



# INSIGHTS IAS

SIMPLIFYING IAS EXAM PREPARATION

## **SECURE SYNOPSIS**

### **MAINS 2019**

**GS-I**

# **JANUARY 2019**



**NOTE:** Please remember that following ‘answers’ are *NOT* ‘model answers’. They are NOT synopsis too if we go by definition of the term. What we are providing is content that both meets demand of the question and at the same time gives you extra points in the form of background information.

INSIGHTS IAS



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## General Studies Paper - I

**Topic-** Indian culture will cover the salient aspects of Art Forms, Literature and Architecture from ancient to modern times

**Q) Discuss the contributions made by scholars of ancient India in the field of medicine and mathematics ? (250 words)**

The hindu

### **Why this question**

Off late, there has been much debate over the developments in science and technology in ancient India. This question expects you to discuss the advancement made by Indians in the field of aforementioned fields.

### **Key demand of the question**

The question expects us to discuss the contributions of scholars of ancient India in the aforementioned fields.

### **Directive word**

**Discuss –** Here in your discussion, you need to discuss the contributions of the scholars in the fields mentioned above.

### **Structure of the answer**

**Introduction –** Highlight that off late there has been much discussion about the contribution made by ancient India to the field of science and technology.

### **Body**

- Discuss the contribution in the field of medicine
- Diseases cures and medicines were first mentioned in Atharva veda
- Takshila emerged as the centre of medicine and learning
- Discuss texts such as charaksamhita and sushrutsamhita etc
- Discuss contribution in the field of mathematics
- Mention that apastamba in 2nd century BC introduced practical geometry involving acute angle etc
- Discuss contribution such as decimal system, notation system etc
- Discuss the role of books such as Surya Siddhanta etc

**Conclusion –** Highlight the significance of these contributions in modern times and what it says about the culture of science in the country.

### **Introduction:**

Ancient India was a land of sages, saints and seers as well as a land of scholars and scientists. The contributions that are recorded in scripts have been accepted after validation by the scientists. The claims by many academicians, politicians about such contributions in the Indian science congress of past few editions has thrown the light again on them.

### **Body:**

#### **Contributions in field of Mathematics:**

- In ancient India, roots to mathematics can be traced to Vedic literature, which are around 4000 years old. Between 1000 BC and 1000 AD, a number of mathematical treatises were authored in India.



- **Sulvastutra** by **Baudhayana** mentions about ‘Pi’. This further helped in calculations of angles in triangles.
- **Will Durant**, American historian (1885-1981) said that **India was the mother of our philosophy of much of our mathematics**.
- It is now generally accepted that India is the birth place of several mathematical concepts, including zero, the decimal system, algebra and algorithm, square root and cube root. Zero is a **numeral as well as a concept**. It owes its origin to the Indian philosophy which had a concept of ‘**sunya**’, literal translation of which is ‘**void**’ and zero emerged as a derivative symbol to represent this philosophical concept. **Brahmagupta** in **Brahmasputa Siddhantika** makes a mention of zero.
- Geometrical theories were known to ancient Indians and find **display in motifs on temple walls**, which are in many cases replete with mix of floral and geometric patterns. The method of graduated calculation was documented in a book named “**Five Principles**” (**Panch-Siddhantika**) **which dates to 5th Century AD**.
- Algebraic theories, as also other mathematical concepts, which were in circulation in ancient India, were collected and further developed by **Aryabhatta**, 5<sup>th</sup> century Indian mathematician. He has referred to **Algebra (as Bijaganitam)** in his treatise on mathematics named
- In 12th century, **Bhaskaracharya** also authored several treatises on the subject – one of them, named **Siddantha Shiromani** has a chapter on algebra. He is known to have given a basic idea of the **Rolle’s theorem** and was the first to conceive of differential calculus.
- In 1816, **James Taylor** translated **Bhaskaracharya’s Leelavati** into English.
- The **credit for fine-tuning and internationalizing these mathematical concepts** – which had originated in India – goes to the Arabs and Persians. **Al-Khawarizmi**, a Persian mathematician, developed a technique of calculation that became known as “**algorism**.”
- **The Fibonacci numbers:** The Fibonacci sequence first appeared in Indian mathematics as **m̄tr̄meru**, mentioned by **Pingala** in connection with the Sanskrit tradition of prosody.
- In 14th century, **Madhava** of Sangamagrama, along with other mathematicians of the Kerala school, studied **infinite series, convergence, differentiation, and iterative methods for solution of non-linear equations**.
- **Jyestadeva** of the Kerala school wrote the first **calculus text, the Yuktibhasa**, which explores methods and ideas of calculus repeated only in seventeenth century Europe.

