significant role in every country's tourism industry. Clean water bodies attract more tourists to the destination. In India, Rivers

are treated as Goddesses, and people gather during festivals to take holy baths in the Rivers. Many fairs and festivals are celebrated on the banks of the rivers of India, such as the Ganga Dussehra, Ganga Mahotsav, Dev Deepawali, Kumbh fair, etc. Water-based adventure sports activities are performed on water bodies. For example, those who wish to participate in white water rafting can visit Rishikesh, Scuba Diving and Snorkeling lovers can visit the Andaman & Nicobar Islands, and parasailing adventure sports lovers can see the sea beaches of south India. However, many nature lovers visit water bodies to enjoy their beauty—the pleasant climate and to participate in boating activities.

14.2 Types of Water Bodies:

Water is one of the most essential natural resources on earth and can be found in various forms. Water bodies are divided into categories of salt and fresh and small and large. Their features differentiate them from each other. You must have seen oceans, streams, ponds and more. These are bodies of water that only carry the utmost importance for life on earth. Let us discuss the different types of bodies of water in detail for a better understanding.

Bodies of Water:

- Oceans
- Seas
- Lakes
- Rivers and Streams
- Glaciers
- **Oceans:**

Oceans are the most enormous bodies of water on Earth, covering at least 71% of the Earth's surface. The entire marine saltwater you see on Earth ultimately ends up in the World's Oceans.

However, how our continents are arranged makes it easier to differentiate between specific ocean basins. Thus, looking at this distinction, the Pacific

Ocean is the largest. Then we have the Atlantic Ocean, followed by the Indian Ocean.

Finally, we have the Southern Ocean and then the Arctic Ocean. Humanity depends on oceans in various ways; for instance, we get food from them, use them for transport, and use them for their impact on the water cycle.

- **Seas:**

These can be called sub-sections of the oceans. The coastal reaches of the oceans where land masses surround them are known as seas.

The most common example of a sea is the Mediterranean Sea. We also have other popular ones like South China, the Caribbean, and the Bering Sea. Most of these water bodies directly connect to the ocean.

However, there are particular saline water bodies; the Caspian Sea is one example. Furthermore, it is divided into smaller bays, straits, and gulfs categories.

- **Lakes:**

These are inland bodies of water found either in freshwater or saltwater. Lakes are also enclosed by land; some even categorize the Caspian Sea as a lake. There is no precise difference between a lake and a pond.

However, lakes, like the Great Lakes of North America and Lake Baikal of Russia, can also be huge. Many procedures create lakes, some of which are glacial erosion, volcanic eruption and damming of rivers.

- **Rivers and Streams:**

These are bodies of water in motion. In other words, the water which flows on the earth's surface creates rivers and streams. Streams can be said to be the smaller version of the rivers. They consist of fresh water in the ocean through the constant flow of rivers and streams.

Rivers are quite an essential source of water as well as energy. In addition to that, they are also significantly used for transportation purposes and as fishing grounds. River Nile in Africa is one of the longest rivers in the world, in addition to the Amazon River in South America. Furthermore, we have River Mississippi, Congo, Mackenzie and more.

- **Glaciers:**

Glaciers are frozen bodies of water. They are also water bodies that move slowly, similar to frozen rivers. All the glaciers, ice caps, and glacial ice are millions of years old. They cover almost 10% of the earth's land and are freshwater sources.

Features of Water Bodies:

Oceans:

- The oceans are vast and deep bodies of water. Usually, these oceans separate continents from one another. The oceans are bodies of salt water.
- We have five oceans in our world. They are the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Arctic Ocean, the Southern Ocean or the Antarctic Ocean.
- The largest and deepest ocean in the world is the Pacific Ocean, covering one-third of the earth's surface.
- This is followed by the Atlantic Ocean and the Indian Ocean in order of size.
- Oceans are home to various plants and seaweed and thousands of sea creatures like sea urchins, whales, sharks, octopuses, a variety of fish, snakes, squids, etc.
- Oceans also contain millions of tiny dead animals called coral polyps, which form the beautiful coral reefs. Australia is the largest coral reef in the world.
- Oceans are helpful to us in many ways as they are a rich source of minerals. They provide energy and valuable fuels like petroleum.
- They work as an essential channel of transportation.

Seas:

- Seas are also big water bodies but are smaller than oceans. They are partly enclosed by a land mass and open into the sea.
- We see many seas eventually connecting to the oceans. For example, the Mediterranean Sea is attached to or joins the Atlantic Ocean.
- Some of the seas are the Red Sea, the Black Sea, the Arabian Sea, the Caribbean Sea and the Mediterranean Sea.

- The Red and the Black Seas have their names because the Red Sea has millions of tiny red plants growing at the bottom, and the Black Sea because of the thick black mud at its bottom.
- Under the seas, we find huge plains, high mountains, and even deep valleys. Interestingly, these various landforms are also present under the sea.
- The largest of the seas is the South China Sea, which is supposed to hold hundreds of islands in its waters.
- Like the oceans, the sea is helpful to us in many ways. It is a rich food source, providing various kinds of seafood.
- It also works as a channel for transportation.
- Like oceans, seas are a food source used extensively as ship transport lanes.

Lakes:

- A lake is a water body surrounded by land on all sides. It is the opposite of an island, a piece of land surrounded by water on all sides.
- Lakes can be salty or freshwater lakes. Salty lakes are due to the evaporation that takes place.
- Some famous lakes are Lake Superior, the Caspian Sea, Lake Victoria, Lake Aral and the Dal Lake.
- The Caspian Sea is the world's largest salt lake. It is so big that it is referred to as a sea.
- Lake Superior is the biggest freshwater lake.
- The Dead Sea is a saltwater lake.
- It is said that nothing can survive in the Dead Sea because it is very salty.

