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INFUSION NOTES
WHEN ONLY THE BEST WILL DO

U.P.S.C.

ENGLISH MEDIUM

LATEST EDITION

HANDWRITTEN NOTES

PRE+ MAINS

General Study paper - 1

Part - 1 Geography (India + World)

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PREFACE

Dear Aspirants, Presented Notes ***"UPSC – CSE (PRE + MAINS)"*** *have been prepared by a team of teachers, colleagues and toppers who are expert in various subjects.*

These notes will help the Aspirants to the fullest extent possible in the examination Of Civil Services conducted by the ***UNION PUBLIC SERVICE COMMISSION (UPSC).***

Finally, despite careful efforts, there may be chances of some shortcomings and errors in the notes / So your suggestions are cordially invited in Infusion notes.

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INDIAN GEOGRAPHY

CHAPTER – 1

INDIA'S PHYSICAL SETTING

Dear aspirants, today we shall study about the surface of the earth on which we live in detail. We know that the surface of the earth is not a plain platform. It is distributed unevenly with a variety of landforms like mountains, hills, plateaus, plains, ravines, cliffs etc. Why is the surface of the earth uneven? What changes in the earth's surface? What process makes mountains and hills? The answer to all the questions above – Geomorphic Processes.

Geomorphic Process

The formation and deformation of landforms on the surface of the earth are a continuous process which is due to the continuous influence of external and internal forces. The internal and external forces causing stresses and chemical action on earth materials and bringing about changes in the configuration of the surface of the earth are known as geomorphic processes.

Endogenic Forces:

Endogenic forces are those internal forces which derive their strength from the earth's interior and play a crucial role in shaping the earth crust.

Examples – mountain building forces, continent building forces, earthquakes, volcanism etc.

The endogenic forces are mainly land building forces.

The energy emanating from within the earth is the main force behind endogenic geomorphic processes. This energy is mostly generated by radioactivity, rotational and tidal friction and primordial heat from the origin of the earth.

Exogenic Forces

Exogenic forces are those forces which derive their strength from the earth's exterior or origin within the earth's atmosphere.

Examples of forces – the wind, waves, water etc.

Examples of exogenic processes – weathering, mass movement, erosion, deposition.

Exogenic forces are mainly land wearing forces.

Exogenic forces can take the form of weathering, erosion, and deposition. Weathering is the breaking of rocks on the earth's surface by different agents like rivers, wind, sea waves and glaciers. Erosion is the carrying of broken rocks from one place to another by natural agents like wind, water, and glaciers.

The actions of exogenic forces result in wearing down (degradation) of relief/elevations and filling up (aggradation) of basins/ depressions, on the earth's surface. The phenomenon of wearing down relief variations of the surface of the earth through erosion is known as gradation.

Geomorphic Agents

Running water, groundwater, glaciers, the wind, waves, and currents, etc., can be called geomorphic agents.

Geomorphic Processes vs Geomorphic Agents

A process is a force applied on earth materials affecting the same. An agent is a mobile medium (like running water, moving ice masses, the wind, waves, and currents

etc.) which removes, transports and deposits earth materials.

Earth Movements

They are the movements in the earth's crust caused by the endogenic or exogenic forces. These movements are also termed as Tectonic movements.

The term 'Tectonic' derived from the Greek word 'Tekton' which means builders.

As the word means, these movements are mainly builders and have been responsible for building up different types of landforms.

We also know that endogenic forces (internal) and exogenic forces (external) are the two main types of geomorphic processes which result in earth movements. In this post, let's study endogenic forces in detail.

Endogenic Forces – Internal forces in detail

Endogenic forces can be classified as slow movements (diastrophic) and sudden movements. Slow movements cause changes very gradually which might not be visible during a human lifetime.

Slow Movements (Diastrophic forces)

- Diastrophic forces refer to forces generated by the movement of the solid material of the earth's crust. All the processes that move, elevate or build portions of the earth's crust come under diastrophism. Diastrophism includes:
- orogenic processes involving mountain building through severe folding and affecting long and narrow belts of the earth's crust.
- epeirogenic processes involving uplift or warping of large parts of the earth's crust.
- earthquakes involving local relatively minor movements.
- plate tectonics involving horizontal movements of crustal plates.
- Slow movements can again be classified as vertical movements and horizontal movements.

Vertical Movements (Epeirogenic movements):

- Vertical movements are mainly associated with the formation of continents and plateaus. They are also called as Epeirogenic movements
- The broad central parts of continents are called cratons and are subject to epeirogeny.
- They do not bring any changes in the horizontal rock strata.
- While they cause upliftment of continents, they can also cause subsidence of continents.
- These movements originated from the center of the earth.

Horizontal Movements (Orogenic Movements):

- Horizontal forces act on the earth's crust from side to side to cause these movements.
- They are also known as orogenic movements (mountain building).
- They bring a lot of disruptions to the horizontal layer of strata leading to a large structural deformation of earth's crust.
- They can be classified as forces of compression and forces of tension.
- Forces of compression are the forces which push rock strata against a hard plane from one side or from both sides.
- The compressional forces lead to the bending of rock layers and thus lead to the formation of Fold Mountains.

- Most of the great mountain chains of the world like the Himalayas, the Rockies (N. America), the Andes (S. America), the Alps (Europe) etc are formed in this manner.
- Forces of tension work horizontally, but in opposite directions.
- Under the operation of intense tensional forces, the rock stratum gets broken or fractured which results in the formation of cracks and fractures in the crust.
- The displacement of rock upward or downward from their original position along such a fracture is termed as faulting.
- The line along which displacement of the fractured rock strata takes place is called the fault line.
- Faulting results in the formation of well-known relief features such as Rift Valleys and Block Mountains. (E.g. Vindhya and Satpura Mountains)
- A rift valley is formed by sinking of rock strata lying between two almost parallel faults. (E.g. Valley of Nile, Rift valley of Narmada and Tapti)
- Rift valleys with steep parallel walls along the fault are called Graben and the uplifted landmass with steep slopes on both sides are called Horst.
- The very steep slope in a continuous line along a fault is termed as Escarpment.
- A volcano is an opening in the earth's crust through which gasses, molten rocks materials (lava), ash, steam etc. are emitted outward in the course of an eruption. Such vents or openings occur in those parts of the earth's crust where the rock strata are relatively weak. Volcanic activity is an example of an endogenic process. Depending upon the explosive nature of the volcano, different landforms can be formed such as a plateau (if the volcano is not explosive) or a mountain (if the volcano is explosive in nature).

Size and location

1. In area, India is the seventh largest country in area, and the second largest in population after China in the world. India is the cradle of human civilization and the murder of history. India is a vast country. Laying entirely in the Northern hemisphere the mainland extends between latitude 8°4N and 37°6N and longitude 68°7E and 97°25E.
2. The topic of cancer (23°30N) divides the country into almost two equal parts.
3. To the southeast and southwest of the mainland, live the Andaman and Nicobar Islands and the Lakshadweep Islands in the bay of Bengal and Arabian sea respectively.
4. The mainland of India extends from Kashmir in the north to Kanyakumari in the south and Arunachal Pradesh in the east to Gujarat in the west.
5. India's territorial limit further extends towards the sea up to 12 nautical miles (about 21.9 km)from the coast.
6. The latitudinal and longitudinal extent of India are roughly 30 degrees , where the actual distance measured from the north to south is 3214 km ,and that from east to west is only 2933 km.
7. This difference is based on the fact that the distance between two longitudes decreases towards the pole whereas the distance between two latitudes remains the same everywhere.
8. From the values of latitude it is understood that the southern part of the country lies within the tropics and the northern part lies in the subtropical zone or the warm temperate zone. This location is responsible for large variation in landforms, climate , soil types and natural vegetation in the country.

9. Longitudinal extent and its implication on the Indian people. There is a variation of nearly 30 degrees which causes a time difference of nearly two hours between the easternmost and the westernmost part of our country. While the sun rises in the northeastern state about two hours earlier as compared to Jaisalmer, the watches in Dibrugarh, imphal in the east and the Jaisalmer, Bhopal aur Chennai in the other parts of India show the same time.
10. There is a general understanding among the countries of the world to select the standard meridian in multiple of 7 degree 30 minutes of longitude. That is why 82 degree 30 minutes E had been selected as the standard meridian of India. Indian standard time is ahead of Greenwich mean Time by 5 hours 30 minutes. There are some countries where there are more than one standard meridian due to their vast east to west extent. For example the USA has 7 time zones
11. The Tropic of Cancer passes through Gujarat Rajasthan Madhya Pradesh Chhattisgarh Jharkhand Tripura Mizoram and West Bengal..

Extreme points of India

- **Southernmost Point- Indira point**
- **Northernmost point-Indira col (Jammu and Kashmir)**
- **Westernmost point- guhar Moti Kutch (Gujarat)**
- **Easternmost point-kibithu (Arunachal Pradesh)**
- **Southernmost point of mainland-Kanyakumari (Tamil Nadu)**

i. India has a common border with Afghanistan, Pakistan, China,Nepal, Bhutan,Myanmar,and Bangladesh.
ii. Northwest :- Pakistan and Afghanistan.
iii. North :- China, Nepal and Bhutan.
iv. East :- Myanmar and Bangladesh.
v. South :- Sri Lanka and Maldives.

- Sri Lanka is separated from India by a narrow channel of sea known as the palk strait and gulf of mannar.

28 States of India and union territories:

- **The States Reorganisation Act of 1956 established the UTs. The Constitution (Seventh Amendment) Act of 1956 introduced the notion of the UT.**
- With effect from October 31st 2019, the state of Jammu and Kashmir has been officially bifurcated into the Union Territories (UT) of Jammu & Kashmir and Ladakh. It is important for aspirants preparing for the IAS Exam to know how the political map of India has changed with the creation of two new Union Territories.
- This article throws light upon how the political map of India has changed after the withdrawal of special status given to Jammu and Kashmir (J&K) under Article 370 by the centre.

Jammu and Kashmir Reorganisation Act, 2019:

- On the 5th of August 2019, the Jammu and Kashmir Reorganisation Bill, 2019 was introduced in the Rajya Sabha.
- The bill sought to bifurcate the state of Jammu & Kashmir into two Union Territories – the UT of Jammu and Kashmir and the UT of Ladakh.
- With both the houses of parliament giving their assent to the bill, the number of states and Union Territories in India has changed.
- India will now have 28 states and the number of Union Territories in the country will be 8 (Dadra & Nagar Haveli and Daman & Diu were merged and the

merger came into effect on 26th January 2020.)

States :. Capital

- Andhra Pradesh–Amaravati
- Arunachal Pradesh–Itanagar
- Assam–Dispur
- Bihar–patna
- Chhattisgarh–Raipur
- Goa–Panaji
- Gujarat–Gandhinagar
- Haryana–Chandigarh
- Himachal Pradesh–Shimla
- Jharkhand–Ranchi
- Karnataka–Bengaluru
- Kerala–Thiruvananthapuram
- Madhya Pradesh–Bhopal
- Maharashtra–Mumbai
- Manipur–Imphal
- Meghalaya–Shillong
- Mizoram–Aizawl
- Nagaland–Kohima
- Odisha–Bhubaneswar
- Punjab–Chandigarh
- Rajasthan–Jaipur
- Sikkim–Gangtok
- Tamil Nadu–Chennai
- Telangana–Hyderabad
- Tripura–Agartala
- Uttarakhand–Dehradun (Winter),Gairsain (Summer)
- Uttar Pradesh–Lucknow
- West Bengal–Kolkata

Union Territories:

- Andaman and Nicobar Islands –Port Blair
- Chandigarh–Chandigarh
- Dadra and Nagar Haveli & –Daman and Diu
- Delhi – New Delhi
- Jammu & Kashmir–Srinagar (Summer), Jammu (Winter)
- Ladakh–Leh (summer), Kargil (winter)
- Lakshadweep–Kavaratti
- Puducherry–Puducherry

Union Territories: Constitutional Provisions:

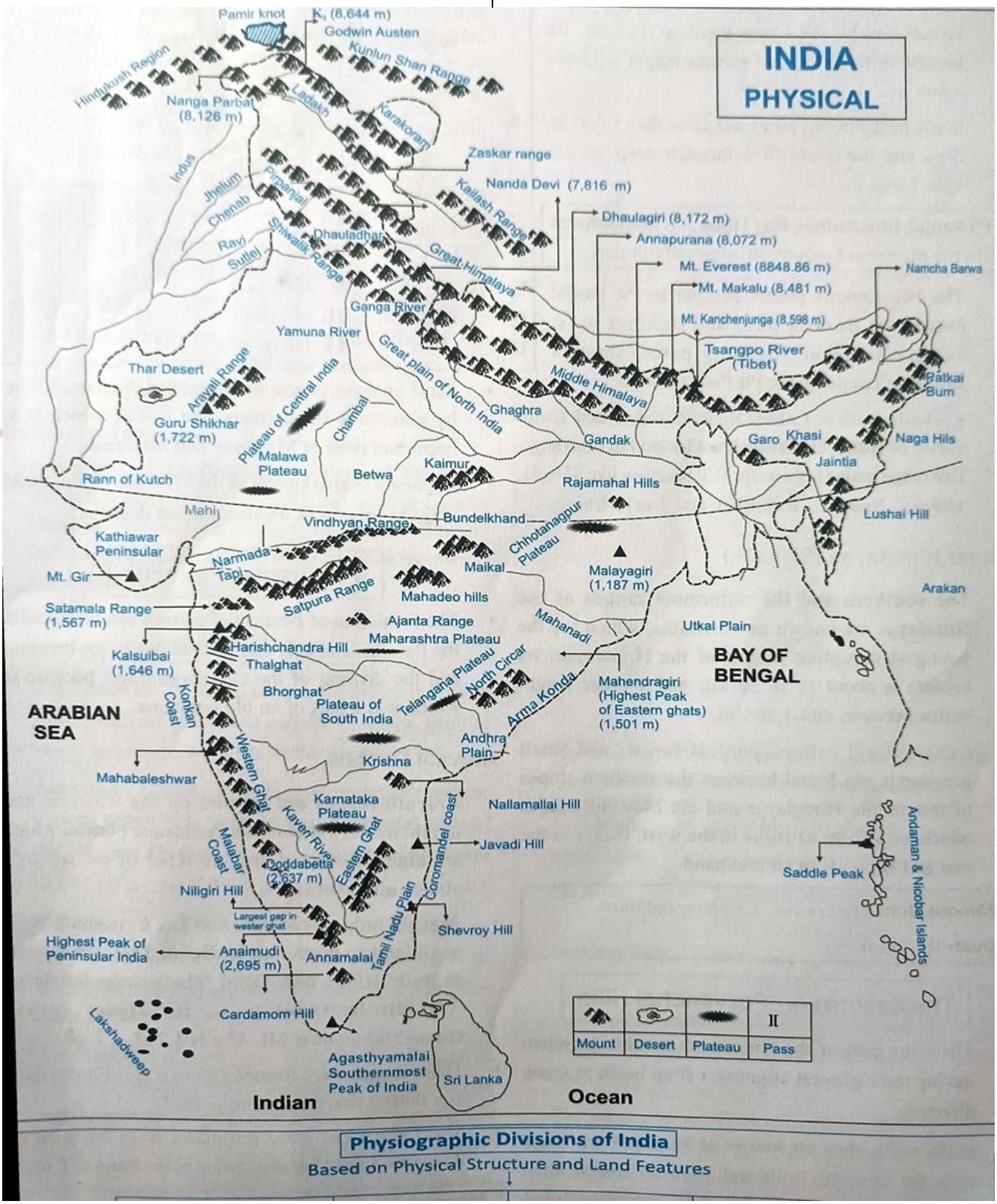
- The union territories are dealt with in **Articles 239 to 241 of Part VIII of the Constitution,** and their administrative system is not consistent.
- Article 239 of the original Constitution allowed the President to administer UTs directly through the administrators. In 1962, Parliament passed Article 239A, allowing it to construct legislatures for the UTs.
- The Constitution (69th Amendment) Act, 1991 inserted Article 239AA to the Indian Constitution, which has unique provisions for the National Capital Territory of Delhi.
- The President of India has the power to make regulations for the peace, progress, and good government of the Andaman and Nicobar Islands, Lakshadweep, Dadra and Nagar Haveli, Daman and Diu, and Puducherry.
- The President's regulation has the same force and effect as a law passed by Parliament.
- The Indian Parliament may establish a High Court for a Union Territory by act or proclaim any court in any territory to be High Court.
- The National Capital Territory of Delhi is the only one that has its own High Court, with the Supreme Court being the highest court in the country.
- The Union Territories are administered by the Centre through administrators.

CHAPTER – 3

PHYSIOGRAPHIC DIVISIONS OF INDIA

On the basis of physiography India is divided into the following divisions.

1. *The Himalayan mountains.*
2. *The great plains of India.*
3. *The peninsular plateau.*
4. *The coastal plains.*
5. *The islands.*



The Himalaya (Himadri) :

The Himalayas are one of the youngest, loftiest and mightiest mountains in the world. They are about 2400 km from the Indus George in the west to the Brahmaputra George in the East. Their width varies from about 500 km in Jammu and Kashmir to about 200 km in Arunachal Pradesh. The southern boundary of the Himalayas is formed by the foothills of Shiwaliks (300m contour), but the northern boundary is obscure and merges with the Tibet plateau. These mountains form an Arc. This helps keep the cold Arctic winds from reaching the tropical landmass.