#### **Contributions in field of Medicine & Surgery:**

- Ayurveda as a science of medicine owes its origins in ancient India. Thus, the literal meaning of Ayurveda is the science of life or longevity. Ayurveda constitutes ideas about ailments and diseases, their symptoms, diagnosis and cure, and relies heavily on herbal medicines, including extracts of several plants of medicinal values. Ayurveda has also always disassociated itself with witch doctors and voodoo.
- Ancient scholars of India like **Atreya, and Agnivesa** have dealt with principles of Ayurveda as long back as **800 BC**. Their works and other developments were consolidated by **Charaka** who compiled a compendium of Ayurvedic principles and practices in his treatise **Charaka-Samahita**, which remained like a standard textbook almost for 2000 years and was translated into many languages, including Arabic and Latin.
- In ancient India, several advances were also made in the field of medical surgery. Specifically these advances included areas like **plastic surgery, extraction of cataracts, and even dental surgery**. Roots to the ancient Indian surgery go back to at least circa 800 BC. **Shushruta**, a medical theoretician and practitioner, lived 2000 years before, in the ancient Indian city of Kasi, now called Varanasi. He wrote a medical compendium called ‘**Shushruta-Samahita**’. Matters like rhinoplasty (plastic surgery) and ophthalmology (ejection of cataracts). The compendium also focuses on the study the human anatomy by using a dead body.
- **Yoga** is a system of exercise for physical and mental nourishment. Since Vedic times, thousands of years before, the principles and practice of yoga have crystallized. But, it was only around **200 BC** that all the fundamentals of yoga were collected by **Patanjali** in his treatise, named **Yogasutra**, that is, **Yoga-Aphorisms**.
- Now, in modern times, clinical practices have established that several ailments, including hypertension, clinical depression, amnesia, acidity, can be controlled and managed by yogic practices. The application of yoga in physiotherapy is also gaining recognition.

**Conclusion:**

There were contributions in fields of Astronomy, physics, chemistry, fine arts, mechanical and production technology, civil engineering and architecture, shipbuilding and navigation. The contributions show the progressive culture and rational thinking. There is a need to take inspiration from such contributions and stride forward.

**Q) Unsubstantiated claims about the achievements of India's past do more harm than good for the future India. Comment. (250 words)**

epw

**Why this question**

*India has recently witnessed several high claims about its past achievements in science and technology. In this context it is essential to understand whether such claims are helpful for India or not.*

**Directive word**

*Comment- here we have to express our knowledge and understanding of the issue and form an overall opinion thereupon.*

**Key demand of the question.**

*The question wants us to express our opinion as to why/ why not unsubstantiated claims about India's achievements in the past are helpful for India's future.*

**Structure of the answer**

**Introduction-** write a few introductory lines about some of the claims made recently about India's past achievements. E.g mention the claims about aeroplanes and in-vitro fertilization etc.

**Body-**

*Discuss why such unsubstantiated claims are not good for India's future. E.g*

- *It is not that India has not had great achievements. But, as is the case with much of science, the great ideas derived through inductive studies have since been taken over by more deductive methods of European science that have scaled even greater heights.*
- *Hence, there is really no need to invent false achievements of our ancestors. Equally interestingly, all such claims are post facto and none have predicted any future discovery.*
- *They will invite ridicule and discredit even genuine studies of the work of our ancestors.*
- *They distract India from its path forward, exploring science and technology using its limited resources.*
- *They set bad precedents for our coming generations by giving respectability to irrational claims.*
- *When subscription to such claims is considered a test of one's loyalty to the nation, they become seriously poisonous and disruptive etc.*

**Conclusion-** based on your discussion, form a fair and a balanced conclusion on the given issue.

**Introduction:**

The various statements by politicians, renowned academicians by linking our past with Scientific endeavours has raised many eyes. There were many unverified and unsubstantiated claims like **discovery of genetic sciences, plastic surgery, claiming Darwin's Evolutionary theory a farce, questioning the breakthroughs of Isaac Newton and Albert Einstein, development of aeroplane based on pushpakavimana**. The Indian Scientific Congress Association expressed "serious concern" as the unorthodox remarks aired by prominent academics at its annual conference attracted condemnation and ridicule.

**Body:**

The tall claims without any scientific basis has an impact on the scientific endeavours achieved by India till now and for future generations.

- It is not that India has not had great achievements. Works like Charaka samhita by charaka, zero by Bhaskara have wide acceptance backed with records.
- In the recent past India has seen great scholars like Srinivasa Ramanujam, space scientist Venkatraman Radhakrishnan, and Subrahmanyam Chandrasekhar, co-winner of the 1983 Nobel Prize for Physics. **Their efforts have helped to form the foundations of science.**
- But, as is the case with much of science, the **great ideas derived through inductive studies** have since been taken over by more deductive methods of European science that have scaled even greater heights.
- They will **invite ridicule and discredit even genuine studies** of the work of our ancestors. Motivated claims not only tarnish the institution's reputation but also take the focus away from the legitimate efforts of our scientists.
- They set bad precedents for our coming generations by giving respectability to irrational claims.
- It inturn leads to false prestige and they can distract India from its path forward, exploring science and technology using its limited resources.
- When subscription to such claims is considered a test of one's loyalty to the nation, they become **seriously poisonous and disruptive**.
- It can **polarize the society** as coordinated efforts to popularize pseudoscientific theories in order to aggrandize the nation's own scientific past will gain ground.
- It also goes against "**Promoting Scientific Temper**" which is one of the fundamental duties mentioned in our Constitution.
- The efforts by many rationalists like Narendra Dabholkar who tried to eradicate superstition will be turned futile.
- There is really **no need to invent false achievements of our ancestors** and we must shed our false inferiority.