Rivers:

- Rivers are large streams that flow over the land. They are, hence, large flowing water bodies. They usually end up in an ocean or sea.
- Rivers are freshwater bodies that generally originate in mountainous or elevated areas.
- We have two kinds of rivers, which are the Snow-fed Rivers and the second is the Rain-fed Rivers.

- Snow-fed rivers find their source in the snowcapped mountains, where the snow melts, flowing down and forming rivers; rain-fed rivers, as the name suggests, are formed in areas where it rains a lot, giving rise to these rivers.
- The place where a river starts its journey is called the source, and where it ends its journey is called the mouth of a river.
- Rivers, again, are very useful. As we have seen in history, most civilizations were formed near the banks of rivers, like the Egyptian Civilization on the banks of the River Nile and the Indus Valley Civilization on the banks of the River Indus.
- This is because the rivers deposit much fertile soil called silt, which is excellent for growing crops.

Waterfall:

- Water falling from a height is usually called a waterfall. A waterfall is formed when a river flows over an edge of hard rocks and falls from a great height.
- Waterfalls make beautiful tourist spots and help generate hydroelectric power.
- The Angel Falls in South America is the world's highest waterfall.

14.3 Indian Ocean:

The Indian Ocean is a body of salt water covering approximately one-fifth of the world's total ocean area. It is the smallest, geologically youngest, and physically most complex of the world's three major oceans. It stretches for more than 6,200 miles (10,000 km) between the southern tips of Africa and Australia and, without its marginal seas, has an area of about 28,360,000 square miles (73,440,000 square km). The Indian Ocean's average depth is 12,990 feet (3,960 metres), and its deepest point, in the Sunda Deep of the Java Trench off the southern coast of the island of Java (Indonesia), is 24,442 feet (7,450 metres). The Indian Ocean is bounded by Iran, Pakistan, India, and Bangladesh to the north; the Malay Peninsula, the Sunda Islands of Indonesia, and Australia to the east; Antarctica to the south; and Africa and the Arabian Peninsula to the west. In the southwest,

it joins the Atlantic Ocean south of the southern tip of Africa, and to the east and southeast, its waters mingle with those of the Pacific Ocean.

Defining the oceanic limits of the Indian Ocean is complicated and remains unsettled. The most apparent border and the one most generally agreed upon is the Atlantic Ocean, which runs from Cape Agulhas, at the southern tip of Africa, due south along the 20° E meridian to the shores of Antarctica. The border with the Pacific Ocean to the southeast is usually drawn from the East Cape on the island of Tasmania south along the 147° E meridian to Antarctica. The Bass Strait, between Tasmania and Australia, is considered by some to be part of the Indian Ocean and by others to be part of the Pacific. The northeastern border is the most difficult to define. The one most generally agreed upon runs northwest from Cape Londonderry in Australia across the Timor Sea, along the southern shores of the Lesser Sunda Islands and of Java, and then across the Sunda Strait to the island of Sumatra. The boundary is usually drawn across the Singapore Strait.

There is no universal agreement on the southern limit of the Indian Ocean. In general (and for this article), it is defined as extending southward to the coast of Antarctica. However, many—notably in Australia—consider the portion closest to Antarctica (along with the corresponding southern extensions of the Atlantic and Pacific) part of the Southern (or Antarctic) Ocean. Australians often call the entire expanse south of that continent's south coast the Southern Ocean.

14.4 Indian Seas:

Arabian Sea:

The Arabian Sea is located in the northwestern part of the Indian Ocean, between the Arabian Peninsula and the Indian subcontinent. It merges with the Gulf of Oman to the northwest and the Gulf of Aden to the southwest and spans 1,491,000 square miles. The depth of the sea varies as it joins the Indian Ocean to the south, but it is generally approximated at 8,970 feet.

The Sea links the neighbouring areas of Iran, the Arabian Peninsula (including Yemen, Oman, and the United Arab Emirates), Pakistan, the Horn of Africa, and India. For this reason, it has gained eminence as a vitally

important historical trade route. Smaller political areas also fringe the Arabian Sea, including Socotra off the coast of Yemen, the Khuriyya Muriyya islands and the Lakshadweep islands.

The Arabian Sea is connected to surrounding bodies of water by a series of gulfs and straits that provide a steady avenue into the sea. The largest and most notable gulfs that feed into the sea are the Gulf of Oman, which connects the Arabian Sea to the Persian Gulf and the Gulf of Aden, which connects the Arabian Sea to the Red Sea. However, gulfs are not the only access point into the Arabian Sea, as two significant rivers drain into its borders. The Arabian Sea is augmented by water flowing down the Indus and Narmada rivers, the principal means of access to the Arabian Sea.

The Arabian Sea is distinguished by its intense water level, often maintained close to land masses. The deep water level is hypothesized to be one of the reasons there are no significant island developments in the centre of the Arabian Sea, even though islands have increased quite a lot on the outer borders. While far below the surface, the Arabian Sea floor exhibits a startling complexity akin to standard land formations. Perhaps most notable among the submarine features is the Maldive Ridge, which runs along the ocean floor from the Arabian Sea into the Indian Ocean. This ridge, essentially similar to a mountain range on land, eventually rises above the water level to become the Maldives Islands.