The great Himalayas are classified into four parallel longitudinal zones which have distinguished graphically or geological features as follows:

1. Tibetan or trans Himalayas including karakoram, Ladakh and (zanskar) ranges.
2. Inner or the greater Himalaya.
3. Lesser or the lower Himalaya.
4. Outer or Shiwalik.

Trans Himalayas:-

(1)- it is also called Tibetan Himalayas. This is about 40 km wide and 965 km long consisting of Karakoram , Ladakh, Zanskar and Kailash ranges, with an average height between 3100 - 3700m.

(2)- it is separated from the European plate by the Indus - Tsangpo suture zone.

(3)- Ladakh range acts as a water divide between Indus and its tributary shyok.

(4) - The highest peak of India K2 (Godwin Austin) (8611m) is located in the Karakoram range.

The greater Himalayas or Himadri –

(1) the greater Himalayas run from Nanga parbat (8126m) in Kashmir to namcha barwa (7756m) in Arunachal Pradesh.

(2) It is from the northernmost line of high ranges, over 6000 m in altitude,covered with perpetual snows and contains several of the highest peaks of the world.

(3) the India - Tibet road which join Shimla with Gangtok in western Tibet passes through the Shipki La in the Sutlej valley.Another trade route connects kalimpong in West Bengal with Lhasa through Jelep La in the chumbi valley in Sikkim.

(4) Mount Everest is the highest peak in the world.

(5) The main Central thrust separates the greater Himalayas from the lesser Himalayas.

The lesser or lower Himalayas

(1) the lower Himalayas consist of middle ranges and are closely related to the inner Himalayas.

(2) the important ranges of lesser Himalayas including pir panjal and Dhauladhar stretching in Jammu and Kashmir and Himachal Pradesh.

(3) the Pir Panjal range is the lowest and the most important one. It runs for 400 km between Jhelum and Beas.

(4) the Pir Panjal (3494m) and the Banihal (2832m) are the two important passes in this range. The Jammu - Srinagar road and Jawahar Tunnel passes through the Bini Lal pass.

(5) several hill stations like Simla, Chali, Chakrata, Mussoorie Nainital , Ranikhet , Almora etc. are situated over this range.

(6) Kangra valley, Kashmir valley and Kullu valley are found in lesser Himalayas.

Shiwaliks or outer Himalayas

(1) It is separated from the lesser Himalayas at some places by flat-bottomed valleys.

(2) it is the southernmost part of the Himalayas. It has relatively steeper Southern slopes.

(3) between the northern slopes of Siwaliks and Southern slopes of lesser Himalayas lie flat floored structural valleys called Dun in the west (such as Dehradun) and Duar in the East **(Haridwar , kotdwar).**

(4) The Shivalik range makes almost a continuous change of more than 2400 km from the Indus gorge in the Northwest to the Brahmaputra in Assam.

- The Himalaya have great climatic, socio-economic and cultural significance for the people of India. Their significance may be summarized as under.

(1) **Climatic influence:** the Himalaya influences the climate of India significantly. They interact with the summer monsoon coming from the Arabian sea and the Bay of Bengal and protect the great plains of India from the Siberian cold winds in winter.

- **Defense :** The Himalaya protects India from the outside Invader. In fact India has never been attacked from the Northern side.

(2) **Agricultural significance :** Rivers and Himalayas deposit a lot of sediment on its footheel from which are formed India's most fertile agriculture ground known as Northern plains.

(3) **source of rivers:** the Himalayas is a source of many perennial rivers such as Ganga, Indus and Brahmaputra which arise from various glaciers, lakes and springs in the Himalayas.

(4) **Generations of hydro – electricity :** time Himalayan valleys with natural waterfalls offers best location for construction of dams and many multipurpose projects such as Barkha - Nangal dam pong , Giri - Bata, Silal , Dulhasti , Baglihar projects, Tehri dam, Koteshwar, etc are located there.

(5) **Minerals :** The Himalayas are rich in metallic and nonmetallic minerals. Coal is found in Kashmir, copper, lead, zinc, nickel, Cobalt, tungsten, gold silver, limestone , precious and semi-precious stones gypsum , magnesite , marble and building materials etc.are the other minerals found in the states of Uttarakhand, Himachal Pradesh, Sikkim, Arunachal Pradesh and Jammu and Kashmir.

(6) **Tourism significance –** The Himalayas are known for their beautiful landscape. Many hill stations like Srinagar, pahalgam, Gulmarg, sonmarg,Dharamshala, Shimla, Mussoorie, Nainital, Ranikhet, Dehradun, Kullu,Manali ,Almora ,Darjeeling are important tourist centers.

(7) **Pilgrimages :** The Himalayas are Abode to many shrines and pilgrimage center such as Amarnath, Kedarnath, Badrinath, Vaishno Devi ,Kailash, Gangotri yamunotri, jwalaji, Hemkund etc.

The Himalayas, the abode to the highest peaks on the earth, are an incredible mountain system of Asia and a great wall between the Plateau of Tibet to the north and the alluvial plains of the Indian subcontinent to the south. It is divided longitudinally into 4 divisions from west to east.

Longitudinal Division of Himalayas:

Indian Himalayas are divided longitudinally into 4 divisions from west to east.

- The Kashmir /Punjab/ Himachal Himalayas
- The Kumaun Himalayas
- The Central/ Nepal Himalayas
- The Assam/ Eastern Himalayas

Kashmir /Punjab/ Himachal Himalayas:

- Punjab Himalayas are located b/w Indus gorge and Satluj gorge
- They are 560kms long, width 320kms wide
- It has Zaskar range forming the northern boundary and the Shiwaliks, the Southern boundary
- The region has ridge and valley topography (Kashmir Valley is the syncline basin) which have been formed by the Lacustrine deposits of River Jhelum.
- It has a number of ox-bow lakes like Wular lake, Dal lake, etc
- It is also called "Vail of Kashmir" and Lacustrine deposits are Karewas, which have special nutrients that help in growing Saffron, from Pulwama to Pampore.
- It receives 100cm rainfall and snow during winters
- It is surrounded by sloppy mountains of Zanskar and Pir Panjal where alpine grasslands are called Bugyals or Marg, like Sonmarg, Gulmarg.
- It is also called "Heaven of the Earth"
- Other ranges are Ratanpur, which joins Pir Panjal.
- The only gateway to Kashmir is the Banihal pass which has the Jawahar tunnel (Second Largest in India)
- There are several passes in the Greater Himalayas which connect Kashmir Valley to Ladakh and other regions like Burzil pass, Zozila pass.

Kumaun Himalayas:

- Located b/w Satluj and Kali gorges
- Kumaun Himalayas extend for 320kms
- The major mountain ranges include Nag Tibba, Dhaula Dhar, Mussoorie, and parts of the Greater Himalayas.
- Major peaks include Nandadevi, Kamet, Badrinath, Kedarnath, etc.
- There are several glaciers and ice caps especially in Uttarakhand giving rise to a number of rivers – Gangotri, Yamunotri, Pindari, etc.
- It receives snowfall during winters and has coniferous forests above 3200m and Deodar forest (Deodar forest) b/w 1600-3200m.
- This region has two important basins Bhagirathi Plain and Doons. Kulu, Manali, and Kangra are tectonic valleys.
- Hill stations are famous because of their climate and colonial heritage
- This region has 200cm of rainfall and it is more vegetated than the Kashmir Himalayas but prone to Seismicity and landslides because the rocks are fractured and fragile especially the lesser Himalayas is composed of loose rocks like shale, limestone, and conglomerates.

Central/ Nepal Himalayas:

- Located between river Kali in the west and river Tista in the east.
- It is 800kms long
- Some of the world-famous peaks Mt. Everest(Sagarmatha), Kanchenjunga, Makalu, Annapurna, Gosainthan, and Dhaulagiri are located here.
- These mountains have orthoclinal plan and have the famous Kathmandu valley.
- The Lesser Himalaya is known as Mahabharat Lekh in this region.
- The range is crossed by rivers like Ghagra, Gandak, Kosi, etc.

Eastern Ghats:

- The Eastern Ghats run almost parallel to the east coast of India leaving broad plains between their base and the coast.
- It is a chain of highly broken and detached hills starting from the Mahanadi in Odisha to the Vagai in Tamil Nadu. They almost disappear between the Godavari and the Krishna.
- They neither have structural unity nor physiographic continuity. Therefore these hill groups are generally treated as independent units.
- It is only in the northern part, between the Mahanadi and the Godavari that the Eastern Ghats exhibit true mountain character. This part comprises the Maliya and the Madugula Konda ranges.
- The peaks and ridges of the Maliya range have a general elevation of 900-1,200 m and Mahendra Giri (1,501 m) is the tallest peak here.
- The Madugula Konda range has higher elevations ranging from 1,100 m and 1,400 m with several peaks exceeding 1,600 m. Jindhagada Peak (1690 m) in Araku Valley, Arma Konda (1,680 m), Gali Konda (1,643 m), and Sinkram Gutta (1,620 m) are important peaks.
- Between the Godavari and the Krishna rivers, the Eastern Ghats lose their hilly character and are occupied by Gondwana formations (KG Basin is here).
- The Eastern Ghats reappear as more or less a continuous hill range in Cuddapah and Kurnool districts of Andhra Pradesh where they are called as Nallamala Range {Naxalite hideout in AP} with a general elevation of 600-850 m.
- The southern part of this range is called the Palkodna range.
- To the south, the hills and plateaus attain very low altitudes; only Javadi Hills and the Shevroy-Kalrayan Hills form two distinct features of 1,000 m elevation.
- The Biligiri Rangan Hills in Karnataka (at its border with Tamil Nadu) attain a height of 1,279 m.
- Further south, the Eastern Ghats merge with the Western Ghats.
- Geologically they are Precambrian fold mountains and the younger contemporary to Aravalli.
- Presently they are highly dissected, fragmented and appear as hills of denudation running roughly along the eastern coast
- Average Elevation – 150-300m (Very low)
- They are made of different rock systems.
- Khondalite is the major rock system, found in the central part of AP, Orissa.
- The Southern Part in TN has Granitic Gneiss.
- Peninsular rivers have carved out wide U shaped valleys. Thus, these mountains are scattered.
- In TN, they are called Shevaroy Hills, Javadi Hills.
- In AP, they are called Palkonda range, Velikonda range and Nalamallai hills
- It is called Northern Circars b/w Godavari and Mahanadi basin, which are the highest part of the Eastern Ghats.
- In Orissa, the highest point is Mahendragiri in Ganjam District.
- These mountains are hardly watershed, thus no rivers except R.Indravati emerge from the Eastern Ghats.

The Indian coastline which is 7516.6 km long covers 6100 km of mainland coastline along with the Andaman, Nicobar, and the Lakshadweep islands.

- The straight and regular coastline of India is the result of the faulting of the Gondwana land during the Cretaceous period.

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

1. **Western Coastal Plains of India**
2. **Eastern Coastal Plains of India**

West Coast of India:

- The west coast strip extends from the Gulf of Cambay (Gulf of Khambhat) in the north to Cape Comorin (Kanyakumari).
- Starting from north to south, it is divided into (i) the Konkan coast, (ii) the Karnataka coast and (iii) the Kerala coast.
- It is made up of alluvium brought down by the short streams originating from the Western Ghats.
- It is dotted with a large number of coves (a very small bay), creeks (a narrow, sheltered waterway such as an inlet in a shoreline or channel in a marsh) and a few estuaries. {Marine Landforms}
- The estuaries of the Narmada and the Tapi are the major ones.
- The Kerala coast (Malabar Coast) has some lakes, lagoons and backwaters, the largest being the Vembanad Lake.

Western Coastal Plains of India

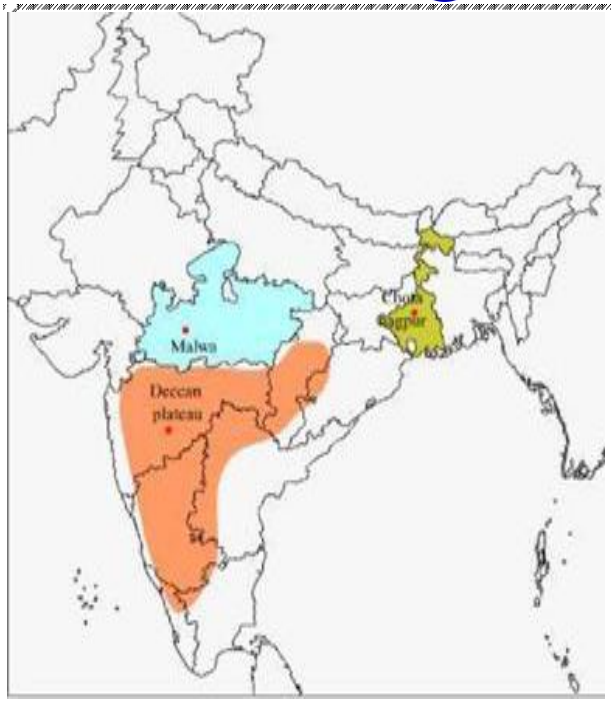
1. Rann of Kachchh in the north to Kanyakumari in the South.
2. These are narrow plains with an average width of about 65 km.
3. Western coast is mainly divided into four categories
    - Kachchh and Kathiawar coast
    - Konkan coast
    - Kanada coast
    - Malabar coast

Kutch and Kathiawar region:

- Kutch and Kathiawar, though an extension of Peninsular plateau (because Kathiawar is made of the Deccan Lava and there are tertiary rocks in the Kutch area), they are still treated as integral part of the Western Coastal Plains as they are now leveled down.
- The Kutch Peninsula was an island surrounded by seas and lagoons. These seas and lagoons were later filled by sediment brought by the Indus River which used to flow through this area. Lack of rains in recent times has turned it into an arid and semi-arid landscape.
- Salt-soaked plain to the north of Kutch is the Great Rann. Its southern continuation, known as the Little Rann lies on the coast and south-east of Kachchh.
- The Kathiawar Peninsula lies to the south of the Kachchh. The central part is a highland of Mandav Hills from which small streams radiate in all directions (Radial Drainage). Mt. Girnar (1,117 m) is the highest point and is of volcanic origin.
- The Gir Range is located in the southern part of the Kathiawar peninsula. It is covered with dense forests and is famous as the home of the Gir lion.

Gujarat Plain:

- The Gujarat Plain lies east of Kachchh and Kathiawar and slopes towards the west and south west.
- Formed by the rivers Narmada, Tapi, Mahi and Sabarmati, the plain includes the southern part of Gujarat and the coastal areas of the Gulf of Khambhat.
- The eastern part of this plain is fertile enough to support agriculture, but the



Baghelkhand

- North of the Maikal Range is Baghelkhand.
- Made of limestones and sandstones on the west and granite in the east.
- It is bounded by the Son river on the north.
- The central part of the plateau acts as a water divide between the Son drainage system in the north and the Mahanadi river system in the south.
- The region is uneven with general elevation varying from 150 m to 1,200 m.
- The Bharner and Kaimur are located close to the trough-axis.
- The general horizontality of the strata shows that this area has not undergone any major disturbance.

Rohtas Plateau:

- The Rohtas Plateau (also referred to as Kaimur Plateau) is a plateau that lies in the south-western part of Bihar.
- The Rohtas Plateau or Kaimur Plateau comprises about 800 square miles (2,100 km2). It is an undulating table land. At Rohtasgarh it attains a height of 1,490 feet (450 m) above sea level.
- Surrounding geography: A series of fluvial plateaux that run along the Kaimur Range consist of a series of descending plateaux, starting with the Panna Plateau in the west, followed by Bhander Plateau and Rewa Plateau and ending with Rohtas plateau in the east.

Chotanagpur Plateau:

- Chotanagpur plateau represents the north-eastern projection of the Indian Peninsula.
- Mostly in Jharkhand, the northern part of Chhattisgarh and Purulia district of West Bengal.
- The Son River flows in the north-west of the plateau and joins the Ganga.
- The average elevation of the plateau is 700 m above sea level.
- This plateau is composed mainly of Gondwana rocks.
- The plateau is drained by numerous rivers and streams in different directions and presents a radial drainage pattern. {Drainage Pattern}
- Rivers like the Damodar, the Subarnarekha, the North Koel, the South Koel, and the Barkar have developed extensive drainage basins.
- The Damodar River flows through the middle of this region in a rift valley from west to east. Here are found the Gondwana coal fields which provide the bulk of coal in India.
- North of the Damodar river is the Hazaribagh plateau with an average elevation of 600 m above mean sea level. This plateau has isolated hills. It looks like a peneplain due to large scale erosion.
- The Ranchi Plateau to the south of the Damodar Valley rises to about 600 m above mean sea level. Most of the surface

is rolling where the city of Ranchi (661 m) is located.

- At places, it is interrupted by monadnocks (an isolated hill or ridge of erosion-resistant rock rising above a peneplain. Ex: Ayers Rock in Australia) and conical hills.
- The Rajmahal Hills forming the northeastern edge of the Chotanagpur Plateau are mostly made of basalt and are covered by lava flows {Basaltic Lava}.
- They run in the north-south direction and rise to an average elevation of 400 m (the highest mount is 567 m). These hills have been dissected into separate plateaus.