**Way Forward:**

- The solution is not to shut our eyes to the past but to engage in careful historical inquiry.
- An emphasis on primary sources, on learning the relevant languages and preparing critical editions of texts, on peer review, and on viewing the past on its own terms, avoiding the pitfalls
- It involves working with the insights of archaeologists, epigraphists, Sanskritists, Persianists, and metallurgists.
- It requires an open mind and a healthy scepticism.
- Tighter screening to filter out unsubstantiated assertions at science conclaves.

**Conclusion:**

Instead of revelling in the glory of assumed scientific achievements of the past, the government would do well to focus on the present and evolve a system that encourages scientific research and innovation by trained scientists. Millions of Indians are still battling for access to nutritious food, employment, health and education. Instead of investing in a misguided sense of nationalistic pride, the government should use the available science to ensure a better standard of living for its people.

**Topic- Modern Indian history from about the middle of the eighteenth century until the present-significant events, personalities, issues; The Freedom Struggle – its various stages and important contributors /contributions from different parts of the country.**

**Q) Chhatrapati Shahu Maharaj was a social reformer well ahead of his time. Discuss. (250 words)**

Reference**Directive word**

**Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.**



### ***Key demand of the question.***

The question wants us to write in detail about the Chhatrapati Shivaji Maharaj, his thoughts, his works and his contribution towards development and reformation of Indian society.

### ***Structure of the answer***

**Introduction**– write a few introductory lines about Chhatrapati Shahu Maharaj. E.g Chhatrapati Shahu Maharaj also known as Rajarshi Shahu was considered a true democrat and social reformer. First Maharaja of the princely state of Kolhapur, he was an invaluable gem in the history of Maharashtra.

### ***Body-***

Discuss in points his contributions towards the Indian society. E.g

- Greatly influenced by the contributions of social reformer Jyotiba Phule, Shahu Maharaj was an ideal leader and able ruler who was associated with many progressive and path breaking activities during his rule.
- From his coronation in 1894 till his demise in 1922, he worked tirelessly for the cause of the lower caste subjects in his state.
- Primary education to all regardless of caste and creed was one of his most significant priorities.
- He established hostels separately for different ethnicities and religions.
- He established the Miss Clarke Boarding School for the socially quarantined segments of the community.
- He introduced several scholarships for the poor but meritorious students from backward castes.
- He also initiated a compulsory free primary education for all in his state.
- Chhatrapati Shahu was a strong advocate of equality among all strata of the society and refused to give the Brahmins any special status.
- He established schools to educate the women, and also spoke vociferously on the topic of women education. He introduced a law banning the Devadasi Pratha etc.

**Conclusion**- based on your discussion, form a fair and a balanced conclusion on the given issue.

### **Introduction:**

Chhatrapati Shahu Maharaj also known as Rajarshi Shahu was considered a **true democrat and social reformer**. He worked tirelessly for the cause of the **lower caste subjects in his state**. Primary education to all **regardless of caste and creed** was one of his most significant priorities.

### **Body:**

Shahu Maharaj's contributions towards the Indian society are as follows:

#### **Social Reforms:**

- Greatly influenced by the contributions of **social reformer Jyotiba Phule**, Shahu Maharaj was an ideal leader and able ruler who was associated with many progressive and path breaking activities during his rule.

#### **(1) Education:**

- His emphasis was on education and his aim was to make education available to masses.
- He introduced a number of educational programs to promote education among his subjects.
- He **established hostels separately for different ethnicities and religions** like Panchals, Devadnya, Nabhik, Shimpi, Dhor-Chambhar communities as well as for Muslims, Jains and Christians.
- He established the Miss Clarke Boarding School for the socially quarantined segments of the community.
- He introduced several scholarships for the poor but meritorious students from backward castes.



- He also initiated a compulsory free primary education for all in his state.
- He established Vedic Schools that enabled students from all castes and classes to learn the scriptures and propagate Sanskrit education among all.
- He also started special schools for the village heads or 'Patils' to make them into better administrators.