The Maldive Ridge, along with other seafloor formations in the Arabian Sea, is hypothesized to be the result of seismic activity roughly 50 million years ago. According to geologists, during this time, Asia collided with the subcontinent of India, forming the Arabian Sea and its unique underground ridges. After the initial collision of the two land masses, the Arabian Sea has been shaped by various highly influential factors, including erosion from water currents. One of the most profound areas of the sea floor is where the Indus River meets the Arabian Ocean. In the place where the two bodies of water meet, a sharp canyon has been formed on the sea floor as the forces of the incoming water sweep away the sandy bottom. Also, due to this

erosion, the Indus River carries the sediment further into the sea, eventually depositing the excess into ridges or other formations.

The Bay of Bengal:

The Bay of Bengal Sea is a large but shallow embayment of the northeastern Indian Ocean, covering an area of about 2,173,000 square km. It is bordered by Sri Lanka and India to the west, Bangladesh to the north, Myanmar (Burma) and the northern part of the Malay Peninsula to the east. According to the definition of the International Hydrographic Bureau, the southern boundary extends from Dondra Head at the south end of Sri Lanka in the west to the northern tip of the Indonesian island of Sumatra in the east. The bay is about 1,000 miles (1,600 km) wide, with an average depth of more than 8,500 feet (2,600 metres). The maximum depth is 15,400 feet (4,694 metres). Several large rivers—the Mahanadi, Godavari, Krishna, and Kaveri (Cauvery) on the west and the Ganges (Ganga) and the Brahmaputra on the north—flow into the Bay of Bengal. The Andaman and Nicobar groups, the only islands, separate the bay from the Andaman Sea.

Salient features of the Bay of Bengal:

The Bay of Bengal is bordered to the north by a broad continental shelf that narrows to the south and slopes of varying gradients on the northwest, north, and northeast, all cut by canyons from the rivers. Most important are the Ganges-Brahmaputra, Andhra, Mahadevan, Krishna, and Godavari canyons. These were former estuaries when the shoreline was at the margin of the continental shelf during the Pleistocene Epoch (about 2,600,000 to 11,700 years ago). The deep floor of the bay is occupied by a vast abyssal (deep-sea) plain that slopes to the south. The main submarine features include the beginning of the long, seismically active Java Trench near the Nicobar-Sumatra mainland and the aseismic Ninetyeast Ridge. The fan of the Ganges River sentiments is the most comprehensive—5 to 7 miles (8 to 11 km)—and thickest in the world. The bay itself was formed as the Indian subcontinent collided with Asia within roughly the past 50 million years.

14.5 Indian Rivers

The Rivers of India play an essential role in the lives of the Indian people. The river systems provide irrigation, potable water, cheap transportation, electricity, and livelihoods for many people all over the country. This clarifies why nearly all of India's major cities are situated on river banks. The rivers are also important in Hindu mythology and are considered holy by all Hindus in the country.

Eight major rivers:

(Indus, Brahmaputra, Narmada, Tapi, Godavari, Krishna and Mahanadi) Along with their numerous tributaries, they make up the river system of India. Most of the rivers pour their waters into the Bay of Bengal. Some rivers, whose courses take them through the western part of the country and towards the east of the state of Himachal Pradesh, empty into the Arabian Sea. Parts of Ladakh, northern parts of the Aravalli range and the arid parts of the Thar Desert have inland drainage. All major rivers of India originate from one of the three main watersheds.

- The Himalaya and the Karakoram ranges
- Vindhya and Satpura ranges and Chotanagpur plateau in central India
- Sahyadri, or Western Ghats in Western India

A detailed description of the famous Rivers of India are described below:

1. River Ganga:

Ganga is the most sacred river to Hindus and is worshipped as the goddess Ganga. Ironically, it is one of the most polluted rivers too. Not only humans but a range of water species are also a threat.

Origin: Gangotri (Himalaya)

Length: 2525Km

Depth: 17 m (56 ft)

Third Largest River in the world.

Major Cities: Patliputra, Kashi, Allahabad, Varanasi, Kolkata, Badrinath, Haridwar, Kanpur, Patna, Farrukhabad, Fatehgarh, Kannauj, Chakeri.

It also created the World's Largest DELTA in West Bengal - Sundarban Delta.

Major Tributaries: Gomti, Ghaghra, Tamsa, Yamuna, Koshi.

Merges into the Bay of Bengal.

2. Indus River:

This gave rise to the most significant ancient human civilisation, the Indus Valley civilisation, which holds great historical value.

Also, the word India has been derived from Indus.

India is a Greek and Latin term for the country of the river Indus.

Origin: Tibetan Plateau

Flows through: The Ladakh

Length: 3180 Km

Major Cities: **Leh, Sukur, Hyderabad (Pakistan)**

Major Tributaries: Balram River, Beas, Chenab, Dras, Gilgit, Jhelum, Ravi, Satluj

Merges into the Arabian Sea

Pakistan has 93 percent, India has five per cent, and China has a two per cent share of this river.

3. Yamuna River:

The name Yamuna is derived from the Sanskrit word "yama", meaning 'twin', and it may have been applied to the river because it runs parallel to the Ganges.

It is the longest and the second-largest tributary river of the Ganges.

One official has also called this river a sewage drain because of its high amounts of pollutants.

Origin: Yamunotri Glaciers (Himalaya) 70 percecnt of water to Delhi from the Yamuna

Tajmahal is situated on the banks of it

Major Cities: Etawah (UP), Auraiya (UP), Mathura, New Delhi

States Covered: Uttarakhand, Himachal Pradesh, Uttar Pradesh, Haryana, Delhi

Major Tributaries: Hanuman Ganga, Sharda, Chambal

Merges into: Ganga, Allahabad (It is the longest river in India which does not directly flow to the sea).