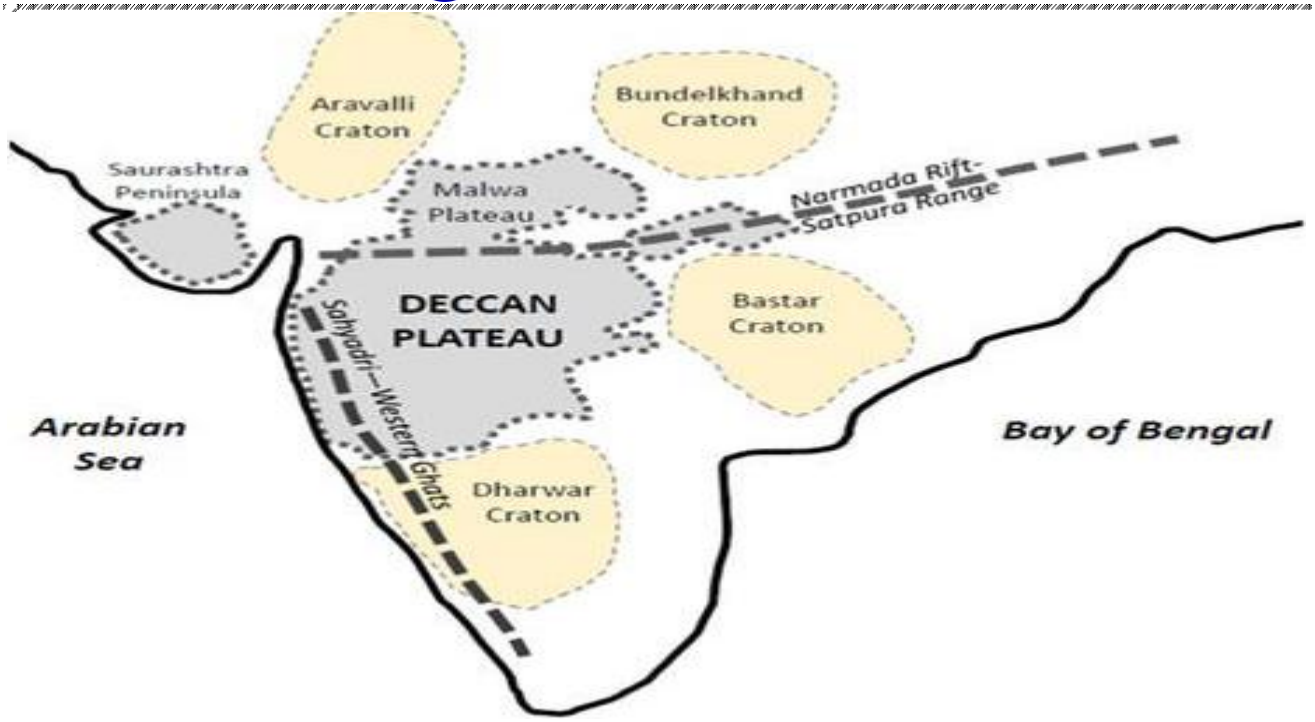
Meghalaya Plateau:

- The peninsular plateau extends further east beyond the Rajmahal hills to form Meghalaya or the Shillong plateau.
- Garo-Rajmahal Gap separates this plateau from the main block.
- This gap was formed by down-faulting (normal fault: a block of earth slides downwards). It was later filled by sediments deposited by the Ganga and Brahmaputra.
- Down warping along Rajmahal–Garo hills = 'Malda gap'
- Ganga-Brahmaputra flows through the Malda gap.
- The plateau is formed by Archaean quartzites, shales, and schists.
- The plateau slopes down to Brahmaputra valley in the north and the Surma and Meghna valleys in the south.
- Its western boundary more or less coincides with the Bangladesh border.
- The western, central, and eastern parts of the plateau are known as the Garo Hills (900 m), the Khasi-Jaintia Hills (1,500 m), and the Mikir Hills (700 m).
- Shillong (1,961 m) is the highest point of the plateau.

Deccan Plateau:

- It covers an area of about five lakh sq km.
- It is triangular in shape and is bounded by the Satpura and the Vindhya in the north-west, the Mahadev and the Maikal in the north, the Western Ghats in the west, and the Eastern Ghats in the east.
- Its average elevation is 600 m.
- It rises to 1000 m in the south but dips to 500 m in the north.
- Its general slope is from west to east which is indicated by the flow of its major rivers.

Rivers have further subdivided this plateau into a number of smaller plateaus.

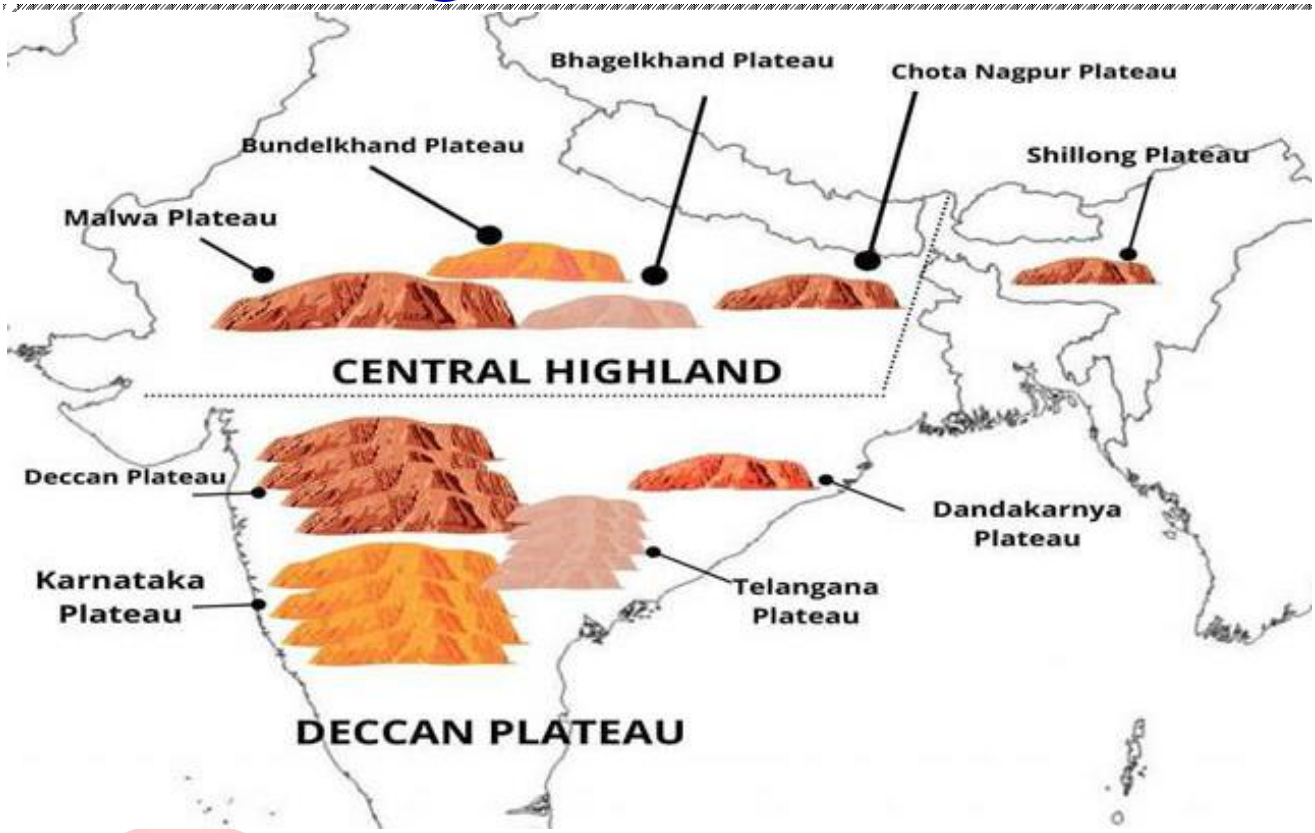


Maharashtra Plateau:

- The Maharashtra Plateau lies in Maharashtra.
- It forms the northern part of the Deccan Plateau.
- Much of the region is underlain by basaltic rocks of lava origin [Most of the Deccan Traps lies in this region].
- The area looks like a rolling plain due to weathering.
- The horizontal lava sheets have led to the formation of typical Deccan Trap topography [step like].
- The broad and shallow valleys of the Godavari, the Bhima, and the Krishna are flanked [bordered on the opposite sides] by flat-topped steep-sided hills and ridges.
- The entire area is covered by black cotton soil known as regur.

Karnataka Plateau:

- The Karnataka Plateau is also known as the Mysore plateau.
- Lies to the south of the Maharashtra plateau.
- The area looks like a rolling plateau with an average elevation of 600-900 m.
- It is highly dissected by numerous rivers rising from the Western Ghats.
- The general trend of the hills is either parallel to the Western Ghats or across it.
- The highest peak (1913 m) is at Mullayanagiri in Baba Budan Hills in the Chikmagalur district.
- The plateau is divided into two parts called Malnad and Maidan.
- Malnad in Kannada means the hill country. It is dissected into deep valleys covered with dense forests.
- The Maidan on the other hand is formed of a rolling plain with low granite hills.
- The plateau tapers between the Western Ghats and the Eastern Ghats in the south and merges with the Nilgiri hills there.



Telangana plateau:

- The Telangana plateau consists of Archaean gneisses.
- It is made up of Dharwar rocks. Gondwana rocks are also found in the Godavari valley, famous for its coal fields.
- Because of the Dharwar rock strata, the plateau is rich in mineral resources.
- Its average elevation is 500-600 m.
- The southern part is higher than its northern counterpart.
- The region is drained by three river systems, the Godavari, the Krishna, and the Penner.
- The entire plateau is divided into Ghats and the Peneplains (a vast featureless, undulating plain which is the last stage of the deposition process).

Bastar Plateau:

- Bastar is a district in the southernmost region in the state of Chhattisgarh.
- It is a forested mineral rich region.
- Southern part of Chhattisgarh between the Mahanadi and Godavari rivers.
- Bisected into two parts by the Indravati River.
- Tribal dominated region.
- Under the strong grip of Naxalism.

Chhattisgarh Plain:

- The Chhattisgarh plain is the only plain worth the name in the Peninsular plateau.
- It is a saucer-shaped depression drained by the upper Mahanadi.
- The whole basin lies between the Maikala Range and the Odisha hills.
- The region was once ruled by Haithaivanshi Rajputs from whose thirty-six forts (Chhattisgarh) it derives its name.
- The basin is laid with nearly horizontal beds of limestone and shales.
- The general elevation of the plain ranges from 250 m in the east to 330 m in the west.

नोट – प्रिय IAS उम्मीदवारों, यहाँ हमने इस टॉपिक का मात्र SAMPLE ही दिया है, पूरा टॉपिक नही दिया है / यदि आपको हमारे नोट्स के सैंपल अच्छे लगे हों तो कम्पलीट नोट्स खरीदने के लिए नीचे दिए गये हमारे संपर्क नंबर पर कॉल कीजिए या लिंक पर क्लिक करें / दोस्तों, हमें पूर्ण विश्वास है कि ये नोट्स आपकी "UPSC IAS (PRE. & MAINS)" की परीक्षा में पूर्ण संभव मदद करेंगे और आप "INFUSION NOTES" के साथ IAS की परीक्षा में जरूर सफल होंगे, धन्यवाद /

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EXAM (परीक्षा)	EXAM DATE	हमारे नोट्स में से आये हुए प्रश्न
RAS PRE. 2021	27 अक्तूबर 2021	74 प्रश्न (150 में से) CUT OFF – 64
UPSC – IAS PRE. (2022)	05 JUNE 2022	69 (100 में से)
SSC GD 2021	16 नवम्बर	68 (100 में से)
SSC GD 2021	01 दिसम्बर	65 (100 में से)
SSC GD 2021	08 दिसम्बर	67 (100 में से)
राजस्थान S.I. 2021	13 सितम्बर	113 (200 में से)
राजस्थान S.I. 2021	14 सितम्बर	119 (200 में से)

राजस्थान S.I. 2021	15 सितम्बर	126 (200 में से)
RAJASTHAN PATWARI 2021	23 अक्टूबर (1st शिफ्ट)	79 (150 में से)
RAJASTHAN PATWARI 2021	23 अक्टूबर (2nd शिफ्ट)	103 (150 में से)
RAJASTHAN PATWARI 2021	24 अक्टूबर (1st शिफ्ट)	95 (150 में से)
RAJASTHAN PATWARI 2021	24 अक्टूबर (2nd शिफ्ट)	91 (150 में से)
RAJASTHAN VDO 2021	27 दिसंबर (1st शिफ्ट)	59 (100 में से)
RAJASTHAN VDO 2021	27 दिसंबर (2nd शिफ्ट)	61 (100 में से)
RAJASTHAN VDO 2021	28 दिसंबर (1st शिफ्ट)	56 (100 में से)
RAJASTHAN VDO 2021	28 दिसंबर (2nd शिफ्ट)	57 (100 में से)
U.P. SI 2021	14 नवम्बर 2021 1st शिफ्ट	91 (160 में से)
U.P. SI 2021	21नवम्बर2021 (1st शिफ्ट)	89 (160 में से)

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RAS PRE. – https://www.youtube.com/watch?v=p3_i-3qfDy8&t=136s

VDO PRE. – https://www.youtube.com/watch?v=gXdAk856W18&t=202s

Patwari – https://www.youtube.com/watch?v=X6mKGdtXyu4&t=103s

अन्य परीक्षाओं में भी इसी तरह प्रश्न आये हैं Proof देखने के लिए हमारे youtube चैनल (Infusion Notes) पर इसकी वीडियो देखें या हमारे नंबरों पर कॉल करें।

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Part - 2 Ancient and Medieval History of India

Part - 3 Modern History of India

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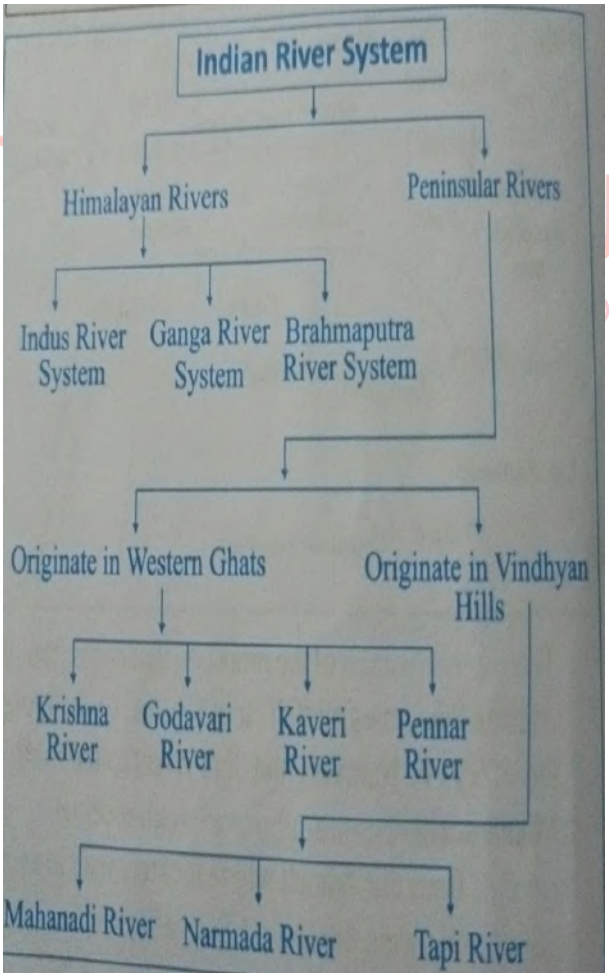
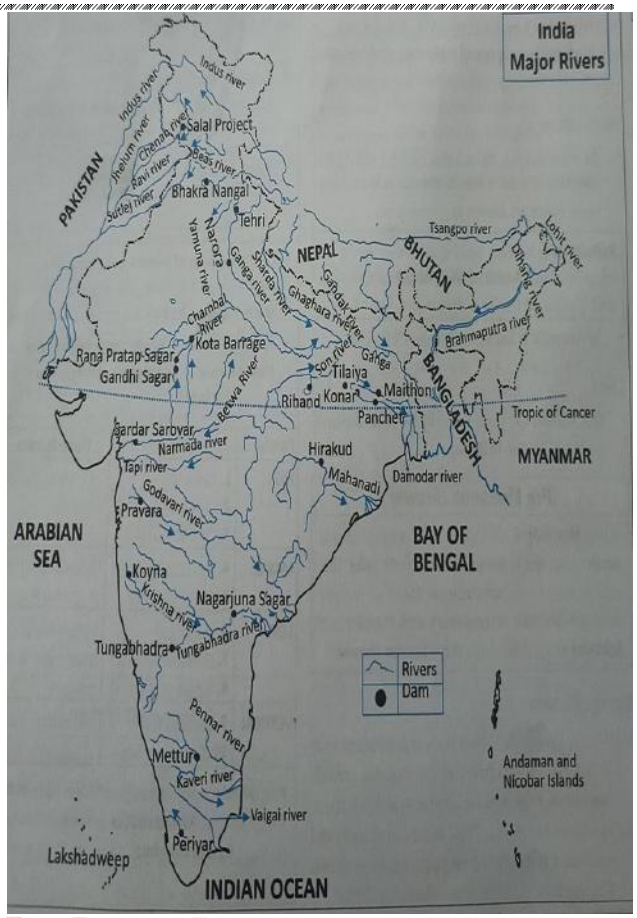
CHAPTER – 4

INDIAN RIVER SYSTEM

Most of the rivers discharge their waters into the Bay of Bengal. Some of the rivers flow through the western part of the country and merge into the Arabian Sea. The northern parts of the Aravalli range, some parts of Ladakh, and arid regions 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 range*
- *The Chota Nagpur plateau and Vindhya and Satpura range*
- *The Western Ghats*

Drainage Systems Based on Origin:

- *The Himalayan Rivers: Perennial rivers: Indus, the Ganga, the Brahmaputra, and their tributaries.*
- *The Peninsular Rivers: Non-Perennial rivers: Mahanadi, the Godavari, the Krishna, the Cauvery, the Narmada, and the Tapi and their tributaries.*

Drainage Systems Based on the Type of Drainage:

The river systems of India can be classified into four groups viz.