### **(2) Against Caste discrimination:**

- A strong advocate of equality among all strata of the society and refused to give the Brahmins any special status.
- He removed Brahmins from the post of Royal Religious advisers when they refused to perform religious rites for non-Brahmins.
- He made great efforts to **abolish the concept of caste segregation and untouchability**.
- He introduced (perhaps the first known) **reservation system in government jobs** for untouchable castes.
- His **Royal Decree** ordering his subjects to **treat every member of the society as equal and granting the untouchables equal access to public utilities** like wells and ponds, as well as establishments like schools and hospitals.
- He **legalised inter-caste marriages** and made a lot of efforts for the upliftment of the dalits.
- He discontinued the hereditary transfer of titles and tenures of revenue collectors (Kulkarni), a caste infamous for exploiting the masses, especially enslavement of the Mahars, a lower caste.

### **(3) Women Empowerment:**

- He worked towards betterment of the conditions of women in his empire.
- He established schools to **educate the women**, and also spoke vociferously on the topic of women education.
- He introduced a **law banning the Devadasi Pratha**, the practice of offering girls to God, which essentially led to exploitation of the girls in the hands of the Clergy.
- He **legalised widow remarriages** in 1917 and made efforts towards **stopping child marriages**.

### **Association with Dr. B.R. Ambedkar:**

- The King was greatly impressed by the great intellect of young Bhimrao and his revolutionary ideas regarding untouchability.
- He made Dr. Ambedkar the Chairman of the conference for the betterment of the untouchables.
- He believed that Ambedkar was the leader who would work for the amelioration of the segregated segments of the society.
- He even donated Rs. 2,500 to Dr. Ambedkar when he started his newspaper '**Mooknayak**' in 1921 and contributed more later for the same cause.

### **Conclusion:**

- Shahuji was a visionary and patronized the social reformers working for the weaker sections and against the ills of the society. He had implemented reforms which were made as fundamental rights and DPSPs in our Constitution, post independence.

## **Q) Discuss Lala Lajpat Rai's role as someone who embraced diversity as a crucial element of national culture ? (250 words)**

Indianexpress

### **Why this question**

*The article discusses the views of lala Lajpat Rai regarding the role of diversity as an element of Indian culture and its usefulness for the freedom struggle. Lala Lajpat Rai is an important personality of the freedom struggle and hence this article is important.*

### **Key demand of the question**

*The question expects us to discuss the views of lala Lajpat Rai with regards to diversity of India and relate it to how crucial an element it was in the national culture and freedom struggle.*



### **Directive word**

*Discuss – Here your discussion should focus on bringing out the views of lala Lajpat Rai with regards to diversity in India and highlight the importance of his views.*

### **Structure of the answer**

**Introduction** – Explain the role of lala Lajpat Rai in freedom struggle.

### **Body**

*Discuss the evolution of his views with respect to diversity in India.*

- Having earlier conceived of Hindus and Muslims as separate “religious nationalities”, by 1915, he proclaimed that “religious nationalism” was a “false idea”, embodying a “narrow sectarianism” which could never be “truly national”. “Religion was a matter of individual faith,” he proclaimed, which “must not interfere with the common civil life of the country”. Instead, every person must transcend their religious community to realise their larger common interest as Indians.
- Lajpat Rai argued that India’s natural geography brilliantly marked it off from the rest of the world, endowing its people with a common nationhood. At times, he pronounced that Indians — whether Hindu, Muslim, Christian or Parsi — were a common race. He argued that Indian Muslims were descendants of the Aryan race who had merely converted to Islam — they continued to be influenced by their ancestral Aryan-Hindu culture.
- dismissed the idea that nations of the world comprised of single pure races to proudly proclaim that the Hindus, Muslims and Christians of India were a “racial mix-up”.

*Discuss the significance of his views for the freedom struggle*

**Conclusion** – Give a fair and balanced summary of the views of lala Lajpat Rai and its significance.

### **Introduction:**

One of the legendary triumvirate – **Lal-Bal-Pal** ( Lala Lajpat Rai, Bal Gangadhar Tilak and Bipin Chandra Pal) of India’s freedom movement against the British colonial rule, Lala Lajpat Rai was a **multi-faceted personality** and led a **life of ceaseless activity dedicated to a self-less service to the nation**. He realized that “the British people were indifferent to Indian affairs and the British press was not willing to champion Indian aspirations” as some Moderates believed.

### **Body:**

Rai has been seen as “a champion of moral courage than of physical courage” and was aware of the basic problems of the society. The evolution of his views with respect to diversity in India are

- Rai was an advocate of an **assertive Hindu politics**, exemplified by his participation in the **Punjab Hindu Sabha in 1909 and Hindu Mahasabha in the mid-1920s**.
- However, his vision of Hindu politics was very different from the exclusivist Hindu nationalism that demanded that either India’s religious minorities be forcefully assimilated into Hindu culture or be excluded from the nation.
- Before 1915, Rai conceived of Hindus and Muslims as separate “religious nationalities”.
- But post 1915, he proclaimed that “religious nationalism” was a “false idea”, embodying a “narrow sectarianism” which could never be “truly national”.
- He became a staunch supporter of the idea that **Religion was a matter of individual faith** which “must not interfere with the common civil life of the country”.
- He also believed that **every person must transcend their religious community to realise their larger common interest as Indians**.
- Lajpat Rai argued that **India’s natural geography** brilliantly marked it off from the rest of the **world**, endowing its people with a common nationhood.
- He argued that **Indian Muslims were descendants of the Aryan race** who had merely converted to Islam.