4. Brahmaputra:

The lives of millions of Indian and Bangladeshi citizens are reliant on the Brahmaputra River.

Its delta is home to 130 million people and 6,00,000 people on the riverine islands.

Origin: Angsi Glacier (Tibet)

Entered from Arunachal Pradesh to Assam

Length: 2900 Km

Majorly covered cities: Dibrugarh (Assam), Guwahati

Another name: Jamuna (Bengali), Tsangpo (Tibet), Pinyin or Yarlung Zangbo (China)

Merges into: Padma River of Bangladesh

Also called as Tsangpo-Brahmaputra

5. Mahanadi:

The word Mahanadi is a compound of the Sanskrit words maha ("great") and nadi. It is the major river in Chattisgarh and Odisha. Its water is mainly used for irrigation and drinking purposes. Also known as The Ruin of Orrisa. (Devastating flood over the years but before the construction of HIRAKUND DAM)

Source: Sihawa, Dhamtari, Dandakaranya, Chhattisgarh

Length: 858 Km

Major cities on the river: Cuttak, Sambalpur.

6. Godavari:

The Godavari is India's second-longest river after the Ganga. The river has been revered in Hindu scriptures for millennia and continues to harbour and nourish a rich cultural heritage.

The longest river in Southern India is also known as 'Dakshina Ganga.' 2nd Largest after Gangus (Ganga)

Origin: Tryambakeshwar, Maharashtra

Length: 1465 Km

Major Towns along the river: Rajahmundry (AP), Nashik (MH), Nanded (MH), Nizamabad (AP).

States Covered: Maharashtra, Telangana, Chhattisgarh, Andhra Pradesh, Puducherry (Yanam).

Major Dam on River: Gangapur Dam, Sriram sagar dam.
The Krishna Godavari Basin is one of the main nesting sites of the endangered Olive Ridley sea turtle.

Merge into The Bay of Bengal.

7. Krishna:

The Krishna River is India's fourth-biggest river in terms of water inflows and river basin area, after the Ganga, Godavari and Brahmaputra.

Also known as Krishnaveni, the Krishna River is the fourth largest in India (after the Ganges, Godavari, and the Brahmaputra).

Origin: Mahabaleshwar (Maharashtra)

Length: 1400 Km

Major towns along the river: Sangali (MH), Konya (MH), Vijayawada (AP)

Major Tributaries: Bhima, Paleru, Malaprabha, Tungbhadra

It is a primary source of irrigation for Maharashtra, Karnataka, Telangana and Andhra Pradesh.

Dams: Nagarjun Sagar Dam, Dhom Dam, Narayanpur Dam.

This river's delta is one of India's most fertile regions and home to ancient Satavahana and Ikshvaku Sun Dynasty kings.

Vijayawada is the largest city on the River Krishna.

Merges into the Bay of Bengal.

8. Cauveri:

The primary uses of Kaveri are providing water for irrigation, household consumption, and electricity generation in South India.

Origin: Talakaveri (Western Ghats, Karnataka)

Important Tributaries: Amravati, Shemsha, Hemavati

Major Towns along the river: Kushalnagar, Mysuru northern suburbs, Srirangapatna, Karur, Tiruchirapalli (TN), Kumbakonam, Mayiladuthurai, Poompuhar.

Length: 765 Km

Merges into The Bay of Bengal

14.6 Indian Lakes:

India is known for its diverse natural resources. There are many resources out of which water bodies have a significant hold on the scenic beauty of our country. Lakes are one of India's primary sources of natural beauty, and there are many lakes in almost every state.

Lakes can be classified into various categories:

Sr. No	Category of Lake in India
1.	Freshwater Lakes
2.	Saltwater Lakes
3.	Natural Lakes
4.	Oxbow Lakes
5.	Artificial Lakes
6.	Crater Lakes

List of Important Lakes in India:

The list of important lakes in India is given below:

Lakes in India	State/UT
Pulicat lake	Andhra Pradesh
Kolleru Lake	Andhra Pradesh
Haflong Lake	Assam
Deepor Beel	Assam
Chandubi Lake	Assam
Kanwar lake	Bihar
Hamirsar Lake	Gujarat
Kankaria Lake	Gujarat
Badkhal Lake	Haryana
Brahma Sarovar	Haryana
Chandra Taal	Himachal Pradesh
MaharanaPratap Sagar	Himachal Pradesh
Dal Lake	Jammu Kashmir
Wular Lake	Jammu Kashmir

Agara Lake	Karnataka
Ulsoor Lake	Karnataka
Kuttanad Lake	Kerala
Sasthamkotta	Kerala
Bhojtal	Madhya Pradesh
Shivsagar	Maharashtra
Loktak lake	Manipur
Umiam Lake	Meghalaya
Tam Dil	Mizoram
Chilika Lake	Odisha
Harike	Punjab
Kanjli	Punjab
Sambhar Lake	Rajasthan
Tsomgo Lake	Sikkim
Chembarambakkam	Tamil Nadu
Hussain Sagar	Telangana
Govind Bhallabh Pant Sagar	Uttar Pradesh
Belasagar	Uttar Pradesh
Bhimtal	Uttarakhand
Kaliveli	Tamil Nadu

Significance of Lakes:

Lakes in India are a great source of:

- Irrigation
- Drinking-Water
- Navigation
- Livelihood

Essential Facts about Lakes:

- Wular Lake is one of the biggest freshwater lakes in Asia, and it was formed due to tectonic activity.
- Chilika Lake in Odisha is the largest saline water lake in India.