- *Himalayan rivers, Deccan rivers, and Coastal rivers that drain into the sea.*

- Rivers of the inland drainage basin (endorheic basin). Streams like the Sambhar in western Rajasthan are mainly seasonal in character, draining into the inland basins and salt lakes. In the Rann of Kutch, the only river that flows through the salt desert is the Luni.

Drainage Systems Based on Orientation to the sea:

- The Bay of Bengal drainage (Rivers that drain into the Bay of Bengal)(East flowing rivers)
- Arabian sea drainage (Rivers that drain into the Arabian sea)(West flowing rivers).
- The rivers Narmada (India's holiest river) and Tapti flow almost parallel to each other but empty themselves in opposite directions (West flowing). The two rivers make the valley rich in alluvial soil and teak forests cover much of the land.

The area covered by The Bay of Bengal drainage and Arabian Sea drainage are not proportional to the amount of water that drains through them.

- Over 90 per cent of the water drains into the Bay of Bengal; the rest is drained into the Arabian Sea or forms inland drainage.

Himalayan River systems:

- Indus River System
- Brahmaputra River System
- Ganga River System

The Indus River System:

- The Indus arises from the northern slopes of the Kailash range in Tibet near Lake Manasarovar.
- It has a large number of tributaries in both India and Pakistan and has a total length of about 2897 km from the source to the point near Karachi where it falls into the Arabian Sea out of which approx 700km lies in India.
- It enters the Indian Territory in Jammu and Kashmir by forming a picturesque gorge.
- In the Kashmir region, it joins with many tributaries – the Zaskar, the Shyok, the Nubra and the Hunza.
- It flows between the Ladakh Range and the Zaskar Range at Leh.
- It crosses the Himalayas through a 5181 m deep gorge near Attock, which is lying north of Nanga Parbat.
- The major tributaries of the Indus River in India are Jhelum, Ravi, Chenab, Beas, and Sutlej.

Left and Right bank tributaries:

- Zanskar river, Suru river, Soan river, Jhelum River, Chenab River, Ravi River, Beas river, Satluj river, Panjnad river are its major left-bank tributaries.
- Shyok River, Gilgit river, Hunza river, Swat river, Kunnar river, Kurram river, Gomal River, and Kabul river are its major right-bank tributaries.

Shyok River:

- Rising from the Karakoram Range, it flows through the Northern Ladakh region in J&K
- It has a length of about 550km.
- A tributary of the Indus River, it originates from the Rimo Glacier.
- The river widens at the confluence with the Nubra River
- Shyok River marks the south-eastern fringe of the Karakoram ranges by forming a V-shaped bend around it.

Nubra River:

- It is the main tributary of the Shyok River.

Beas River:

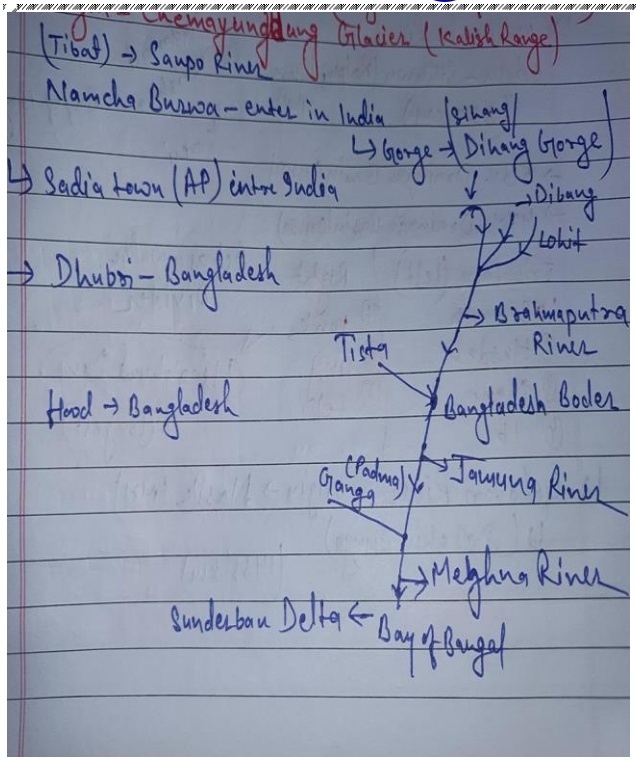
- Beas River, an important river of the Indus River System, emerges from Rohtang pass in HP
- The river before entering Pakistan merges with the Sutlej River at Hari-Ke-Pattan in Punjab
- The total length of this river is 460km and the river covers 256km through HP
- The tourist resorts of Manali are situated on the right banks of the River Beas.

Indus Waters Treaty 1960:

- The Indus system comprises the main Indus River, Jhelum, Chenab, Ravi, Beas, and Sutlej. The basin is mainly shared by India and Pakistan with a small share for China and Afghanistan.
- Under the treaty signed between India and Pakistan in 1960, all the waters of three rivers, namely Ravi, Sutlej, and Beas (Eastern Rivers) were allocated to India for exclusive use.
- While, the waters of Western rivers – Indus, Jhelum, and Chenab were allocated to Pakistan except for specified domestic, non-consumptive, and agricultural use permitted to India as provided in the Treaty.
- India has also been given the right to generate hydroelectricity through the run of the river(RoR) projects on the Western Rivers which, subject to specific criteria for design and operation, is unrestricted.

Present Developments;

- To utilize the waters of the Eastern rivers which have been allocated to India for exclusive use, India has constructed the following dams:
- Bhakra Dam on Satluj,
- Pong and Pandoh Dam on Beas and
- Thein (Ranjit Sagar) on Ravi.
- Other works like Beas-Sutlej Link, Madhopur-Beas Link, Indira Gandhi Nahar Project, etc have helped India utilize nearly the entire share (95 %) of the waters of Eastern rivers.
- However, about 2 Million Acre Feet (MAF) of water annually from Ravi is reported to be still flowing unutilized to Pakistan below Madhopur.
- To stop the flow of these waters that belong to India for its utilization in India, the following steps have been taken:
- Shahpurkandi Project: This project will help in utilizing the waters coming out from the powerhouse of Thein dam for irrigation and power generation in J&K and Punjab. The construction work is being undertaken by the Govt of Punjab under the monitoring of the Govt of India.
- Construction of Ujh multipurpose project: This project will create storage of water on river Ujh, a tributary of Ravi for irrigation and power generation in India. This project is a National Project whose completion period will be 6 years from the beginning of the implementation.
- The 2nd Ravi Beas link below Ujh: This project is being planned to tap excess water flowing down to Pakistan through river Ravi, even after construction of Thein Dam, by constructing a barrage across river Ravi for diverting water through a tunnel link to Beas basin. The Govt. of India declared this project as a National Project.
- The above three projects will help India to utilize its entire share of waters given under the Indus Waters Treaty 1960.



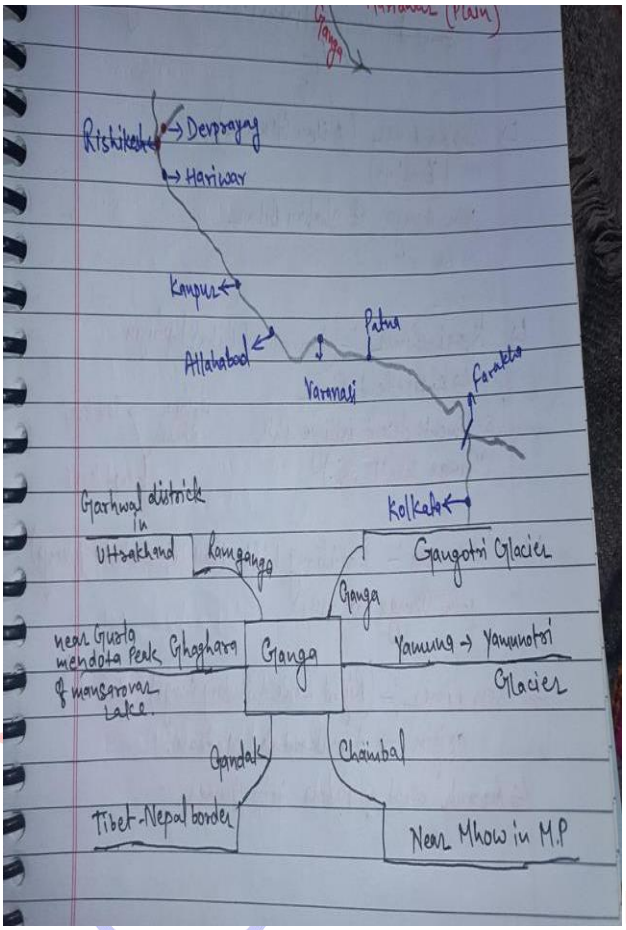
Ganga River System:

- The Ganga originates as the Bhagirathi from the Gangotri glacier.
- Before it reaches Devprayag in the Garhwal Division, the Mandakini, Pindar, the Dhauliganga and the Bishenganga rivers merge into the Alaknanda, and the Bheling drain into the Bhagirathi.
- The Pindar River rises from East Trishul and Nanda Devi unites with the Alaknanda at Karan Prayag. The Mandakini meets at Rudraprayag.
- The water from both Bhagirathi and the Alaknanda flows in the name of the Ganga at Devprayag.
- The Ganga is formed from the 6 headstreams and their five confluences.
- The Alaknanda River meets the Dhauliganga River at Vishnuprayag, the Nandakini River at Nandprayag, the Pindar River to form the Ganga mainstream.
- The Bhagirathi, considered to be the source stream: rises at the foot of Gangotri Glacier, at Gaumukh, at an elevation of 3892m and fanning out into the 350km wide Ganga delta, it finally empties into the Bay of Bengal.
- From Devapryag the river is called Ganga.
- Ganga debouches [emerge from a confined space into a wide, open area] from the hills into the plain area at It is joined by the Yamuna at Allahabad.
- Near Rajmahal Hills it turns to the south-east.
- At Farakka, it bifurcates into Bhagirathi-Hugli in West Bengal and Padma-Meghna in Bangladesh (it ceases to be known as the Ganga at Farakka).
- Brahmaputra (or the Jamuna as it is known here) joins Padma-Meghna at.
- The total length of the Ganga river from its source to its mouth (measured along the Hugli) is 2,525 km.
- Haridwar, Kanpur, Soron, Kannauj, Allahabad, Varanasi, Patna, Ghazipur, Bhagalpur, Mirzapur, Ballia, Buxar, Saidpur, and Chunar are the important towns.
- It has long been considered holy by Hindus and worshiped as the goddess Ganga in Hinduism.

The concept of Panch Prayag:

- Vishnuprayag: where the river Alaknanda meets river Dhauli Ganga
- Nandprayag: where river Alaknanda meets river Mandakini
- Karnaprayag: where river Alaknanda meets river Pinder
- Rudraprayag: where river Alaknanda meets river Mandakini
- Devprayag: where river Alaknanda meets river Bhagirathi -GANGA
- The principal tributaries of the Ganga are Yamuna, Damodar, Sapta Kosi, Ram Ganga, Gomati, Ghaghara, and Son. The river after traveling a distance of 2525

km from its source meets the Bay of Bengal



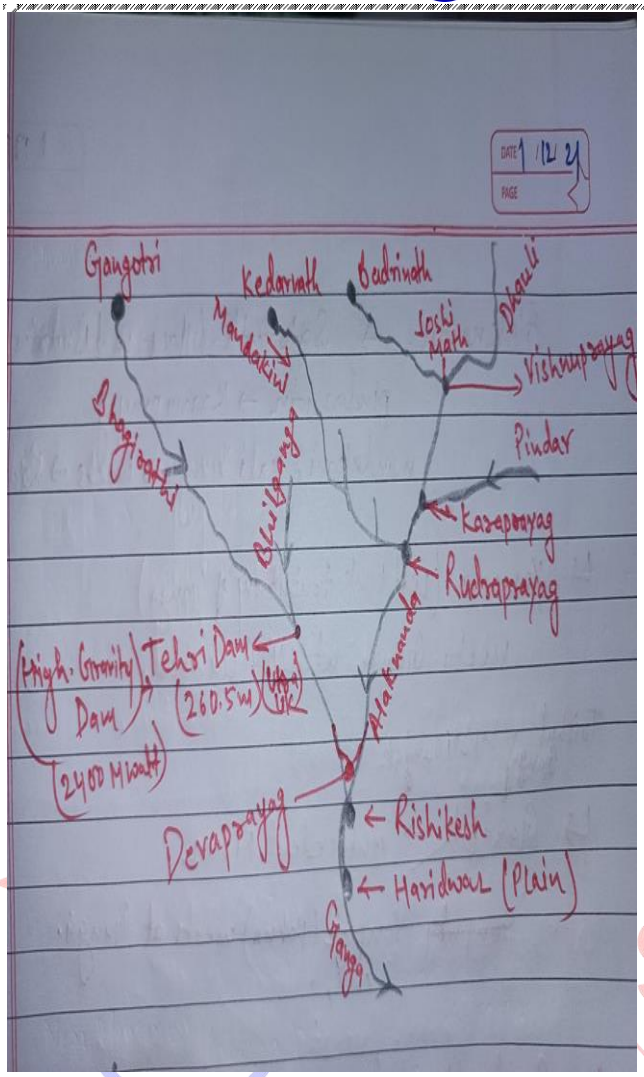
The Ganga river system spreads in India, Tibet (China), Nepal and Bangladesh. It is the largest river basin in India and accounts for about one-fourth of the total area of the country. It covers states of Uttar Pradesh, Madhya Pradesh, Rajasthan, Bihar, West Bengal, Uttarakhand, Jharkhand, Haryana, Chhattisgarh, Himachal Pradesh and Union Territory of Delhi.

Ganga-Brahmaputra Delta:

- Before entering the Bay of Bengal, the Ganga, along with the Brahmaputra, forms the largest delta of the world between the Bhagirathi/Hugli and the Padma/Meghna covering an area of 58,752 sq km.
  - The coastline of the delta is a highly indented area.
  - The delta is made of a web of distributaries and islands and is covered by dense forests called the
  - A major part of the delta is a low-lying swamp that is flooded by marine water during high tide.

ALAKNANDA:

- It is one of the headstreams of the Ganga.
- It rises at the confluence and feet of the Satopanth and Bhagirath glaciers in Uttarakhand.
- It meets the Bhagirathi River at Devprayag after which it is called the Ganga.
- Its main tributaries are the Mandakini, Nandakini, and Pindar rivers.
- The Alaknanda system drains parts of Chamoli, Tehri, and Pauri districts
- The Hindu pilgrimage center of Badrinath and the natural spring Tapt Kund lie along the banks of the Alaknanda River
- At its origin, Lake Satopanth is a triangular lake located at a height of 4402m and named after the Hindu trinity Lord Brahma, Lord Vishnu, and Lord Shiva.



BHAGIRATHI:

- It is one of the two most important headstreams of the Ganga which meets the Alaknanda at Devprayag to form the Ganga
- It rises at the foot of Gangotri Glacier, at Gaumukh, at an elevation of 3892m at the base of Chaukhamba peak in the Uttarkashi district of Uttarakhand
- The upper catchment of the river is glaciated
- It cuts spectacular gorges in its middle course where it has cut through granites and crystalline rocks of the central Himalayan axis
- Gangotri, Uttarkashi, and Tehri are important settlements along the river.

Dhauliganga:

- It originates from Vasudhara Tal, perhaps the largest glacial lake in Uttarakhand.
- Dhauliganga is one of the important tributaries of Alaknanda, the other being the Nandakini, Pindar, Mandakini and Bhagirathi.
- Dhauliganga is joined by the Rishiganga river at Raini.
- It merges with the Alaknanda at Vishnuprayag.
- There it loses its identity and the Alaknanda flows southwest through Chamoli, Maithana, Nandaprayag, Karnaprayag until it meets the Mandakini river, coming from the north at Rudraprayag.
- After subsuming Mandakini, the Alaknanda carries on past Srinagar, before joining the Ganga at Devprayag.
- Alaknanda then disappears and the mighty Ganga carries on its journey, first flowing south then west through important pilgrimage centers such as Rishikesh and finally descending into the Indo-Gangetic plains at Haridwar.
- Tapovan Vishnugad Hydropower Project being constructed on the Dhauliganga.

Rishiganga River:

- It is a river in the Chamoli district, Uttarakhand.
- It springs from the Uttari Nanda Devi Glacier on the Nanda Devi Mountain.
- It is also fed from the Dakshini Nanda Devi Glacier.
- It flows through the Nanda Devi National Park and merges into the Dhauliganga River near the village Raini.

Major Tributaries of the Ganga River:

Right Bank Tributaries of the Ganga River:

- Yamuna River
- Chambal River
- Banas River
- Sindh River
- Betwa River
- Ken River
- Son River
- Damodar River

Left Bank Tributaries of the Ganga River:

- Ramganga River
- Gomti River
- Ghaghra River
- Kali River
- Gandak River
- Burhi Gandak
- Kosi River

RAMGANGA:

- A tributary of the Ganga river, it drains south-western Kumaun.
- Ramganga River originates in the southern slopes of Dudhatoli Hill in the Chamoli district of Uttarakhand.
- It is fed by springs emanating from the reservoirs of underground water
- The prominent geomorphic features found in its tract across the lower Himalayan hills of Almora district are incised meanders, paired and unpaired terraces, interlocking spurs, waterfalls, rock benches, cliffs, and towering ridges
- It also flows through the dun valley of Corbett National Park.
- There is a dam built across the Ramganga at Kalagarh
- It finally meets the Ganga near Kannauj.
- Bareilly city is situated on its banks.