- He sometimes ceased speaking of a common Hindu culture to talk of a larger distinctive Indian culture that bound India's diverse peoples.
- His embrace of diversity as a crucial ingredient of national culture was evident in his strong aversion to the imposition of a homogenous culture on the Indian nation.

The significance of his views for the freedom struggle are as follows

- His views helped recognize the importance of a united front against British.
- The British efforts to divide India on communal lines as seen in the Acts of 1909 and 1919 was made clear to Indian leadership .
- His thoughts of cultural diversity were given post independence by Nehru as 'Unity in Diversity'.
- His idea of people of all religions as true citizens of India, combined with Gandhiji's ideas of inclusive fight against British led to Non- Cooperative movement linked with the Khilafat movement.
- Rai's understanding of the societal issues led him to form various social organizations like All India Trade Union Congress, Punjab National Bank which are still flourishing in India.

### **Conclusion:**

- Lala Lajpat Rai dismissed the idea that nations of the world comprised of single pure races to proudly proclaim that the Hindus, Muslims and Christians of India were a "racial mix-up. His notions of respect of diversity are very vital in today's Indian society which is being polarized on simple issues. There is a need of tolerance and fraternity among the people for a Vibrant and Resurgent India.

**Q) Today, as the clamour for farm loan waiver amid joblessness in the farm sector puts pressure on the Centre and State governments, a relook at Gandhiji's thoughts can provide new possibilities. Comment. (250 words)**

#### The hindubuisnessline

##### **Why this question**

*Mahatma Gandhi advocated for a very different model of economic development of the nation with village republics at its centre. Such ideas are discussed in the article which would enable us to take lessons from the past.*

##### **Key demand of the question**

*The question expects us to discuss Mahatma Gandhi's view on rural development and his proposals for the benefit of farmers. This is to juxtaposed with the present rural crisis and see what lessons can be drawn from Mahatma Gandhi's teachings*

##### **Directive word**

*Comment – When you are asked to comment, you have to pick main points and give your 'opinion' on them based on evidences or arguments stemming from your wide reading. Your opinion may be for or against, but you must back your argument with evidences.*

##### **Structure of the answer**

**Introduction** – Explain about the present rural crisis and highlight that the vision of the father of our nation for India's development was focussed around self sufficient villages.

##### **Body**

Highlight in brief the problems plaguing the farmers for which loan waivers has become a necessity

Highlight Mahatma Gandhi's vision for India's development and his prescriptions.

- Gandhi envisaged villages as self-sufficient republics. He knew that India lived in its villages which is why he stressed on the growth of the rural economy such as khadi, handloom, handicraft and sericulture.



- advocacy of the charkha was a way to promote gainful employment for an able-bodied individual. charkha symbolised this view about how each person could earn their own livelihood and become self-reliant.
- According to him, large-scale production was meant to be profit-oriented and therefore, harmful for society as it could lead to concentration of wealth and power in a few hands. Gandhi advocated decentralisation because it could avoid violence. He suggested delocalisation of production as against concentration in particular areas. His beliefs on decentralisation were aimed at correcting all evils of a centralised economy

*Discuss his prescriptions for the farming sector – First, prevention of fragmentation and fixing economic holdings. Second, country-wide tapping and harnessing of water resources; third, improvement of soil and its productivity through natural as well as scientific treatment of manures, seeds, crop-diseases, prevention of soil erosion etc; fourth, cooperation; fifth, State aid and protection; and sixth, reclamation of waste-lands inland and along the sea-coast and creeks.*

**Conclusion** – In your conclusion highlight how and whether his views and suggestions are relevant for agricultural and rural areas in today's day and age

### Introduction:

The newly independent India was faced with famine, food shortage and rural distress raging across the length and breadth of land. Seventy years later, India's farm distress has reached alarming levels with about 12,000 farmers committing suicides every year due to poor remunerative prices for their yield.

Gandhiji envisioned '**India as a flourishing village republic**' where the villages are self-sustaining units and peasants are their own rulers.