- Vembanad Lake in Kerala is the longest lake in India.
- Cholamu Lake in Sikkim is the highest lake in India.
- **Lonar Lake** is a notified National Geo-heritage Monument, saline, soda lake, located at Lonar in Buldhana district, Maharashtra.

14.7 Significance of Water Bodies in the Development of the Tourism Industry:

Clean water contributes to the recreation and tourism industry worldwide by accentuating beautiful beaches, white-water rivers, mountain lakes, and aquatic ecosystems such as coral reefs. Water has a powerful attraction for people. When people decide to plan vacations and travel for recreation, instruction, and pleasure, many have a solid tendency to head to the water. For example, a day at the beach provides recreation, relaxation, and a chance to renew the spirit. A third of all Americans visit coastal areas yearly, making 910 million trips while spending about $44 billion. Coastal tourism supports businesses like hotels, resorts, restaurants, outdoor outfitters, chartered fishing services, and travel agencies.

One of the largest service industries in the United States is travel and tourism, two broad categories which involve approximately 17 million jobs. Total travel and tourism expenditures in the United States for 2000 reached $582.5 billion, while total revenue was $99.5 billion. In increasing numbers, domestic and foreign travellers visit theme parks, natural wonders, and points of interest in major U.S. cities. Worldwide, tourism annually generates over 3.5 trillion dollars, a significant percentage of which involves water-related tourism.

Because of the popularity of tourism worldwide, coastal, lake, and riverfront development has dramatically increased in recent decades. For instance, riverfront developments often include convention centres, hotels, retail and entertainment facilities, housing, and sometimes an aquarium or discovery centre. With the emergence of riverfront parks, land near rivers is becoming highly desirable.

Popular Water-Related Activities:

Almost all Americans participate in some water-based recreation and tourism and (on average) spend about 10 percent of their disposable income on recreational activities, including water-related tourism. Popular water-related vacations may involve cruise ships, ecotourism, sport fishing, underwater diving, and canoeing and kayaking, to name a few.

Cruise Ships:

Cruise ships are elegant vessels featuring swimming pools, theatres, restaurants, and luxurious passenger accommodations. Some ships built in the 1980s were twice the size of their 1970s predecessors and carried over 1,000 passengers. In the 1990s, these floating entertainment centres became even more significant, some carrying nearly 5,000 passengers and crew. One half-billion-dollar ship featured amenities such as a giant floating casino, a luxurious 1,350-seat theatre, a 9-hole miniature golf course, an ice rink, and a shopping mall.

Some cruise operators also offer small ships for up-close exploration of wilderness waterways. The shallow draft of small vessels can take tourists along shorelines, alongside icebergs and calving glaciers, and through the narrowest navigable channels. * The small vessels offer a more informal and relaxed way to observe difficult-to-reach water passages and landmasses.

Ecotourism:

Ecotourism is a popular way to enjoy water resources while still conserving the integrity of nature. Ecotourism is tourism directed toward exotic, often threatened, natural environments, primarily to support conservation efforts and to observe wildlife. The fastest-growing segment of the world's tourism business, ecotourism, is expanding at 30 percent a year worldwide. Many tourism experts believe this increase is due to people becoming more knowledgeable about ecosystem values.

Sport Fishing:

Sport fishing is enjoyed in freshwater or salt water. Freshwater fishing takes place in such places as lakes, ponds, rivers, and streams. Game fish in these waters include trout, bass, and many other species. They range in size from

0.25 kilograms (0.5 pounds), such as bluegills, to as large as 45 kilograms (100 pounds), such as king salmon.

Salt-water fishing occurs in oceans, estuaries, and tidal rivers. Game fish in these waters tend to be larger than average freshwater fish. They include snappers, bonefish, striped bass, and tuna. Fish can be landed as large as 70 kilograms (150 pounds), such as sailfish and tarpon, and even as much as 225 kilograms (500 pounds), such as marlin.

Fishing expenditures are increasing, and participation rates outpace population growth in some areas. Much of recreational spending is tied to fish and wildlife, requiring high-quality water and habitat for survival.

Underwater Diving:

Underwater diving is entering and remaining below the surface to explore, work, or have fun. Diving is famous all over the world as a tourist activity. It is usually done in the ocean, but divers also explore other water bodies such as lakes, rivers, and ponds. Snorkelling is a popular underwater activity involving swimming face down on the surface (or just below). The essential equipment is a mask to observe underwater objects and aquatic plants and animals, fins for propulsion, and a slender plastic tube called a snorkel to breathe. Scuba divers carry a tank of air that allows them to breathe while diving deep underwater. The Professional Association of Dive Instructors estimates that there are now 6 million active scuba divers worldwide. They engage in many different types of diving: wreck, cave, commercial, and military. The most common form of scuba diving is sport diving, or recreational diving, which is practised at depths of less than 39 meters (130 feet). From these depths, divers can make a straight ascent to the surface. Diving beyond this limit requires advanced training.

In general, divers seek locations where the water is clear, the temperatures warm, and the marine life plentiful. Divers often visit areas with coral reefs because they are colourful and dense with life and provide shelter for many types of fish. The Caribbean is the most popular destination globally, with many designated marine parks or sanctuaries. The South Pacific, the Indian Ocean, and the Red Sea are other ordinary dive destinations. However, cold-

water divers may venture into cold waters when fully equipped with proper exposure protection (such as a thick wet or dry suit) to endure the harshness of such climates.