GOMTI:

- It originates from Gomat Taal which formally is known as Fulhaar jheel, near Madho Tanda, Pilibhit in UP.
- It extends 900km through UP and meets the Ganges River in Ghazipur.
- At the Sangam of Gomti and Ganga, the famous Markandey Mahadeo temple is situated.
- The most important tributary is the Sai River, which joins near Jaunpur
- The cities of Lucknow, Lakhimpur Kheri, Sultanpur and Jaunpur are located on the banks of Gomti
- The river cuts the Jaunpur city into equal halves and becomes wider in Jaunpur.

GHAGHARA:

- The Ghagra originates in the glaciers of Mapchachungo.
- Alternatively known as Karnali or Kauriala, it is a trans-boundary perennial river originating from the Tibetan plateau near Lake Mansarovar.
- It cuts through the Himalayas in Nepal and is joined by the Sharda River at Brahmaghat in India
- It is a major left-bank tributary of the Ganga and joins it at Chhapra in Bihar.
- Its total length is 1080km
- This river is the main source of water in Bara-Banki District of UP.
- Rapti, Chhoti Gandak, Sharda, and Sarju are the major tributaries of this river.

SHARDA:

- The Sarda river rises in the Milam glacier in the Nepal Himalayas where it is known as the Goriganga.
- The Sharda originates from the Greater Himalayas at Kalapani at an altitude of 3600m in the Pithoragarh District of Uttarakhand.

- Mahanadi basin, because of its rich mineral resource and adequate power resource, has a favorable industrial climate.
- The Important industries presently existing in the basin are the Iron and Steel plant at Bhilai, aluminum factories at Hirakud and Korba, paper mill near Cuttack and cement factory at Sundargarh.
- Other industries based primarily on agricultural produce are sugar and textile mills.
- Mining of coal, iron and manganese are other industrial activities.
- Floods in Mahanadi River Basin
- The basin is subject to severe flooding occasionally in the delta area due to the inadequate carrying capacity of the channels.
- The multi-purpose Hirakud dam provides some amount of flood relief by storing part of floodwater.
- However, the problem still persists and a lasting solution needs to be evolved.

Godavari River System:

- The Godavari river is the largest river in Peninsular India. It is known as the Dakshin Ganga or Vridha Ganga (old Ganga) because of its age, size, and length. It is navigable in the delta region.
- Source of origin of the Godavari river: It rises from a place called Trimbak located in the Western Ghats in Nashik district in the state of Maharashtra.
- Confluence or mouth of the Godavari river: It drains into the Bay of Bengal before forming a large delta below Rajahmundry.
- The Godavari basin extends over states of Maharashtra, Andhra Pradesh, Chhattisgarh, and Odisha in addition to smaller parts in Madhya Pradesh, Karnataka, and the Union Territory of Puducherry (Yanam) having a total area of ~ 3 lakh Sq.km.
- The basin is bounded by Satmala hills, the Ajanta range, and the Mahadeo hills on the north, by the Eastern Ghats on the south and the east, and by the Western Ghats on the west.
- The total length of Godavari from its origin to outfall into the Bay of Bengal is 1,465 km.
- Rajahmundry is the largest city on the banks of Godavari.
- The Sri Ram Sagar project which was constructed on this river (1964-69) serves the irrigation needs of Adilabad, Nizamabad, Karimnagar and Warangal districts.

The Pravara, Indravati, Wainganga, Wardha, Pench, Kanhan, Penganga, Manjira, Bindusara and sabari rivers are its important tributaries.

Nashik, Trimbakeshwar, Nanded, Aurangabad, Nagpur, Bhadrachalam, Nizamabad, Rajahmundry, Balaghat, Yanam, and Kovvur are the important urban centers on its banks.

MANJRA:

- It is a right-bank tributary of the river Godavari.
- It originates in the Balaghat range, near Ahmednagar, at an altitude of 823 m.
- Manjra River flows through the Latur District of Maharashtra and the Bidar District of Karnataka before entering Medak District in Andhra Pradesh.
- It flows for about 96km in Medak District through Narayankhed, Jahirabad, Sangareddy and Narsapur Talukas.
- Ultimately, it drains into the Godavari River at Basara near Nizamabad.
- Valdi river is a tributary of Marijira, Nizam Sagar was constructed across the Manjra River between Achampet and Banjapalle

villages of the Nizamabad district in Andhra Pradesh.

- The most outstanding feature of the project is the gigantic masonry dam sprawling across the river for 3km with a motorable road of 14 feet width.

PAINGANGA:

- (Penganga or Panuganga) It originates in the Ajantha ranges in the Aurangabad district in Maharashtra.
- It then flows through Buldhana and Washim districts.
- Then it acts as a boundary between Yavatma and Nanded districts.
- It then flows along the state border between Maharashtra and AP.
- It joins the Wardha River near a small village called Wadha in Wani Tehsil of Yavatmal district
- It is deeply entrenched and not able to be navigated.
- The river provides irrigation to the Washim and Yavatmal districts in Maharashtra.
- There are two dams being constructed on the river, namely Upper Painganga and Lower Painganga.
- Also, this dam is known as the "Isapur Dam".
- Adan river is the major tributary.
- It passes through the Painganga Wildlife Sanctuary.
- Sahastrakund waterfalls are situated on it.

WARDHA:

- It is one of the biggest rivers in the Vidarbha region of Maharashtra.
- It originates at an altitude of 777 meters in Satpura Range near Multai in Betul District of Madhya Pradesh, about 70 miles north-west of Nagpur
- From the origin, it flows 32 km in Madhya Pradesh and then enters into Maharashtra
- After traversing 528km, it joins Wainganga and together they are called Pranhita, which ultimately flows into the Godavari River
- Kar, Wena, Jam, Erai are the left tributaries
- Madu, Bembla. Penganga are the right tributaries
- A huge dam (Upper Wardha Dam) is built on Wardha River near Morshi and considered a lifeline for Amravati city.

WAINGANGA:

- It literally means "the arrow of water".
- It originates about 12 km, from Mundara village of Sconi district in the southern slopes of the Mahadeo Hills of the Satpura Range of Madhya Pradesh and flows south through Madhya Pradesh and Maharashtra in a very winding course of approximately 4 360 miles
- After joining the Wardha, the united stream, known as the Pranahitha, ultimately falls into the river Godavari.
- It drains Chandrapur. Gadchiroli, Bhandara, Gondia, and Nagpur districts of Maharashtra.
- The main tributaries of the Wainganga River are the Thel, Thanwar, Bagh, Chulband, Garhavi, Khobragadi, and Kathani, which meet on the left bank; and the Hirri, Chandan, Bawanthari, Kanhan, and Mul joining on the right bank.
- Kamptee, Bhandara, Tumsar, Balaghat, and Pauna are the major urban and industrial centers along the river.

Nag River:

- The Nagpur city derives its name from the Nag river which passes through the city.

नोट – प्रिय IAS उम्मीदवारों, यहाँ हमने इस टॉपिक का मात्र SAMPLE ही दिया है, पूरा टॉपिक नही दिया है / यदि आपको हमारे नोट्स के सैंपल अच्छे लगे हों तो कम्पलीट नोट्स खरीदने के लिए नीचे दिए गये हमारे संपर्क नंबर पर कॉल कीजिए या लिंक पर क्लिक करें / दोस्तों, हमें पूर्ण विश्वास है कि ये नोट्स आपकी "UPSC IAS (PRE. & MAINS)" की परीक्षा में पूर्ण संभव मदद करेंगे और आप "INFUSION NOTES" के साथ IAS की परीक्षा में जरूर सफल होंगे, धन्यवाद /

प्रिय दोस्तों, अब तक हमारे विभिन्न नोट्स में से विभिन्न परीक्षाओं में आये हुए प्रश्नों के परिणाम –

EXAM (परीक्षा)	EXAM DATE	हमारे नोट्स में से आये हुए प्रश्न
RAS PRE. 2021	27 अक्तूबर 2021	74 प्रश्न (150 में से) CUT OFF – 64
UPSC – IAS PRE. (2022)	05 JUNE 2022	69 (100 में से)
SSC GD 2021	16 नवम्बर	68 (100 में से)
SSC GD 2021	01 दिसम्बर	65 (100 में से)
SSC GD 2021	08 दिसम्बर	67 (100 में से)
राजस्थान S.I. 2021	13 सितम्बर	113 (200 में से)
राजस्थान S.I. 2021	14 सितम्बर	119 (200 में से)

राजस्थान S.I. 2021	15 सितम्बर	126 (200 में से)
RAJASTHAN PATWARI 2021	23 अक्टूबर (1st शिफ्ट)	79 (150 में से)
RAJASTHAN PATWARI 2021	23 अक्टूबर (2nd शिफ्ट)	103 (150 में से)
RAJASTHAN PATWARI 2021	24 अक्टूबर (1st शिफ्ट)	95 (150 में से)
RAJASTHAN PATWARI 2021	24 अक्टूबर (2nd शिफ्ट)	91 (150 में से)
RAJASTHAN VDO 2021	27 दिसंबर (1st शिफ्ट)	59 (100 में से)
RAJASTHAN VDO 2021	27 दिसंबर (2nd शिफ्ट)	61 (100 में से)
RAJASTHAN VDO 2021	28 दिसंबर (1st शिफ्ट)	56 (100 में से)
RAJASTHAN VDO 2021	28 दिसंबर (2nd शिफ्ट)	57 (100 में से)
U.P. SI 2021	14 नवम्बर 2021 1st शिफ्ट	91 (160 में से)
U.P. SI 2021	21नवम्बर2021 (1st शिफ्ट)	89 (160 में से)

& Many More Exams

दोस्तों, इनका proof देखने के लिए नीचे दी गयी लिंक पर क्लिक करें या हमारे youtube चैनल पर देखें –

RAS PRE. – https://www.youtube.com/watch?v=p3_i-3qfDy8&t=136s

VDO PRE. – https://www.youtube.com/watch?v=gXdAk856W18&t=202s

Patwari – https://www.youtube.com/watch?v=X6mKGdtXyu4&t=103s

अन्य परीक्षाओं में भी इसी तरह प्रश्न आये हैं Proof देखने के लिए हमारे youtube चैनल (Infusion Notes) पर इसकी वीडियो देखें या हमारे नंबरों पर कॉल करें।

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CHAPTER – 16

IRRIGATION

DETERMINANTS OF AGRICULTURE

Agricultural Infrastructure

- If agriculture is the lifeblood of the Indian economy, then infrastructure is like the arteries and veins which are necessary for this sector's and the economy's sustenance and growth.
- Infrastructure, mainly physical, in the agriculture sector implies those facilities that help farmers in the processes of sowing to selling; namely- irrigation, road connectivity, electrification, storage and telecommunication.
- Investment in infrastructure leads to reduced costs per input, enhanced productivity, further income generation and capacity building. It has positive spill-over effects such as the development of rural areas, alleviating hunger and poverty and proper conservation and management of natural resources.

Determinants of Agriculture

- Determinants of agriculture decide the agricultural pattern, cropping pattern, and agricultural productivity of a region.

Irrigation:

- Water is an important input for successful agriculture. It may be available naturally through rainfall or artificially through irrigation.
- The process of supplying water to crops by artificial means such as canal, wells, tubewells, tank etc. from the source of water such as resources, tanks, ponds or underground water is called irrigation.

Need for Irrigation

- The main idea behind irrigation systems is to assist in the growth of agricultural crops and plants by maintaining the minimum amount of water required, suppressing weed growth in grain fields, and preventing soil consolidation.
- **In India 2/3rd of the total cropped area needs irrigation**.
- Nature of monsoon rainfall in India is uncertain, unreliable, irregular, variable, seasonal and unevenly distributed.

The features of Monsoon and its effect on Indian agriculture which makes irrigation a necessity is as under:

Uncertainty of arrival.

- **Variable especially in areas of low rainfall e.g.-Punjab, Haryana, W. Uttar Pradesh (High coefficient of variability)**
- Variation in the spatial distribution of rainfall e.g. – Meghalaya has much more rainfall than that of Thar Desert.
- Only 30% of cultivated land receives sufficient rainfall of more than 100cm. Also in areas of high rainfall, irrigation is necessary to further increase farm productivity.
- Monsoon gaps (no rain for 2 or more weeks during the sunny season) may damage the crops in absence of irrigation facilities.
- Monsoon is "seasonal", 75% of rainfall happens in 3-4 months of the year and remaining in 8-9 months marked by dry

season when irrigation is badly needed for growing crops (5 months dry in Kerala, 9 months dry in NW India).

- Rainfall in most parts of India is torrential & therefore there is less opportunity for soil to absorb water & surface water goes waste. Also the rain water flows down very quickly along the hill slopes.
- Irrigation is necessary to end Monoculture cropping practices in Indian Agriculture.
- Irrigation is also necessary for socio economic transformation of rural India by making agricultural variables.
- **Certain crops like rice, sugarcane, jute, cotton require more water & need irrigation even in areas of heavy rainfall.**
- Introduction of HYV seeds & heavy doses of chemical fertilisers since the green revolution has made irrigation necessary.
- Sandy & loamy soil can't retain water like Alluvial & Black soil.
- The increasing population leads to more intensive agriculture which needs more irrigation facilities along with other inputs.
- To supply essential moisture for plant growth which includes transport of essential materials irrigation is necessary.
- Irrigation is required to leach or dilute the salts in soil.
- To increase productivity, cropping intensity or gross cropped area the expansion of the irrigation network is necessary.
- It is estimated that yields of irrigated crops are 50% to 100% higher than that of non irrigated crops under similar geographical conditions.

Geographical Factors Favouring Irrigation:

- **Northern plains of India:** Geographical factors favouring irrigation in Northern plains are:
  - Slope of land is gentle & canals can carry irrigation water to far off places.
  - Soft and friable soil makes it easy to dig canals and to link wells.
  - Deep clay in sub-soil acts as a reservoir for rain water which percolates through porous aluminium. Hence, a large quantity of groundwater is available for irrigation through wells and tube wells.
  - A large number of perennial rivers provide water for irrigation throughout the year.
- **Peninsular plateau area:** Irrigation in Peninsular plateau is not an easy task due to its difficult terrain and factors enumerated below:
  - Rocks are hard so digging canals & wells isn't easy. That is why tank irrigation is mainly practiced here.
  - Surface is uneven so canals can't carry water to far off places.

Development of Irrigation:

- According to the Rostov hypothesis, India was in the second stage of economic development after independence where the maximum population was dependent upon primary agricultural activity.
- To boost this sector from Ist FYP onwards, agriculture planners advocated agricultural development as prime pre requisite behind agriculture growth and regional planning.
- The availability of water and the type climate and terrain of an area plays a

major role in deciding the irrigation practices of the area.

Thus it can be seen that important requirements for irrigation are:

- Source of water
- Distribution Channel
- Field applications

Historical Developments in Irrigation:

- Since ancient times irrigation was practiced in India. Hindu Monarchs, Mughal emperors and British rulers exhibited great engineering feats to develop irrigation at different times in the history of India.
- The pre-independent undivided India had some of the best irrigation systems in the world. Much of the canal irrigated areas of Sutlej and Indus went to Pakistan.

Post- independence with the advent of the plane wing, sustained and systematic programmes for development of irrigation were taken up. This was done in order to ensure:

- Balanced regional development
- Rural development

Sources of Irrigation:

There are different sources of irrigation in an area which are dependent upon the following factors:

- Topography
- Soil
- Rainfall
- Availability of surface or groundwater.
- Nature of river (perennial or non perennial)
- Requirement of crops
- Main types of irrigation include wells and tube wells, canals, tanks, traditional water harvesting techniques and micro irrigation.
- The traditional irrigation types include various irrigation practices of rural India which are being done from ages. Some of them are famous with names such as Johars, Baolis, Hundu, Suragam, Kuhls, Sprins and Doug.

Micro irrigation:

- Micro-irrigation is considered as a prudent Irrigation technology promoted nationally and internationally to achieve higher cropping Intensity and irrigation Intensity through more focused application of water to crops.
- Micro-irrigation involves two methods of irrigation system:
- **Drip Irrigation**: In drip irrigation, water is applied near the plant root through emitters or drippers, on or below the soil surface, at a low rate varying from 2-20 litres per hour. The soil moisture is kept at an optimum level with frequent irrigation.
- **Sprinkle irrigation**: In this method, water is sprayed into the air and allowed to fall on the ground surface somewhat resembling rainfall. The spray is developed by the flow of water under pressure through small orifices or nozzles. The sprinkler irrigation system is a very suitable method for irrigation on uneven lands and on shallow soils.

Other Types of Irrigation

- **Furrow Irrigation**: Furrow irrigation is a type of surface irrigation in which trenches or "furrows" are dug between crop rows in a field. Farmers flow water down the furrows and it seeps vertically

should be <15 meters, greater than which it becomes uneconomical).

- Regular supply of cheap electricity and diesel so that water can be taken out when needed.

- Soil in the immediate neighborhood of tube wells should be fertile so that the construction and operational cost of tube wells is recovered by increased farm production.

- **Wells proliferated after the Green Revolution in Punjab, Haryana and Western Uttar Pradesh.**

- **Water application efficiency is 60% in well and tube well irrigation.**

Salient features of Indian Agriculture –

Indian Agriculture

- **Agriculture is made up of two words – 'Ager' + 'culture'. 'Ager' means soil and 'culture' means cultivation.**

- Agriculture is defined as the art, science and business of producing crops and livestock for economic purposes.