### Body:

The problems plaguing the farmers:

- Small and fragmented land-holdings leading to poor productivity, inability to use mechanisation.
- Increased input costs of seeds, fertilizers, manures etc. The lack of working capital, formal credit facilities push farmers to high interest loans at moneylenders.
- Monsoon-dependence and lack of irrigation facilities doubled with soil erosion and loss of fertility of land due to monocropping.
- The low yield and unattractive prices are pushing peasants out of farming to unskilled labour in urban areas.
- Agricultural marketing still continues to be in a bad shape in rural India.
- Storage facilities in the rural areas are either totally absent or grossly inadequate leading to immediate sale of produce.
- The National Crime Records Bureau (NCRB) reveals that out of the total suicide incidents in the country in 2015, about 9.4 per cent were from the farming sector.
- This rate has come down from double digits during the decade 2002-2012.

Many state governments have announced farm loan waivers to reduce the agrarian distress. However, the truth is that farm loan waivers do not help the marginal and small farmers who form almost 85% of our farmers. Further, the tenant farmers, women are also left out due to lack of land records in their name.

### Mahatma Gandhi's vision for India's development and his prescriptions:

- Gandhiji's concept of rural development revolves around **creating model villages for transforming 'swaraj' into 'su-raj'**.
- Gandhi, while **rejecting modern civilisation** as a mode of life and work, invoked **agriculture, charkha and the village as metaphors for sane human living**.
- He envisaged villages as **self-sufficient republics, independent of its neighbours** for its own vital wants, and yet **interdependent** for many others in which dependence is a necessity.
- He knew that **India lived in its villages**. He wanted to bring about rural reconstruction with sound **scientific and spiritual values**.



- He stressed on the **growth of the rural economy** through allied activities such as khadi, handloom, handicraft and sericulture.
- **Advocacy of the charkha** was a way to promote gainful employment for an able-bodied individual.
- Charkha symbolised this view about how **each person could earn their own livelihood and become self-reliant**.
- According to him, **large-scale production was meant to be profit-oriented** and therefore, harmful for society as it could lead to **concentration of wealth and power in a few hands**.
- Gandhi advocated **decentralisation** because it could avoid violence. He suggested delocalisation of production as against concentration in particular areas. His beliefs on decentralisation were aimed at **correcting all evils of a centralised economy**.

Gandhiji categorically listed ways and means to improve the state of Indian agriculture.

- Prevention of fragmentation and fixing economic holdings.
- Country-wide tapping and harnessing of water resources.
- Improvement of soil and its productivity through natural as well as scientific treatment of manures, seeds, crop-diseases, prevention of soil erosion etc.
- Cooperation at all the levels of governance.
- State aid and protection to the peasants.
- Reclamation of waste-lands inland and along the sea-coast and creeks.
- Crops such as cotton, castor seed, groundnut, rice, sugar besides vegetables as the strength of India's agriculture.
- Decentralise capital formation and discourage concentration of workforce in urban pockets.

### **Conclusion:**

To Gandhi, the practice of agriculture signified a promise of limitless reach. It signified a mode of work and being which, while sustaining life, could nurture an ultimate sense of meaning and worth. Thus, there is a need to take up structural reforms in agriculture like better formal credit, agricultural marketing, processing of the raw materials into products to ensure remunerative prices to farmers.

### **Q) Discuss Mahatma Gandhi's view on representative democracy ? (250 words)**

Indianexpress

#### ***Why this question***

*The article explains Gandhi's view on representative democracy and would enable us to understand his views on democracy and hind swaraj more deeply.*

#### ***Key demand of the question***

*The question expects us to bring out Gandhi's views on representative democracy while explaining about his own idea of hind swaraj. Finally, we can discuss how democracy in current time can be made more representative using Gandhi's ideas.*

#### ***Directive word***

*Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.*

#### ***Structure of the answer***

***Introduction – explain about the idea of representative democracy***

#### ***Body***

***Discuss Gandhi's view on representative democracy***

- *Gandhi's view of British style parliamentary democracy can be gauged from his view that parliamentary form of democracy was ill-suited for India, when he wrote in the Hind Swaraj, "I pray to God that India may never be in that plight".*
- *Gandhi supported the idea of direct democracy instead of representative democracy.*



- dislike for representative democracy sprang from his conviction that it would in no time degenerate into an anti-people institution in a multicultural and multi-religious context like India.

*Explain about the form of direct democracy that Gandhi advocated – talk about the idea of village republics and Hind swaraj*

- Gandhi envisaged the creation of interrelated self-sufficient non-hierarchical socialist village communities called “swaraj”, with each of them functioning as a direct democracy.
- Gandhi devised his constructive programme for the implementation of “swaraj”. He believed that “swaraj”, if implemented through the constructive programme, would help people conceive development as freedoms instead of economic advancement.
- He also needed, a non-violent interim arrangement during the transition from a capitalist state to a stateless socialist society. Gandhi’s idea of trusteeship, like Marx’s idea of dictatorship of the proletariat, was intended for that purpose. He believed that this was the only way India could escape the threat of becoming a nation state and being forced to choose between the two evils.