Canoeing and Kayaking:

Canoes and kayaks are small crafts that are pointed at both ends. Most canoes are open-topped boats, while kayaks are entirely enclosed except for an opening for each occupant. One or more persons can paddle both types of boats. One of the sport's most exciting activities is whitewater kayaking. Participants sit in closed-topped boats and propel themselves with a double-bladed paddle through fast-moving water. Kayakers wear waterproof clothing, a life vest, and a helmet.

14.8 Check Your Progress:

- **Throw a light on the critical water-based adventure sports activities:**

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- **How water bodies help in the promotion of the tourism industry at any destination:**

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14.9 Summary:

Water bodies are the lifeline of any country, and India is rich in all forms of water bodies. All Indian states have Rivers, lakes and ponds. Oceans and

seas cover the south. Due to these water bodies, India offers every category of water-based tourism product, such as

(a) places of recreation

(b) alternate means of transportation

(c) tourism, and they also help develop the town as a whole with its multiplier effects such as trade and commerce, local transportation, hotels and restaurants etc.

Water bodies are the first victims of urbanization; hence, their conservation/restoration is imperative for a healthy and sustainable town or city. However, the future of water bodies will be influenced not just by climatic factors but also by policy decisions, technological changes, better spatial planning, and good governance.

14.10 Glossary:

- **Water Body:** An area filled with water.
- **Water-Based Adventure Activity:** Any adventure activity performed inside or above a water body.

14.11 Self-Assessment Questions:

- Explain in detail about the different forms of water bodies found in India.
- Highlight the significance of water bodies in India's tourism industry.
- Discuss the popular water-based adventure sports activities.

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Unit-15
Climate of India: Introduction, Features, Types and Seasons of India

Structure:

15.0 Objectives:

The following are the key objectives of the present unit:

- To understand the climatic features of India.
- To know how climatic conditions affect the growth of the Indian tourism industry.

15.1 Introduction:

The climate of India consists of a wide range of weather conditions across a vast geographic scale and varied topography, making generalizations difficult. The climate in South India is generally hotter and extremely humid than North India's. South India is more humid due to nearby coasts. The southern half of the nation does not experience temperatures below ten °C in winter, and the temperature usually tends to exceed 40 °C (104 °F) during summer. Based on the Köppen system, India hosts six major climatic subtypes: arid deserts in the west, alpine tundra and glaciers in the north, and humid tropical regions supporting rain forests in the Southwest and the island territories. Many areas have starkly different microclimates, making it one of the most climatically diverse countries in the world. The country's meteorological department follows the international standard of four seasons with some local adjustments: winter (January and February), summer (March, April and May), monsoon (rainy) season (June to September), and a post-monsoon period (October to December).

India's geography and geology are climatically pivotal: the Thar Desert in the northwest and the Himalayas in the north work to create a culturally and economically crucial monsoonal regime. As Earth's highest and most massive mountain range, the Himalayas bar the influx of frigid katabatic winds from the icy Tibetan Plateau and northerly Central Asia. Most of North India is thus kept warm or is only mildly chilly or cold during winter; the same thermal dam keeps most regions in India hot in summer.

Though the Tropic of Cancer—the boundary between the tropics and subtropics—passes through the middle of India, the bulk of the country can

be regarded as climatically tropical. As in much of the tropics, monsoonal and other weather patterns in India can be strongly variable: epochal droughts, heat waves, floods, cyclones, and other natural disasters are sporadic but have displaced or ended millions of human lives. Such climatic events are likely to change in frequency and severity due to human-induced climate change. Ongoing and future vegetative changes in India's low-lying coastal areas are also attributed to global warming.

The climate of a country significantly affects its tourism industry. Tourists always avoid hot and humid destinations. Countries with pleasant climates receive good no. of tourists. India has all kinds of climates which affect its travel and tourism activities. Due to climatic characteristics, India's tourism season is classified into peak and off-season. The off-season starts in April and ends in September, and the Peak season continues from October to March because India has an enjoyable climate during this period. Foreigners prefer to visit India between October and March, and domestic tourists travel to South Indian states. Those interested in enjoying the snowfall can visit Shimla, Manali, Mussoorie, etc., during the winter season in India. Foreign tourists avoid summers because of India's hot weather, humidity and heavy rainfall during summers. Many domestic tourists prefer to travel in the summer because of the summer vacation for their children. Good knowledge of the climatic features of India is necessary for every travel agent because every tourist asks them about this.

15.2 Climatic Conditions of India:

The climate of India comprises a wide range of weather conditions across a large geographic scale and varied topography, making generalizations difficult. Analyzed according to the Köppen system, India hosts six major climatic subtypes, ranging from desert in the west to alpine tundra and glaciers in the north to humid tropical regions supporting rainforests in the southwest and the island territories. Many areas have starkly different microclimates. The nation has four seasons: winter (January and February),

summer (March to May), a monsoon (rainy) season (June to September), and a post-monsoon period (October to December).

India's unique geography and geology strongly influence its climate, particularly in the Himalayas in the north and the Thar Desert in the northwest. The Himalayas act as a barrier to the frigid Katabatic winds flowing down from Central Asia. Thus, North India stays warm or only mildly cold during winter; the same phenomenon makes India relatively hot in summer. Although the Tropic of Cancer—the boundary between the tropics and subtropics—passes through the middle of India, scientists consider the whole country tropical.

As in much of the tropics, India experiences unstable monsoonal and other weather conditions: significant droughts, floods, cyclones and other natural disasters occur sporadically, killing or displacing millions. Global warming further threatens India's long-term climatic stability. Climatic diversity in India makes the analysis of those issues complex.