- Livestock, fisheries and poultry come under the allied agricultural activities.

- Importance of Agriculture in India:

- Two thirds of the livelihood of the Indian population is directly or indirectly dependent on Agriculture.

- 55% of the labour force is directly or indirectly involved in Agriculture.

- Agricultural sector accounts for 15% of the export earnings and 14%-17% of India's GDP.

- Agricultural sector provides raw material for various industries such as textiles, sugar, flour mills, Jute, Apparel etc.

- Flourishing Agricultural production in India is the main factor behind the food security of the large Indian population.

- Allied sectors in agriculture involve- horticulture, animal husbandry, dairy, fishing etc.

- Agriculture and allied sectors play a vital role in providing nutrition and livelihood to the huge population in India.

Salient features of Indian Agriculture

- **Subsistence agriculture:** The type of agriculture in India is mostly Subsistence agriculture. In Subsistence agriculture the agricultural produce is for self-consumption only, there is no surplus production to sell in the market.

- **Commercial agriculture:** Large-scale commercial agriculture is also practiced in India, such as tea plantation in Assam, coffee in Karnataka, coconut in Kerala, etc. Commercial Agriculture is the agricultural practice where large agricultural produce is sold in the market by the firms for making profits.

- Since the land resource in India is limited the pressure of increasing population on agriculture is increasing day by day.

- **Mechanization:** After the Green Revolution, there has been an increasing trend in the use of machines in farm operations. This has led to the mechanization of Indian agriculture. Punjab, Haryana, Western Uttar Pradesh, River valleys of Andhra, and Tamil Nadu are major agriculturally mechanized areas in India.

- ***Monsoon dependent***: *Due to lack of irrigation facilities Two-third of Indian agriculture is dependent on monsoon rains.*

- ***Variety of crops:*** *Due to the presence of different types of topography, diverse soil (like alluvial, red, black cotton soil, etc), and different types of climate, India is blessed with the production of different varieties of crops in different regions. For eg., hilly areas are suitable for tea cultivation, plains for rice cultivation*

- ***Predominance of food crops:*** *In order to feed a large population and predominance of subsistence agriculture, food crops are mainly grown in order to keep with the food security demands of the huge Indian population.*

- ***There are basically three cropping seasonal patterns in India namely Kharif, Rabi, and Zaid.***

Cropping Seasons in India

- *There are three distinct crop seasons in the northern and interior parts of the country, namely Kharif, rabi, and Zaid.*

- *The Kharif season: The crops which are grown in the Kharif season require a good amount of water, thus the sowing of Kharif crops largely coincides with the onset of the Southwest Monsoon.*

- *The Rabi season: The sowing of rabi crops begins with the onset of winter in October-November and the harvesting is done in March-April. The celebration of the festival Holi can be related to a good harvest in the month of March- April.*

- *The Zaid season: It is a short duration summer cropping season beginning after harvesting of rabi crops, the cultivation of watermelons, cucumbers, vegetables, and fodder crops during this season is done on irrigated lands.*

- *However, this type of distinction in the cropping season does not exist in southern parts of the country due to high temperature. The same crop can be grown thrice a year.*

Note: There are some crops that are grown in both Kharif and Rabi seasons like Maize, Jowar and Groundnut.

Shifting Cultivation/Land Rotation/Jhumming

- *Shifting cultivation is called so because of the shifting of the land after the cultivation of a crop when the soil losses its fertility (generally in 2 to 3 years).*

- *In Shifting cultivation forest land is cleared and cultivated. It is also called land rotation because the same crop (generally rice) is grown on a different piece of land.*

- *Due to the cultivation of the same crop on the same cleared forest land year after year, soil productivity is lost. After the land fertility is lost, the crop is shifted to other slashed and burnt land.*

- *Shifting cultivation leads to Soil Erosion, it is because clearing of forest land leads to the clearing of vegetation over the soil which in turn leads to soil erosion.*

- *Shifting cultivation is practiced in northeastern states of India, Chotanagpur plateau of Jharkhand, M.P., and in Hilly areas of the Himalayas, the Western Ghats, and the Eastern Ghats.*

This practice is known by different name in different regions of India like:

  - *Jhum in Assam,*
  - *Poonam in Kerala,*

- Podu in Andhra Pradesh and Odisha and
- Bewar Masha Penda and Bera in various parts of Madhya Pradesh.

Crop Rotation

- Crop rotation is the reverse of land rotation (Shifting Cultivation)
- Crop rotation is the practice of planting different crops sequentially on the same plot of land to improve soil health, optimize nutrients in the soil, and combat pest and weed pressure.
- In crop rotation, there is repeated cultivation of crops and fallow land which is done in a certain sequence in a scientific manner to conserve the fertility of the land.
- For example, on a particular piece of land, in the first year we are sowing Malt-Barley in a sequence and in the second year Spring-Wheat in a sequence and in the third year we are sowing potatoes, and then again in the fourth year we are back to Malt – Barley sequence(refer the figure).
- Since the nutrient requirements of different crops are different, sowing different crops on the same piece of land in sequence and in a scientific manner maintains and even improves the soil fertility and stabilizes the income of farmers.
- Crop rotation checks the soil erosion and conserves moisture. It is because there is always some crop thriving on the land to check erosion of the topsoil.
- Suitable crop rotation is the key of modern scientific agriculture which aims to produce maximum yield by maintaining soil productivity.

Sustainable Agriculture/Eco-Farming

- The concept of sustainable agriculture has come up because yields from modern farming techniques are reaching a plateau and the environmental problems due to excessive use of chemicals and fertilizers and pesticide residue in the food chain. The high use of modern farming techniques has led to the degradation of land and has led to various ecological problems like eutrophication, land degradation, etc., which has depleted the quality of land as a sustainable resource.
- Hence, we need a system of agriculture which produces sufficient food to meet the needs of the present generation without eroding the ecological assets and productivity of life supporting systems of the future generation.
- The table depicted below throws light on the fact that in sustainable agriculture the quantity of Input is low and output is high, thereby keeping the requirements of conservation of soil and increasing land productivity.
- Sustainable agriculture also involves agroforestry (growing trees near the crops), multi-level cultivation (growing trees of different heights in sequence), and integrated animal husbandry (growing crops with animal rearing practices).
- The term sustainability denotes the characteristic of a process that can be maintained indefinitely. With the help of sustainable farm practices, the needs of the present generation can be met without compromising the needs of future generations.

Zero Tillage farming/No-Till Farming

Tillage

- Tillage is an agricultural land preparation through mechanical agitation which includes digging, stirring, and overturning.

Zero Tillage

- Zero tillage is the process where the crop seed will be sown through drillers without prior land preparation and disturbing the soil where previous crop stubbles are present.
- Zero tillage not only reduces the cost of cultivation it also reduces the soil erosion, crop duration, and irrigation requirement, and weed effect which is better than tillage.
- Zero tillage (ZT) also called No-Tillage or Nil Tillage.
- No-till farming decreases the amount of soil erosion tillage causes in certain soils, especially in sandy and dry soils on sloping terrain.
- No-till farming is widely used in the United States and the number of acres managed in this way continues to grow. This growth is supported by a decrease in costs. No-till management results in fewer passes with equipment and the crop residue prevents evaporation of rainfall and increases water infiltration into the soil.

Advantages of zero tillage

- Reduction in the crop duration and thereby early cropping can be obtained to get higher yields.
- Reduction in the cost of inputs for land preparation and therefore a saving of around 80%.
- Residual moisture can be effectively utilized and the number of irrigations can be reduced.
- Dry matter and organic matter get added to the soil.
- Environmentally safe – Greenhouse effect will get reduced due to carbon sequestration.
- No-tillage reduces the compaction of the soil and reduces the water loss by runoff and prevents soil erosion.
- As the soil is intact and no disturbance is done, No-Till lands have more useful flora and fauna.
- This practice has carbon-sequestration potential. Apart from reducing carbon emission, the no-tilling practice can also reduce nitrous oxide emissions by 40 to 70%.

Disadvantages of Zero Tillage Farming

- the initial cost of zero tillage equipment (the upfront costs can be high, but they should be recouped through higher crop yields and fuel and labor savings)
- gullies can form in the fields (low-pressure tires and changing traffic patterns across the field can help prevent these)
- increased use of herbicides
- the learning curve for zero tillage farming

Zero budget natural farming (ZBNF)

- Zero Budget Natural Farming, a type of farming that involves the elimination of chemical pesticides, sustaining agriculture with eco-friendly processes, and restoring soil fertility and organic matter.
- It is a unique chemical-free method that involves agroecology. For the zero-net

- The whole family works on the farm. Most of the work is done manually.
- The farms are small. Yield is not very high, Most of the yield is consumed by the family with a very little surplus for the family.

Plantation Agriculture

- Plantation agriculture is a type of commercial farming in which a single crop is grown for the entire year.
- The major crops grown during plantation agriculture are Tea, coffee, sugarcane, cashew, rubber, banana, or cotton.
- Major plantations are found in the tropical regions of the world. Plantations exist on every continent possessing a tropical climate.
- Rubber in Malaysia, coffee in Brazil, Tea in India, and Sri Lanka.
- It is capital intensive and demands good managerial ability, technical know-how, sophisticated machinery, fertilizers, irrigation, and transport facilities. Plantation agriculture is export-oriented agriculture.

Dryland, and Wetland farming:

Dryland farming:

- They are practiced in regions receiving low rainfall, like Rajasthan, some parts of Gujarat and Maharashtra, etc. The soil is sandy and has low water retention capacity.
- Crops like **Peas, millets, grams, and other drought-resistant crops or varieties can be grown**.
- Dryland farming helps in soil and water conservation.

Wetland Framing

- It is practiced in the regions receiving high annual rainfall, mainly done in river plains, north-east India, the Ghats of India, etc. Crops requiring high irrigation can be easily grown.
- Types of crops under wetland farming in India **are Rice, sugarcane, cotton, Jute, etc.**

Terrace Cultivation:

- The hill and mountain slopes are cut to form terraces and the land is used in the same way as in permanent agriculture.
- Since the availability of flat land is limited, terraces are made to provide a small patch of level land.
- Soil erosion is also checked due to terrace formation on hill slopes.

Agricultural Production (India's Position in World Agriculture)

- **Largest producer of milk.**
- **Largest producer of millets in the world**
- **Largest producer of jute.**
- **Largest producer of ginger.**
- **Largest producer of bananas.**
- **Largest producer of castor oil seeds.**
- **Largest producer of mangoes.**
- **Largest producer of safflower oil seeds.**
- **Largest producer of papayas.**
- **Largest producer of cottonseed (As per International Cotton Advisory Committee (ICAC) report for the month of March 2017)**

- **Second largest producer of tea, the first position being held by China.**
- **Second largest producer of sugarcane, the first position being held by Brazil.**
- **Second largest producer of wheat, the first position being held by China.**
- **Second largest producer of onions, the first position being held by China.**
- **Second largest producer of potatoes, the first position being held by China.**
- **Second largest producer of garlic, the first position being held by China.**
- **Second largest producer of rice, the first position being held by China.**
- **Second largest producer of cement., next to China.**
- **Second largest producer of silk, the first position being held by China.**

Green Revolution in India –

Green Revolution:

- Richard Bradly in 1940 called India a "begging bowl" due to its heavy import dependence on food grains from the USA.
- In Mexico, there was a famine and at the same time the USA drowned millions of tonnes of wheat to maintain high prices.
- William Gadd in 1968 in Washington DC used the term "Green Revolution" for the first time.
- Green Revolution refers to the multiple growths in crop production in 3rd world countries based on the use of modern inputs, technologies, HYVs, farm mechanization, and irrigation facilities.
- Green Revolution was termed by Prof. William Gadd in 1968 in a seminar titled "The food crisis in 3rd World Countries" in Washington D C. It reflected the agro-economical situation of developing countries aiming at self-sufficiency in agriculture and mitigation of food crisis, hunger, famine, and related social evils.
- The Mexican food crisis was the stimulus as Professor Norman Borlaug developed HYVs by genetic modification and cross-fertilization of good quality wheat. It was successful in Mexico and wheat production doubled in 7 years.
- Self-sufficiency was achieved and it triggered a similar revolution in other crops across the world. Rice revolution took place in the Philippines and Japan which spread into SouthEast Asia.
- In 1961, M.S. Swaminathan invited Norman who suggested a similar revolution in Indian agriculture. Green Revolution was introduced with the Intensive Agriculture District Program (IADP) on an experimental basis in **7 districts viz. Jalandhar, Aligarh, Shahbad (Bihar), Raipur, West Godavari (A.P), Thanjavur (T.N), Pali (Rajasthan).**
- The program was successful and in 1964-65, the Intensive Agriculture Area Program (IAAP) was started and the number of districts was raised to 32.
- **In 1965-66 the HYV program was started which is the starting point of the Green Revolution in India.**

Basis of Green Revolution:

- High Yielding Varieties (HYVs): These are the genetically modified seed which can yield 2 to 3 times more than normal crop.

Way Forward:

- India's long coastline has the potential of becoming the strength of the economy particularly through the exploitation of the Blue Revolution.
- India can grow to the extent of a 10 trillion dollar economy as against 2.7 trillion dollars today with the help of the Blue Economy.
- India needs to develop more scientifically its fishing system and other related aspects such as freezing, packaging, etc.

Economic Planning in India & Niti Ayog –

Economic Planning:

- Economic planning refers to any plans of economic activity **which point to achieving specific social and economic outcomes. The term economic planning is used to describe the long term plans of the government of India to develop and coordinate the economy with efficient** utilization of resources.The planning mechanism should have some general goals as well as specific objectives which are to be achieved within a specified period of time.
- The philosophy of planning is that only markets and price systems cannot ensure the welfare of citizens. Apart from this, there are economic requirements such as investment in infrastructure, investment in public goods such as transport, and other public utilities which are enjoyed by the society.

Types of economic planning:

- **In today's world, most economies are mixed economies.** The planning can be of several types discussed below:
- **Indicative planning:** It puts forward / indicates some broad principles and guidelines to achieve some goals. Indicative planning is peculiar to the mixed economy of France. But this is quite different from the type of planning which exists in other mixed economies. By mixed economy, we mean simultaneous working of the public and private sector. It is the state which controls the private sector in different ways, i.e. by quotas, price, licenses, etc. But under indicative planning, the private sector is not rigidly controlled to achieve the targets and priorities of the plan. The state gives full assistance to the private sector but does not control it. It, rather, directs the private sector in certain areas to implement the plan.
- **Comprehensive / Imperative Planning:** It refers to centralized planning and implementation with the allocation of resources. It is used by socialist countries and each and every aspect of planning is controlled by the state. The resources are optimally used by the state in order to achieve the targets of the plan. Consumer sovereignty is sacrificed under this type of planning. The consumers get fixed quantities at fixed prices. **The government policies are rigid which cannot be changed easily. Any change can adversely affect the economy**.
- **Structural Planning:** It aims to change the existing structures. In this type of planning the present social and economic structure is changed and a new structure emerges. In developing countries, there is structured planning. Big economic and social changes are brought about to usher into a new system. **For instance, the shift from capitalist to socialist economy can be called a structural change.** Structural planning can help in accelerating the pace of economic development. The Communist

नोट – प्रिय IAS उम्मीदवारों, यहाँ हमने इस टॉपिक का मात्र SAMPLE ही दिया है, पूरा टॉपिक नही दिया है / यदि आपको हमारे नोट्स के सैंपल अच्छे लगे हों तो कम्पलीट नोट्स खरीदने के लिए नीचे दिए गये हमारे संपर्क नंबर पर कॉल कीजिए या लिंक पर क्लिक करें / दोस्तों, हमें पूर्ण विश्वास है कि ये नोट्स आपकी "UPSC IAS (PRE. & MAINS)" की परीक्षा में पूर्ण संभव मदद करेंगे और आप "INFUSION NOTES" के साथ IAS की परीक्षा में जरूर सफल होंगे, धन्यवाद /

प्रिय दोस्तों, अब तक हमारे विभिन्न नोट्स में से विभिन्न परीक्षाओं में आये हुए प्रश्नों के परिणाम –

EXAM (परीक्षा)	EXAM DATE	हमारे नोट्स में से आये हुए प्रश्न
RAS PRE. 2021	27 अक्तूबर 2021	74 प्रश्न (150 में से) CUT OFF – 64
UPSC – IAS PRE. (2022)	05 JUNE 2022	69 (100 में से)
SSC GD 2021	16 नवम्बर	68 (100 में से)
SSC GD 2021	01 दिसम्बर	65 (100 में से)
SSC GD 2021	08 दिसम्बर	67 (100 में से)
राजस्थान S.I. 2021	13 सितम्बर	113 (200 में से)
राजस्थान S.I. 2021	14 सितम्बर	119 (200 में से)

राजस्थान S.I. 2021	15 सितम्बर	126 (200 में से)
RAJASTHAN PATWARI 2021	23 अक्टूबर (1st शिफ्ट)	79 (150 में से)
RAJASTHAN PATWARI 2021	23 अक्टूबर (2nd शिफ्ट)	103 (150 में से)
RAJASTHAN PATWARI 2021	24 अक्टूबर (1st शिफ्ट)	95 (150 में से)
RAJASTHAN PATWARI 2021	24 अक्टूबर (2nd शिफ्ट)	91 (150 में से)
RAJASTHAN VDO 2021	27 दिसंबर (1st शिफ्ट)	59 (100 में से)
RAJASTHAN VDO 2021	27 दिसंबर (2nd शिफ्ट)	61 (100 में से)
RAJASTHAN VDO 2021	28 दिसंबर (1st शिफ्ट)	56 (100 में से)
RAJASTHAN VDO 2021	28 दिसंबर (2nd शिफ्ट)	57 (100 में से)
U.P. SI 2021	14 नवम्बर 2021 1st शिफ्ट	91 (160 में से)
U.P. SI 2021	21नवम्बर2021 (1st शिफ्ट)	89 (160 में से)

& Many More Exams

दोस्तों, इनका proof देखने के लिए नीचे दी गयी लिंक पर क्लिक करें या हमारे youtube चैनल पर देखें –

RAS PRE. – https://www.youtube.com/watch?v=p3_i-3qfDy8&t=136s

VDO PRE. – https://www.youtube.com/watch?v=gXdAk856W18&t=202s

Patwari – https://www.youtube.com/watch?v=X6mKGdtXyu4&t=103s

अन्य परीक्षाओं में भी इसी तरह प्रश्न आये हैं Proof देखने के लिए हमारे youtube चैनल (Infusion Notes) पर इसकी वीडियो देखें या हमारे नंबरों पर कॉल करें।

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CHAPTER – 23

TRIBES IN INDIA

- A tribe is a social division of a traditional society composed of households connected with a common culture and a dialect by social, financial, religious, or blood connections.
- A tribe possesses certain qualities and characteristics that make it a unique cultural, social, and political entity.