*Give your views in Gandhi’s ideas*

*Conclusion – Explain how third tier of government can be strengthened in line with Gandhi’s vision.*

#### Introduction:

- Representative democracy is the system of government where citizens elect a representative to represent them. It is limited in the sense that participation in government is infrequent and brief, being restricted to the act of voting every few years.
- The elected representative communicates the views of his constituents and secures their interests. In a representative democracy, **government is the expression of the will of people**. **Discussion, debates, deliberations and dissents** are the ways in which people exchange ideas and take decisions.

#### Body:

Gandhiji’s view on representative democracy are

- Gandhiji’s disdain for the institution of parliament was evident when in 1909. With reference to British parliament of the day, he described it **“a costly toy of the nation”**.
- He believed that the parliamentary form of democracy was ill-suited for India was clearly evident when he wrote in the Hind Swaraj, “I pray to God that India may never be in that plight”.
- The democracy that Gandhi supported wholeheartedly was the direct form of democracy as opposed to the representative one.
- Representative democracy is a product of an idea of a nation state that developed after the French Revolution.
- The idea of a nation state was itself a trap and he feared that once India adopted it, it would forever be forced to run a representative form of government in order to avoid the menace of a possible dictatorship.
- This dislike for representative democracy sprang from his conviction that it would in no time degenerate into an anti-people institution in a multicultural and multi-religious context like India.

The form of direct democracy that Gandhi advocated

- Gandhi envisaged the creation of interrelated self-sufficient non-hierarchical socialist village communities called “swaraj”, with each of them functioning as a direct democracy.
- He believed that “swaraj”, if implemented through the constructive programme, would help people conceive development as freedoms instead of economic advancement.
- Gandhi’s idea of trusteeship, like Marx’s idea of dictatorship of the proletariat believed this was the only way India could escape the threat of becoming a nation state and being forced to choose between the two evils.



Current state of representative democracy of India:

- In the democracy index of 2017, India has been categorised as a flawed democracy.
- Money, other incentives and the presence of criminals play a significant role in the elections.
- Except for the left parties, all other political groups are either owned by an individual, a family or an institution for all practical purposes.
- Intra party democracy thus stands seriously compromised.
- The 'Vote Banks' are exploited by all the political parties.
- The Hindutva movement and its ascendency, is now threatening to convert Indian representative democracy into a majoritarian democracy.

### **Conclusion:**

- Direct democracy introduced through deliberative polling, we should simultaneously convert the parliament and the legislative assemblies into institutions of deliberative democracy.
- **Giving true autonomy to the third tier of democracy, free and fair elections, intra-party democracy** will help get the swaraj that Gandhiji's idea of direct democracy had.

### **Topic – Post independence history**

**Q) Bangladesh's birth owes to Pakistani policy flaws much more than India's intervention. Critically comment. (250 words)**

Indianexpress

#### **Why this question**

The article discusses the reasons that led to the independence of Bangladesh and explains that the birth of Bangladesh was inevitable considering the policies followed by Pakistan, and provides an interesting insight in the mistakes committed and reasons for the birth of Bangladesh.

#### **Key demand of the question**

The question expects us to bring out reason behind birth of Bangladesh and give our view on what was the more pertinent reason – India's intervention or policies followed by Pakistan.

#### **Directive word**

**Critically comment** – When you are asked to comment, you have to pick main points and give your 'opinion' on them based on evidences or arguments stemming from your wide reading. Critically comment is also forming opinion on main points but in the end you have to provide a fair judgement.

#### **Structure of the answer**

**Introduction** – highlight the situation in which Bangladesh was born.

#### **Body**

Discuss the reasons for creation of Bangladesh. Here you first need to touch upon the role played by India in liberation of Bangladesh.

- Indian government allowed Awami league leaders to form government in exile
- Gave military training to Mukti Vahini Sena on Indian soil
- provided food, shelter, clothing and medical aid to refugees in spite of tremendous strain on their resources
- in December 1971 Indian armed forces directly undertook the operation for liberation of Bangladesh which led to Indo-Pakistan war of 1971.

Point out that the seeds of partition was sowed as a result of the policies followed over the years by Pakistan

Highlight the issues caused by policy with respect to language

Persecution of people in Bangladesh etc

**Conclusion** – Give your view on what played more critical role in liberation of Bangladesh.



## Introduction:

Pakistan was made of West and East Pakistan after August 14, 1947. The eastern province gained its independence in March 1971 and Bangladesh was born. Bangladesh's independence has been considered India's most successful neighbourhood intervention.

## Body:

The claim for a separate nation arose right from day one. The policies of Pakistan which overlooked the needs of East Pakistani people were one of the chief reasons.