15.3 Features of Indian Climate:

The climate is an essential element of the physical environment of humanity, for, although man usually thinks of himself as a creature of the land, he lives at the bottom of a deep 'ocean of air that surrounds the earth'. The climate is the aggregate of atmospheric conditions involving heat, moisture and air movement.

The exchange of energy and mass between the earth and the atmosphere over a long period results in conditions which we call climate (Richfield, 1979, p. 3). In a developing country like India, climatic characteristics have a dominant role in affecting the economic pattern, way of life, mode of living, food preferences, costumes and even the behavioural responses of the people. Despite many scientific and technological developments in India, our dependence on monsoon rainfall for successful agricultural activities has not been minimized. Similarly, vegetarianism, loose costumes with headgear, courtyards with wide verandahs in houses, festivals, and rituals have all been adjusted to the climatic and weather conditions.

The climate of India belongs to the 'tropical monsoon type', indicating the impact of its location in the tropical belt and the monsoon winds. Although a sizeable part of the country lying north of the Tropic of Cancer falls in the northern temperate zone, the shutting effects of the Himalayas and the existence of the Indian Ocean in the south have played significant roles in giving India distinctive climatic characteristics. The climatic conditions in India have the following characteristics:

- **The Reversal of Winds:**

  The climate of India is characterized by the complete reversal of the wind system with the change of seasons. During the winter, the winds generally blow from northeast to southwest (land to sea), while in the summer, the winds blow from southwest to northeast (sea to land).

- **Development of High and Low-Pressure Areas:**

  Due to low temperatures, a high-pressure area is formed over northern India during winter. On the other hand, during the summer, a thermally induced low-pressure area is formed over the northwestern part of India due to high temperatures.

  These alternate high and low-pressure areas control the direction, intensity and flow of winds in the respective seasons. That is why the winds are generally offshore and dry during the winter and onshore and wet during the summer.

- **Seasonal and Variable Rainfall:**

  The annual rainfall received in various parts of India varies regionally and seasonally.

  About 80 per cent of the total rainfall is received during the short rainy season (June to September). As the rainfall is in the form of heavy downpours, it creates problems of floods and soil erosion. Sometimes, there is continuous rainfall for many days, and sometimes a long dry spell.

- **Multiple Seasons:**

  A constant and continuous change of weather has been observed over India. Although there are three main seasons: summer, winter and rainy, the

number may increase to six in many parts. This diversity of seasons shows India's quickly changing nature of weather conditions.

15.4 Factors Affecting Indian Climate:

According to the meteorological department, six decisive factors influence India's climatic conditions. These factors are:

- **Himalayan mountains:**

  As mentioned earlier, India is separated from the rest of Asia by the impenetrable wall of the Himalayan mountain ranges. These ranges protect India from Central Asia's bitterly cold and dry winds during winter. Further, these mountain ranges act as an effective physical barrier for rain-bearing southwest monsoon winds to cross the northern frontiers of India. Thus, the Himalayan mountain ranges are a climatic divide between the Indian Sub-continent and Central Asia.

- **Latitude:**

  We have already studied the Tropic of Cancer, which divides the tropical and subtropical parts of the earth. It crosses India from the middle of Rann of Kutch in the west to Mizoram in the East because the Indian climate includes tropical and sub-tropical features.

- **Surface distance from the sea:**

  Areas near the coast have equable or marine climates. On the contrary, interior locations lack the sea's moderating influence and experience extreme or continental climates. For example, the annual temperature range at Kochi does not exceed 03 °C but is as high as 20°C at Delhi. Similarly, the yearly rainfall in Kolkata is 119 cm, which falls to a low of 24 cm in Bikaner.

- **Physiography:**

  The physiography of India significantly impacts significant elements of climate such as temperature, atmospheric pressure, direction of winds and the amount of rainfall. The physical map of India is very closely related to the country's climatic conditions. Places at higher altitudes have cool climates even though they are in the peninsular India, i.e., Ooty.

Several hill stations and the Himalayan ranges are much more relaxed than those in the Great Plain of North India. The most significant control of physiography in peninsular India is seen in rainfall distribution. The southwest monsoon winds from the Arabian Sea strike almost perpendicular at the Western Ghats and cause copious rainfall in the Western Coastal plain and the western slopes of the Western Ghats.

On the contrary, vast areas of Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu lie in the rain shadow or leeward of the Western Ghats and receive scanty rainfall. The physiographic control of the mighty Himalayas over the country's climate goes without saying.

The monsoon winds from the Bay of Bengal are bifurcated into two branches by the physiographic features. One branch goes to the Brahmaputra valley through the Meghalaya plateau. Here, the funnel-shaped Cherrapunji Valley forces the moisture-laden monsoon winds to rise along the steep slope, making this area the wettest place in the world.

- **Altitude:**

India is the land of the Himalayas, which has a height of about 6000 metres. The Himalayan mountain range stops the cold winds continuously trying to enter the Indian territory from central Asia. That is why India has a milder winter than other parts of central Asia.

In addition to the above, India's climatic conditions are highly dependent upon wind flow, rainfall, and temperature, eventually influencing seasons and discerning the dynamics of wetness and dryness.

- **Distance from the Sea:**

Areas near the coast have equable or marline climates. On the contrary, interior locations lack the sea's moderating influence and experience extreme or continental climates. For example, the annual temperature range at Kochi does not exceed 3°C but is as high as 20°C in Delhi. Similarly, the yearly rainfall in Kolkata is 119 cm, which falls to a low of 24 cm in Bikaner.