Race vs Ethnicity;

Although, all human belongs to same species, i.e. Homo sapiens and even subspecies, i.e. Homo Sapiens Sapiens. But there are small genetic variations across the globe due to geographical diversity such as variations in skin shading to the eye shading, and facial structure to hair shading. These engender diverse physical appearances termed as 'race' which is associated with biology.

Ethnicity refers to cultural factors, including nationality, regional culture, ancestry, and language. It implies or suggests shared cultural traits, linguistic or religious traits, and shared group history. For Ex. Indo-Aryan Ethnic Group, Dravidian Ethnic Group, Mongoloid Ethnic Group.

- India has been described as a "melting pot" of races and tribes. India has one of the largest and diverse tribal populations in the world.
- The tribal population in India according to the 2011 census is 104 million or 8.6% of the total population.
- Madhya Pradesh has the largest population (15.3 million i.e 21%) according to numbers and Lakshadweep has the highest population (94.8%) compared to its total population.
- The largest tribe are Bhils, nearly 46 lakh and the smallest tribe are Andamanese with only 19 members.

The tribal communities in India have been recognized by the Indian Constitution under 'Schedule 5' of the constitution. Hence the tribes recognized by the Constitution are known as 'Scheduled Tribes'.

- Article 366 (25) defined scheduled tribes as "such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under Article 342 to be Scheduled Tribes for the purposes of this constitution".

Article 342:

- The President may, with respect to any State or Union territory, and where it is a state, after consultation with the Governor thereof by public notification, specify the tribes or tribal communities or parts of or groups within tribes or tribal communities which shall, for the purposes of this constitution, is deemed to be scheduled tribes in relation to that State or Union Territory, as the case may be.
- Parliament may by law include in or exclude from the list of Scheduled tribes specified in a notification issued under clause(1) any tribe or tribal community or part of or group within any tribe or tribal community, but save as aforesaid, a notification issued under the said clause shall not be varied by any subsequent notification.
- Thus, the first specification of Scheduled Tribes in relation to a particular State/

Union Territory is by a notified order of the President, after consultation with the State governments concerned. These orders can be modified subsequently only through an Act of Parliament. The above Article also provides for listing of scheduled tribes State/Union Territory wise and not on an all India basis.

Ministry of Tribal Affairs:

- The Ministry of Tribal Affairs is responsible for the overall development of the scheduled tribes in India. This Ministry was set up in 1999 after the bifurcation of the Ministry of Social Justice and Empowerment with the objective of providing a more focused approach on the integrated socio-economic development of the Scheduled Tribes (STs), the most underprivileged of the Indian Society, in a coordinated and planned manner.
- The Ministry of Tribal Affairs shall be the nodal Ministry for overall policy, planning, and coordination of programs of development for the Scheduled Tribes. In regard to sectoral programs and schemes of development of these communities policy, planning, monitoring, evaluation, etc. as also, their coordination will be the responsibility of the concerned Central Ministries/ Departments, State Governments, and Union Territory Administrations.

National Commission for Scheduled Tribes (NCST):

- The National Commission for Scheduled Tribes (NCST) was established by amending Article 338 and inserting a new Article 338A in the Constitution through the Constitution (89th Amendment) Act, 2003.
- By this amendment, the erstwhile National Commission for Scheduled Castes and Scheduled Tribes was replaced by two separate Commissions namely-
- the National Commission for Scheduled Castes (NCSC)
- the National Commission for Scheduled Tribes (NCST) w.e.f. 19 February 2004.

Tribal Sub Plan (TSP) strategy;

- The Tribal Sub Plan (TSP) strategy is a Government of India initiative aimed for the rapid socio-economic development of tribal people.
- The funds provided under the Tribal Sub Plan of the State have to be at least equal in proportion to the ST population of each State or UTs.
- Similarly, Central Ministries/Departments are also required to earmark funds out of their budget for the Tribal Sub-Plan. As per guidelines issued by the Planning Commission, the Tribal Sub Plan funds are to be non-divertible and non-lapsable.
- The National Commission for Scheduled Tribes is vested with the duty to participate and advise in the planning process of socio-economic development of STs, and to evaluate the progress of their development under the Union and any State.

Particularly Vulnerable Tribal Groups (PVTGs):

PVTGs are more vulnerable among the tribal groups. In India, tribal population makes up for 8.6% of the total population.

- 75 tribal groups have been categorized by the Ministry of Home Affairs as Particularly

1871 under the British as Criminals and addicted to the systematic commission of non-bailable offenses.

- Once declared notified they were required to register with the local magistrate and severe restriction was placed on their movement.
- But after Independence Criminal Tribes Act was repealed and were placed under the Habitual offenders Act. Thus they still suffer from numerous disabilities due to this and are unable to meet their subsistence needs.
- The Idate Commission appointed by the Government called for the repeal of the Habitual offenders Act to allow for inclusive development of these tribes.

Most Famous Tribal Groups

Bhils Tribe:

- The Bhils are a tribe found mostly in the mountain ranges of Udaipur and in some districts of Rajasthan.
- The Bhils are the largest tribes in India.
- Popularly known as the Bow men of Rajasthan
- They speak the Bhili language.
- Their celebrations are the Ghoomar dance, Bhagoria Mela during Holi, Than Gair-a dance drama, and the Baneshwar Fair during Shivaratri.

Gonds Tribe:

- Found in the Chhindwara district of Madhya Pradesh and in parts of Maharashtra, Orissa, and Andhra Pradesh, the Gonds are the second biggest tribe in India.
- They are known for their valor and speak many Indian languages including the Dravidian Gondi language.
- They have houses of mud walls and thatched roofs in the Gondi forests.
- Agriculture is their main occupation.
- Keslapur Jathra and Madai are their festivals.

Baiga Tribe:

- The Baiga (means sorcerers) is one of the Particularly Vulnerable Tribal Groups (PVTGs).
- They mainly live in Chhattisgarh, Jharkhand, Bihar, Odisha, eWst Bengal, Madhya Pradesh, and Uttar Pradesh.
- Traditionally, the Baiga lived a semi-nomadic life and practiced slash and burn cultivation. Now, they are mainly dependent on minor forest produce for their livelihood.
- Bamboo is the primary resource.
- Tattooing is an integral part of Baiga culture, every age and body part has a specific tattoo reserved for the occasion.

Munda Tribe (means headmen of village):

- **This tribe is found in Jharkhand and parts of** Chattisgarh, Bihar, Odisha, and West Bengal.
- Their life is simple and basic. They speak the Mundari language. The Mundas were hunters in the past but now are laborers in farms.
- They follow the Sarna religion owing allegiance to a God called Singbonga which means the Sun God.
- Their language is Kili and Nupur dance is the main entertainment.

- They are also called Cholanaickar and Pathinaickars.

Cholanayakan:

- Distribution: southern Kerala State, especially Silent Valley National Park.
- They are called Cholanaikan because they inhabit the interior forests. 'Chola' or 'shoals' means deep evergreen forest, and 'naikan' means King. They are said to have migrated from Mysore forests.
- The Cholanaikkans speak the Cholanaikkan language, which belongs to the Dravidian family.
- They live in rock shelters called 'Kallulai' or in open campsites made of leaves.
- They subsist on food-gathering, hunting and minor forest produce collection.

Kanikaran Tribe:

- Kanikkaran are a tribal community found in the southern parts of Kerala and Tamil Nadu states in India.
- Though they cultivate everything and make agriculture their main profession, they have a special liking for fishing and hunting.
- Kaanikkar Nritham is a form of group dance performed as a rural offering.
- The Kanikkars are semi-nomadic, living in temporary huts of bamboo and reeds. These are generally situated on hillsides.

Kurumba Tribe:

- This is a major tribe found in parts of Kerala and Tamil Nadu. They are one of the earliest settlers of the Western Ghats.
- They lead a simplistic lifestyle depending on agriculture and gathering of honey and wax.
- They are adept at formulating traditional herbal medicines.
- They are well known in the region for their skills in witchcraft and magic.

Great Andamanese Tribe:

- The tribe is based in the 'Strait Island' of Andaman and Nicobar Islands.
- The members speak Jeru dialect among themselves and their number stands at 51 as per the last study carried out by Andaman Adim Janjati Vikas Samiti in 2012.
- More than 5,000 Great Andamanese lived in the Islands before British settlers arrived in the 19th century.
- However, hundreds were killed in the conflict as they defended their territories from British invasion, and thousands more were wiped out in epidemics of measles, influenza, and syphilis (a bacterial infection).

Onges:

- The Onge were semi-nomadic and fully dependent on hunting and gathering for food.
- The Onge are one of the least fertile people in the world. About 40% of married couples are sterile.
- Onge women rarely become pregnant before the age of 28.
- Infant and child mortality is in the range of 40%.
- The ong speaks the Önge language. It is one of two known Ongan languages (South Andamanese languages).
- A major cause of the decline in Onge population is the changes in their food habits brought about by their contact with the outside world.

(4) involuntary displacement and migration, (5) and legal and constitutional matters have been studied by the Xaxa Committee.

- Of the five issues, the first three are concerned with issues that have been at the root of the post-colonial State's development agenda for tribes: livelihood and employment, education and health.
- Substantial resources have been allocated specifically for tribes in all these spheres, and special programmes and schemes have also been formulated to address problems on these fronts, beginning from the first phase of India's planned development.
- And yet the status of tribes in these spheres continues to be one of the critical gaps in India's road to development. This also raises the question of institutions and systems for delivery of public goods and services.
- Massive development displacement: As a part of the faulty nation-building process, tribal areas have witnessed the large-scale development of industry, mining, infrastructure projects such as roads and railways, hydraulic projects such as dams and irrigation.
- These have been followed by processes of urbanization as well.
- There has often been loss of livelihood, massive displacement and involuntary migration of tribes.
- Another important issue analyzed by the Committee is the working of legislation.
- The Provisions of Panchayats (Extension to Scheduled Areas) Act (PESA), 1996 and The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (FRA), 2006, enacted to redress the historical injustice to tribal and forest communities, have been significant initiatives that have changed their legal status.
- However, policies and practices have been slow to absorb the changed circumstances recognised in the law.
- These legislations and their violations have been examined for future amendment.
- Subjects such as land acquisition, food security, detention and imprisonment, the status of Particularly Vulnerable Tribal Groups (PVTGs) and Denotified Tribes, have also been highlighted.

Scheduled Tribes in India – Definition, Criteria, and Full List:-

Scheduled Tribes: Who are they?

The framers of the Constitution took note of the fact that certain communities in India were suffering from extreme social, educational and economic backwardness.

They needed special consideration for safeguarding their interests and for their socio-economic development.

These communities were notified as Scheduled Castes and Scheduled Tribes as per provisions contained in **Clause 1 of Articles 341 and 342 of the Constitution respectively.**

What is a tribe?

The tribes are the autochthonous or native people of the land who are believed to be the earliest settlers in the Indian Peninsula. They are generally called Adivasis, implying original inhabitants.

CHAPTER – 29

ASIA – WORLD GEOGRAPHY

Asia is the world's largest continent, having an area of 44,444,100 sq km.

It covers 8.8% of the Earth's total surface area with a population of 4.4 billion which is 60 % of the world's total population.

It is a continent of contrast in relief, temperature, vegetation and people also.

Asia is to the east of the Suez Canal, the Ural River, and the Ural Mountains, and south of the Caucasus Mountains and the Caspian and Black Seas.

It is bounded on the east by the Pacific Ocean, on the south by the Indian Ocean and on the north by the Arctic Ocean.

The earth's highest and lowest places are both in Asia:

- The highest place on earth: **Mount Everest.**
- The lowest place on earth: **Dead Seashore.**

Regional Divisions of Asia

Asia can be divided into six physiographic divisions.

Central Asia: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan.

Eastern Asia: China, Hong Kong, Japan, North Korea, South Korea, Macau, Mongolia, Taiwan.

Northern Asia: Russia

South-eastern Asia: Brunei, Myanmar, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Timor-Leste, Vietnam.

Southern Asia: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka.

Western Asia: Armenia, Azerbaijana, Bahrain, Cyprus, Georgia, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, State of Palestine, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, Yemen.

Major Physical Divisions of Asia:

- The Northern Lowlands
- The Central Mountains
- The Central and Southern Plateaus
- The Peninsulas
- Deserts
- The Great River Plains
- Island Groups

I. The Northern Lowlands:

The Northern Lowlands are the extensive plain areas that comprise several patches of lowlands of this large continent.

The **major lowlands** are:

Great Siberian plain:

- It extends between the Ural Mountains in the west and the river Lena in the east. It is the largest lowland in the world covering an area of 1,200,000 square miles approx.

Manchurian Plain:

- It is the area adjoining Amur river and its tributaries of the northern part of China with an area of 135,000 square miles approx.

Great Plains of China:

- It is contributed by two major rivers of China, Hwang Ho and Yangtze river which

covers an area of 158,000 square miles approx.

Tigris-Euphrates plains.

Ganga plains.

Irrawaddy plains.

2. The Central Mountains

- These are the prominent and extensive mountain ranges that cover the parts of Central Asia.
- They consist of Pamir and Tian Shan ranges and extend across portions of Afghanistan, China, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan.
- These mountain ranges are designated as biodiversity hotspots by Conservation International which covers several montane forests and alpine ecoregions of Central Asia.
- It encompasses several habitat types, including montane grasslands and shrublands, temperate coniferous forests, and alpine tundra.
- A mountain knot is a junction of two or more mountain ranges. The two main mountain knots in Asia are:
- **The Pamir Knot is the junction of five mountain ranges : the Sulaiman, the Hindu Kush, the Kunlun, the Karakoram, and the Himalayan ranges.** Mount Everest, the highest peak in the world in the Himalayan range.
- **The Armenian Knot is connected to the Pamir Knot by the Elburz and the Zagros Ranges that originate in the Armenian Knot.** The Tien Shan and the Altai are other mountain ranges in Asia.

Peaks of Asia:

- Mount Everest (8848 m), Nepal-Tibet, China border
- K2 (8,61,1 m), Pakistan-China
- Kangchenjunga (8,586 m), Nepal-Sikkim (India).
- Lhotse (8,516 m), Nepal-Tibet, China.
- Makalu (8,462 m), Nepal-Tibet, China.
- Cho Oyu (8,201 m), Nepal.

3. The Central and Southern Plateaus:

Plateaus are the land areas having a relatively that surface considerably raised above adjoining land on at least one side, and often cut by deep canyon.

4. Peninsulas:

A peninsula is a mass of land surrounded by water but attached to the mainland. The Deccan plateau region is also a peninsula. The major peninsulas of Arabia, India, and Malay are in southern Asia. The Kamchatka peninsula lies in northeastern Asia.

5. Deserts:

Asia has some big deserts such as the Gobi, the TaklaMakan, the Thar, the Kara-Kum, and the Rub-al-Khali Deserts.

The Rub' al Khali desert, considered the world's largest sand sea, covers an area larger than France across Saudi Arabia, Oman, the United Arab Emirates, and Yemen.

6. (a) Islands of Asia:

Asia also has a cluster of islands, also called an archipelago. An archipelago sometimes called an island group or island chain, which is formed close to each other in large

clusters. Indonesia, Philippines, Japan, Andaman, and Nicobar are some examples of archipelagos.

6. (b) Drainage of Asia:

The drainage of Asia consists of mighty oceans, extensive seas, lengthy rivers, and their tributaries and distributaries, major lakes, etc.

Oceans: Asian continent is surrounded by three major ocean from three sides such as

The Pacific Ocean – It covers the eastern part of Asia where major rivers of eastern Asia drain, such as Menam Mekong, Xi Jiang, Chang Xiang, Huang Ho, and Amur.

The Indian Ocean – It covers the southern part of Asia and the major rivers that flow into the Indian Ocean are Tigris, Euphrates, the Indus, the Ganga, Brahmaputra, Irrawaddy, Salween.

The Arctic Ocean – It covers the North east part of Asia and consists of three major rivers such as Ob, Yenisey, and Lena.

Seas:

As the continent is covered by sea from its three sides, It has also characterized by the long stretch of bay and gulf.