15.5 Climatic Regions of India:

Some of the most essential climatic regions of India are as follows:

1. Tropical Rain Forest (Am):

It is found in west Coastal Plains, Sahyadris and parts of Assam. The temperature is high, not falling below 18.2°C and rising to 29°C in April or May. Crops like tea, coffee and spices are characteristic vegetation.

2. Tropical Savanna (Aw):

It is found in peninsular areas except for the semi-arid zone on the lee side of Western Ghats. The mean temperature is above 18.2°C and rising as high as 32°C. The natural vegetation all over the area consists of savanna.

3. Tropical Semi-Arid Steppe Climate (Bs):

It runs southwards from Central Maharashtra to Tamil Nadu on the left side of Western Ghats and Cardamom Hills. The temperature varies from 20°C to 23.8°C (December) and 32.8°C (May). The climate is suitable for dry climate and livestock rearing.

4. Tropical and Sub-Tropical Steppe Climate (BSn):

This type of climate occurs over a broad crescent from Punjab to Kutch between the Thar Desert to its west and the more humid climate of the Ganga Plain and the peninsula to its east and south, respectively. The temperature varies from 12°C (January) to 35°C (June), and the maximum temperature is up to 49 °C.

5. Tropical Desert (BWn):

It is found in western parts of Barmer, Jaisalmer, Bikaner district of Rajasthan and a good part of Kutch. The mean monthly temperature is uniformly high (34.5°C).

6. Humid Sub-Tropical Climate with Dry Winters (CWa):

It comprises the foothills of the Himalayas, Punjab, Haryana plains, Uttar Pradesh, Bihar, Assam, and east of the Aravalli Range. Winters are dry except for a small quantity of rain from westerly depressions.

7. Mountain Climate:

It is seen in mountainous regions that rise above 600 m, such as the Himalayas and Karakoram ranges. There is a sharp contrast between temperatures of sunny and shady slopes and high variability of rainfall. The Trans-Himalayan region, i.e., Ladakh, where the southwest monsoon fails to reach, has a dry and cold climate and sparse and stunted vegetation.

15.6 Differences between Climate and Weather:

The weather and climate both include some similar atmospheric characteristics, but simultaneously, we can see many differences between these two. The primary differences between Climate and Weather are discussed below:

Sr. No.	Weather	Climate
1.	The day-to-day information of atmospheric changes in a particular area at a specific time is called weather.	Climate is the statistical information on the average weather condition of a specific region for more than 30 years.
2.	The weather of a place includes short-term atmospheric conditions. Also, these atmospheric conditions can change within a short period, such as minutes, hours, days, etc.	The climate of a country or zone includes the long-term average atmospheric conditions. Thus, the climate is the average weather information observed over decades.
3.	The atmospheric elements of weather are air pressure, humidity, wind temperature, rain, cloudiness, storms, snow, precipitation, etc. These conditions can affect the weather of the place within a short time.	When the atmospheric elements of weather are observed over the decades, those become the affecting conditions of climate. These conditions can include temperature, humidity, wind, etc.
4.	The weather of a particular location can impact day-to-day human life in ways such as occupation, transportation, communication, agriculture, etc.	The climate of a country significantly impacts industries, agriculture, and the population's livelihood.
5.	Weather conditions change very frequently.	Climate conditions change over a long period.

15.7 Different Seasons of India:

Important seasons found in India are discussed below:

1. Cold Weather Season:

Th coldest months of this season are January and February. The temperature is between 10°C to 15°C in Northern India and about 25°C in Southern India.

2. Hot Weather Season:

The North Indian region experiences a well-defined hot weather season during April and May. The temperature starts rising by the middle of March, and by mid-May, Mercury will have touched 41° to 42°C. The temperature even exceeds 45°C in areas of central and north-west India.

A striking feature of the hot weather season is the Loo. It is a hot and dry wind which blows in Northern India and Pakistan and can cause heat stroke. The southern part of India does not experience any hot weather season. The highest temperature is recorded in March and May.

3. The Rainy Season:

The inflow of south-westerly monsoons brings the rainy season to India. The monsoon may burst in the first week of June or even earlier in the coastal areas, while in the interior, it may be delayed to the first week of July. With the onset of rain, the temperature starts falling. The Indian sub-continent receives most of its rainfall during the southwest monsoon period.

4. The Season of Retreating Monsoon:

The southwest monsoon begins to retreat from northern India by the second week of September. The pattern of retreat also shows interesting regional variations. High-day temperatures characterize the weather during the season, but nights are pleasant, with the mean minimum temperature going down to 20°C or even lower.

15.8 Check Your Progress:

- **Differentiate between climate and weather:**

- **Highlight the key features of the Indian climate:**

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15.9 Summary:

So, the climatic features of a destination significantly affect the tourism industry. Tourists always avoid the hot summer season with humidity and heavy rainfall. In India, tourists prefer to travel in the winter season because most of them come from frigid climatic regions of the world, and it is difficult for them to face the extensive summers in India. In Summer Season, only domestic tourists visit the nearby hilly states of India. All tourism professionals should learn about the climatic conditions of essential tourist destinations because they are the central curiosity of every tourist, and this factor affects tourist destinations a lot.

15.10 Glossary:

- **Season:** The year when something is familiar or popular or when something usually happens or is done.
- **Weather:** According to Cambridge Dictionary, "weather is the conditions in the air the earth such as wind, rain, or temperature, especially at a particular time over a particular area".

15.11 Self-Assessment Questions:

- Highlight the significance of climatic conditions for India's tourism industry.
- What are the different climatic regions of India?
- Throw a light on the different seasons of India.
- Why do foreign tourists not prefer to visit India during the summer season?

15.12 References and Suggested Readings:

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