Major seas contributing to Asian Drainage are **Andaman Sea, Arabian Sea, Banda Sea, Barents Sea, Bering Sea, Black Sea, Caspian Sea, East Siberian Sea, Java Sea, Kara Sea, Laccadive Sea, Sea of Japan, Sea of Okhotsk. The South China Sea and the Yellow Sea.**

Lakes:

Major lakes of Asia are:

Lake Baikal, Onega, Ladoga, and Peipus in **Russia**;

Lake Akan, Mashu, Biwa, Shikotsu in **Japan**;

Qinghai Lake, Lake Khanka in **China**;

Dal Lake, Chilka, Vembanada, Pulicat and Sukhna in **India**;

Lake Matano and Toba in **Indonesia**, etc.

Baikal is the deepest lake in the world. It is in Southern Siberia, Russia.

Freshwater:

Lake Baikal, located in southern Russia, is the deepest lake in the world, reaching a depth of 1,620 meters (5,315 feet). The lake contains 20 percent of the world's unfrozen fresh water, making it the largest reservoir on Earth. 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 (behind the Amazon of South America and the Nile of Africa). Reaching 6,300 kilometers (3,915 miles) in length, the Yangtze moves east from the glaciers of the Tibetan Plateau to the river's mouth on the East China Sea. The Yangtze is considered the lifeblood of China.

The Tigris and Euphrates Rivers begin in the highlands of eastern Turkey and flow through Syria and Iraq, joining in the city of Qurna, Iraq, before emptying into the Persian Gulf. The land between the two rivers, known as Mesopotamia, was the center of the earliest civilizations, including Sumer and the Akkadian Empire.

Saltwater:

The Persian Gulf has an area of more than 234,000 square kilometers (90,000 square miles). It borders Iran, Oman, United Arab Emirates, Saudi Arabia, Qatar, Bahrain, Kuwait, and Iraq. The gulf is subject to high

rates of evaporation, making it shallow and extremely salty.

The Sea of Okhotsk covers 1.5 million square kilometers (611,000 square miles) between the Russian mainland and the Kamchatka Peninsula.

The Bay of Bengal is the largest bay in the world, covering almost 2.2 million square kilometers (839,000 square miles) and bordering Bangladesh, India, Sri Lanka, and Burma. Many large rivers, including the Ganges and Brahmaputra, empty into the bay.

Straits:

The important straits in Asia are the Strait of Malacca, Bering Strait, etc.

important facts about straits

Name -	Separates- Connects
Bering Strait	Asia and North America— East Siberian Sea with Bering Sea.
La Perouse Strait	— Sakhalin Island and Hokkaido Island—Sea of Okhotsk with Sea of Japan.
Tata Strait	— Eastern Russia and Sakhalin— Sea of Okhotsk with Sea of Japan.
Korea Strait	—South Korea and Kyushu (Japan) —Yellow Sea with Sea of Japan
Formosa Strait (Taiwan Strait)	— Taiwan and China —East China Sea with South China Sea.
Luzon Strait	— Taiwan and Luzon (Philippines)— South China Sea with Pacific Ocean.
Makassar Strait	— Borneo (Kalimantan) and Celebes Island —Celebrate the Sea with the Java Sea.
Sundra Strait	— Java and Sumatra —Java Sea with India Ocean
Malacca Strait	— Malaya Peninsula and Sumatra —Java Sea with Bay of Bengal.
Strait of Johor	— Singapore and Malaysia —South China Sea with the strait ofMalacca.
Strait of Hormuz	— UAE and Iran — Persian Gulf with Gulf of Oman.
Strait of Bosporus	— Asia and Europe—Black Sea with Sea of Marmara.
Strait of Dardanelles	—Asia and Europe—Sea of Marmara with MediterraneanSea.

Resources:

Asia's climate can be most generally divided into three zones:

- North/central,
- Southwest
- Southeast

North/central Zone:

The continent's north/central zone is affected by cold and dry Arctic winds, especially the Siberia region of Russia.

Hardier grains, such as barley, buckwheat, millet, oats, and wheat, are grown in the central and southern areas of this zone, where permanent frosts inhibit plant growth.

Animal husbandry is also very important in this zone. In Mongolia, for example, 75

CHAPTER – 42

WORLD DESERT LANDFORMS: EROSIONAL AND DEPOSITIONAL

Desert

- A desert is a barren area of landscape where little precipitation occurs and, consequently, living conditions are hostile for plant and animal life. The lack of vegetation exposes the unprotected surface of the ground to the processes of denudation. About one-third of the land surface of the world is arid or semi-arid.
- This includes much of the Polar Regions, where little precipitation occurs, and which are sometimes called polar deserts or "cold deserts". Deserts can be classified by the amount of precipitation that falls, by the temperature that prevails, by the causes of desertification, or by their geographical location.
- About 1/5 of the world's land is made up of deserts.
- Deserts that are absolutely barren, where nothing grows are known as true deserts.
- Insufficient & irregular rainfall, high temperature & rapid rate of evaporation are the main causes of the desert's aridity.
- Almost all the deserts are confined within 15 degree – 30 degree parallels to N-S of the equator known as trade wind deserts or tropical deserts.
- They lie in the trade wind belt on the western parts of the continents.
- Offshore trade winds are often bathed in cold currents which produces a desiccating (dehydrating) effect, hence moisture is not easily condensed into precipitation.

Types of desert

Hamada/Rocky Desert

- Consist of large stretches of bare rocks, swept clear of sand & dust by wind.
- Exposed rocks are thoroughly smoothened, polished & highly sterile

Reg/Stony Desert

- Composed of extensive sheets of angular pebbles & gravels which the wind is not able to blow off.
- Stony deserts are more accessible than sandy deserts & large herds of camels kept there.

Erg/Sandy Desert

- Also known as the sea of sand
- Winds deposit vast stretches of undulating sand dunes in the direction of winds.

Badlands

- Consists of gully & ravines formed on hill slopes & rock surfaces by the extent of water action
- Not fit for agriculture & survival
- Finally leads to the abandonment of the entire region by its inhabitant

Mountain Deserts

- Deserts which are found on the highlands such as on plateaus & mountain ranges, where erosion has dissected the desert highland into rough chaotic peaks & uneven ranges.

- Their steep slopes consist of Wadis (dry valleys) with sharp & irregular edges carved due to the action of frost.

Mechanism of Desert/Arid Erosion

Weathering

- Most potent factor in reducing rocks to sand in arid regions.
- Even though the amount of rain that falls in a desert is small, but manages to penetrate into rocks & sets up chemical reactions in various minerals it contains.
- Intense heating during the day & rapid cooling during the night by radiations, set up stresses in already weakened rocks, hence they eventually crack.
- When water gets into cracks of a rock, it freezes at night as the temperature drops below the freezing point & expands by 10 % of its volume.
- Successive freezing will prise of fragments of rocks which get accumulated as screes.
- As heat penetrates rock, its outer surface gets heated & expands, leaving its inner surface comparatively cool.
- Hence, outer surface prise itself from the inner surface & peels o

Action of Wind

- Efficient in arid regions as little vegetation or moisture to bind the loose surface materials.
- It is carried out in the following ways:

Deflation

- Involves lifting & blowing away of loose materials from the ground
- Blowing capacity depending largely on the size of the material lifted from the surface
- Finer dust & sands may be removed miles away from their place of origin & may get deposited even outside the desert margins.
- Deflation results in the lowering of the land surface to form large depressions called Deflation hollows.

Abrasion

- Sandblasting of rock surfaces by the wind when they hurl sand particles against them
- This results in rock surfaces being scratched, polished & worn away
- Abrasion is most effective near the base of the rocks, where the amount of material the wind is able to carry is greatest.
- This explains why telegraphic poles in the deserts are protected by covering of metal for a foot or two above the ground.

Attrition

- When wind-borne particles roll against one another in the collision, they wear each other away
- Hence their sizes are greatly reduced & grains are rounded into millet seed sand.

Desert Landforms by Wind Erosion

- **Rock pedestals/Mushroom rocks**
- Formed by the sandblasting effect of winds against any projecting rock masses
- It wears down the softer layer leading to the formation of irregular edges on alternate bands of softer & harder rocks.

- That's how the high relief in desert areas is reduced to low featureless plains called pediplains.

Alluvium fans

- Alluvium fans are cone shaped heaps of sand that are deposited on the exit of a wadi or valley.
- A wadi is a narrow dry valley with ephemeral water flow (water that flows during heavy rains only). The valley is dry and baked most of the time, but during heavy downpours they can fill up with water and transport all the alluvium from the upslope as sheet wash.
- This alluvium is deposited as the wadi terminates into an open space. Energy is dissipated in the open space and material spreads apart into a fan shape.
- **Canyons/Gorges**
- Gorges (canyons in America) are deep narrow valleys that are excavated and eroded vertically by rivers that flow along deserts.
- The Grand Canyon in Arizona USA was formed by vertical erosion of sedimentary strata by the Colorado River for millions of years.

- **Major and Minor Ocean Relief Features**

The Ocean Relief Features are quite different from the continental features because the Oceanic crust is less than 60-70- million years old whereas continental features are of Proterozoic age (Over 1 Billion years old).

Ocean: Introduction

While there is only one global ocean, the vast body of water that covers 71 percent of the Earth is geographically divided into distinct named regions. The boundaries between these regions have evolved over time for a variety of historical, cultural, geographical, and scientific reasons.

Historically, there are four named oceans: the Atlantic, Pacific, Indian, and Arctic. However, a new ocean has now been recognized as the Southern (Antarctic) ocean as the fifth ocean. **The Pacific, Atlantic, and Indian are known as the three major oceans.**

- They are the source of food- fish, mammals, reptiles, salt, and other marine foodstuffs.
- The tides can be harnessed to provide power.
- Oceanography is the branch of science that deals with the physical and biological properties and phenomena of the sea.
- Earlier echo-sounding techniques were used, now radar soundings and electrical Echo devices are used to find the precise depths of ocean floors and map the relief of oceans.

Ocean Relief Features

The oceans, unlike the continents, merge so naturally into one another that it is hard to

demarcate them. The geographers have divided the oceanic part of the earth into five oceans, namely the Pacific, the Atlantic, the Indian, Southern, and the Arctic. The various seas, bays, gulfs, and other inlets are parts of these four large oceans.

A major portion of the ocean floor is found between 3-6 km below the sea level. The 'land' under the waters of the oceans, that is, the ocean floor exhibits complex and varied features as those observed over the land.

The floors of the oceans are rugged with the world's largest mountain ranges, deepest trenches, and the largest plains. These features are formed, like those of the continents, by the factors of tectonic, volcanic, and depositional processes.

Major Ocean Relief Features

The ocean floors can be divided into four major divisions:

- the Continental Shelf
- the Continental Slope
- the Deep Sea Plain
- the Oceanic Deeps

Besides, these divisions there are also major and minor relief features in the ocean floors like ridges, hills, seamounts, guyots, trenches, canyons, etc.

Continental Shelf

The continental shelf is the extended margin of each continent occupied by relatively shallow seas and gulfs. It is the shallowest part of the ocean showing an average gradient of 1° or even less.

- The shelf typically ends at a very steep slope, called the shelf break.
- The width of the continental shelves varies from one ocean to another. The average width of continental shelves is about 80 km.
- The shelves are almost absent or very narrow along some of the margins like the coasts of Chile, the west coast of Sumatra, etc. On the contrary, the Siberian shelf in the Arctic Ocean, the largest in the world, stretches to 1,500 km in width.
- The depth of the shelves also varies. It may be as shallow as 30 m in some areas while in some areas it is as deep as 600 m.
- The continental shelves are covered with variable thicknesses of sediments brought down by rivers, glaciers, wind, from the land, and distributed by waves and currents. Massive sedimentary deposits received over a long time by the continent shelves become the source of fossil fuels.
- There are 3 views on the continental shelf –
- They can be part of the continent submerged due to the rise in sea level.
- Some smaller continental shelves could have been caused by wave erosion.
- They may have been formed by the deposition of lands-derived or river-borne materials on the off-shore terrace.

Continental shelf geographical significance:

Their shallowness enables sunlight to penetrate through the water, which encourages the growth of plants and organisms → now rich in plankton → fishes thrive on them → so continental shelves are the richest fishing grounds.

- E.g. – Grand banks off Newfoundland, the North Sea, and the Sunda shelf.

- ***Tides: Spring & Neap Tide, Tidal Bulge, Tidal Bore***

Tides

The periodic short term rise and fall in the sea level is known as Tide. It is produced due to the gravitational interaction of earth, sun, and moon. Since the moon is closer to the earth, it has a pronounced influence on the tides. Rotation of earth also aids the tides.

- The moon's gravitational pull to a great extent and to a lesser extent the sun's gravitational pull, are the major causes for the occurrence of tides.
- Another factor is a centrifugal force that acts opposite to the gravitational pull of the earth.
- Tides occur due to a balance between all these forces.

When the highest part, or crest, of the wave, reaches a particular location, high tide occurs; low tide corresponds to the lowest part of the wave, or its trough. The difference in height between the high tide and the low tide is called the tidal range.

The highest tide in the World occurs in the Bay of Funday (Canada). The highest tide in India is recorded at Okha, Gujarat. The greatest tidal range in the world is found at the upper end of the Bay of Fundy in eastern Canada, where a 15-meter (50-foot) water-level fluctuation twice a day is not uncommon, and a wall of seawater—called a tidal bore—several centimeters to more than a meter in height rushes up the Petitcodiac River in New Brunswick for many kilometers.

Tide changes proceed via the following stages:

- Sea level rises over several hours, covering the intertidal zone; flood tide.
- The water rises to its highest level, reaching high tide.
- Sea level falls over several hours, revealing the intertidal zone; ebb tide.
- The water stops falling, reaching low tide.

Oscillating currents produced by tides are known as tidal streams. The moment that the tidal current ceases is called slack water or slack tide. The tide then reverses direction and is said to be turning. Slack water usually occurs near high water and low water. But there are locations where the moments of slack tide differ significantly from those of high and low water.

Tides are commonly semi-diurnal (two high waters and two low waters each day), or diurnal (one tidal cycle per day). The two high waters on a given day are typically not the same height (the daily inequality); these are the higher high water and the lower high water in tide tables. Similarly, the two low waters each day are the higher low water and the lower low water. The daily inequality is not consistent and is generally small when the Moon is over the equator.

Types of Tides

Tides vary in their frequency, direction and movement from place to place and also from time to time.

Tides may be grouped into various types based on their frequency of occurrence in one day or 24 hours or based on their height.

Tides based on Frequency

- Semi-diurnal tide
- Diurnal tide
- Mixed tide

नोट – प्रिय IAS उम्मीदवारों, यहाँ हमने इस टॉपिक का मात्र SAMPLE ही दिया है, पूरा टॉपिक नही दिया है / यदि आपको हमारे नोट्स के सैंपल अच्छे लगे हों तो कम्पलीट नोट्स खरीदने के लिए नीचे दिए गये हमारे संपर्क नंबर पर कॉल कीजिए या लिंक पर क्लिक करें / दोस्तों, हमें पूर्ण विश्वास है कि ये नोट्स आपकी "UPSC IAS (PRE. & MAINS)" की परीक्षा में पूर्ण संभव मदद करेंगे और आप "INFUSION NOTES" के साथ IAS की परीक्षा में जरूर सफल होंगे, धन्यवाद /

प्रिय दोस्तों, अब तक हमारे विभिन्न नोट्स में से विभिन्न परीक्षाओं में आये हुए प्रश्नों के परिणाम –

EXAM (परीक्षा)	EXAM DATE	हमारे नोट्स में से आये हुए प्रश्न
RAS PRE. 2021	27 अक्तूबर 2021	74 प्रश्न (150 में से) CUT OFF – 64
UPSC – IAS PRE. (2022)	05 JUNE 2022	69 (100 में से)
SSC GD 2021	16 नवम्बर	68 (100 में से)
SSC GD 2021	01 दिसम्बर	65 (100 में से)
SSC GD 2021	08 दिसम्बर	67 (100 में से)
राजस्थान S.I. 2021	13 सितम्बर	113 (200 में से)
राजस्थान S.I. 2021	14 सितम्बर	119 (200 में से)

राजस्थान S.I. 2021	15 सितम्बर	126 (200 में से)
RAJASTHAN PATWARI 2021	23 अक्टूबर (1st शिफ्ट)	79 (150 में से)
RAJASTHAN PATWARI 2021	23 अक्टूबर (2nd शिफ्ट)	103 (150 में से)
RAJASTHAN PATWARI 2021	24 अक्टूबर (1st शिफ्ट)	95 (150 में से)
RAJASTHAN PATWARI 2021	24 अक्टूबर (2nd शिफ्ट)	91 (150 में से)
RAJASTHAN VDO 2021	27 दिसंबर (1st शिफ्ट)	59 (100 में से)
RAJASTHAN VDO 2021	27 दिसंबर (2nd शिफ्ट)	61 (100 में से)
RAJASTHAN VDO 2021	28 दिसंबर (1st शिफ्ट)	56 (100 में से)
RAJASTHAN VDO 2021	28 दिसंबर (2nd शिफ्ट)	57 (100 में से)
U.P. SI 2021	14 नवम्बर 2021 1st शिफ्ट	91 (160 में से)
U.P. SI 2021	21नवम्बर2021 (1st शिफ्ट)	89 (160 में से)

& Many More Exams

दोस्तों, इनका proof देखने के लिए नीचे दी गयी लिंक पर क्लिक करें या हमारे youtube चैनल पर देखें –

RAS PRE. – https://www.youtube.com/watch?v=p3_i-3qfDy8&t=136s

VDO PRE. – https://www.youtube.com/watch?v=gXdAk856W18&t=202s

Patwari – https://www.youtube.com/watch?v=X6mKGdtXyu4&t=103s

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