- **Imposition of Urdu:** Urdu was made the “National Language” of Pakistan. The requests from East Pakistan and option of Arabic were turned down. This further strengthened the nationalism which was language-based (Bengali) from the pre-independence times.
- **Administrative hassles:** The grotesque scheme of writing Bengali in the Arabic script was introduced. In 1952, there were 21 centres doing this in East Pakistan with Central Education Ministry funding. The Bengali East Pakistan chief minister didn't know that this was happening outside the primary school stream, a provincial subject.
- **Disparity of Governance:** Punjab and the Punjabi-dominated army ruled Pakistan soon after the birth of Pakistan. The services were also dominated by Punjabis through quotas but East Pakistan dominated in literacy and high education. Top seats in the civil services exams always went to East Pakistan.
- **Military Rule:** General Ayub Khan took over Pakistan in 1958, the East Pakistan's needs and demands were completely suppressed. Until 1962, martial law continued and Ayub purged a number of politicians and civil servants from the government and replaced them with army officers.
- **Distance factor:** Pakistan couldn't tackle the strange phenomenon of being divided by a thousand miles of India.
- **Economic Prowess of East Pakistan:** Most of the foreign exchange was earned by exports from East Pakistan which was poorly defended when the big war of 1965 with India was fought. That sowed the seeds of December 16, 1971.
- **Six-Point Program discarded:** The six point program of Mujib-Ur-Rahman in 1966 for economic and political autonomy of East Pakistan was discarded. The Awami League's electoral victory in 1970 promised it control of the government, with Mujib as the country's prime minister, but the inaugural assembly never met.
- **Genocides and Refugee Problems:** There was a systematic ethnic slaughter which qualified as genocide. There was clear ethnic or religious targeting of the Hindu minority among the Bengalis. By July-August 1971, 90% of the refugees were Hindus concentrated in the border districts of West Bengal with large Muslim populations. Consequently, there was danger of serious communal strife. The Response of West Pakistan to 1970 cyclone which ravaged East Pakistan was minimal and lacked compassion.

The West Pakistan's policies had a deep impact leading to the liberation of East Pakistan. India's role is also crucial in liberation of Bangladesh.

## India's role in liberation of Bangladesh:

- Indian government allowed Awami league leaders to form government in exile
- Gave military training to Mukti Vahini Sena on Indian soil.
- Provided food, shelter, clothing and medical aid to refugees in spite of tremendous strain on their resources.
- In December 1971, Indian armed forces directly undertook the operation for liberation of Bangladesh which led to Indo-Pakistan war of 1971.
- India observed international refugee law and allowed refugees regardless of religion or language. It internationalised their tragedy.

## Conclusion:

India's humanitarian intervention in Bangladesh has shaped South Asia, made it a responsible power in the region. Bangladesh's growth rate is nearly 7 per cent, whereas Pakistan's growth rate is



below 5 per cent. Extreme poverty, or those living below the poverty line, in Bangladesh is under 9 per cent while those in Pakistan are 29.5 per cent. Bangladesh's literacy rate is 72 percent, that of Pakistan is 58 per cent and loaded more with ideology than useful knowledge. Bangladesh flourishes today while Pakistan has turned into a 'Rogue State'.

**Topic- Events from 18th century such as industrial revolution, world wars, redrawing of national boundaries, colonization, decolonization,**

**Q) Why do you think the League of Nations failed to preserve world peace. Discuss. (250 words)**

Norman Lowe; WORLD HISTORY; League of Nations

#### **Directive word**

**Discuss-** this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.

#### **Key demand of the question.**

The question wants us to write in detail about the League of Nations (LoN) and bring out the reasons as to why it failed to preserve world peace and another world war.

#### **Structure of the answer**

**Introduction-** write a few introductory lines about the LoN. e.g It was formed in 1920 on the same day as the treaty of Versailles was signed. Its aim was to settle international disputes before they got out of hand, and so prevent war from ever breaking out again.

#### **Body-**

Discuss the reasons as to why the LoN failed to preserve world peace and prevent another war. E.g

- It was too closely linked with the Versailles Treaties.
- It was rejected by the USA
- Germany was not allowed to join until 1926 and the USSR only became a member in 1934 (when Germany left). So for the first few years of its existence the League was deprived of three of the world's most important powers.
- The gathering of leading ambassadors was only intended to function until the League machinery was up and running, but it lingered on, and on several occasions it took precedence over the League.
- The world economic crisis began in 1929.
- Japan's invasion of Manchuria etc.

**Conclusion– based on your discussion, form a fair and a balanced conclusion on the given issue.**

#### **Introduction:**

**Woodrow Wilson's 14 point program** had envisaged creation of an international agency that would work for maintenance of world peace. The League of Nations was set up after the 1<sup>st</sup> World War in 1920 with the following two main aims

- Settle international disputes to prevent war in future. This was to be achieved through the **principle of collective security**. The maintenance of international peace and security was the primary goal of the League.
- **Economic and Social work:** The League of Nations was to seek international cooperation for socio-economic development across the world.

#### **Body:**

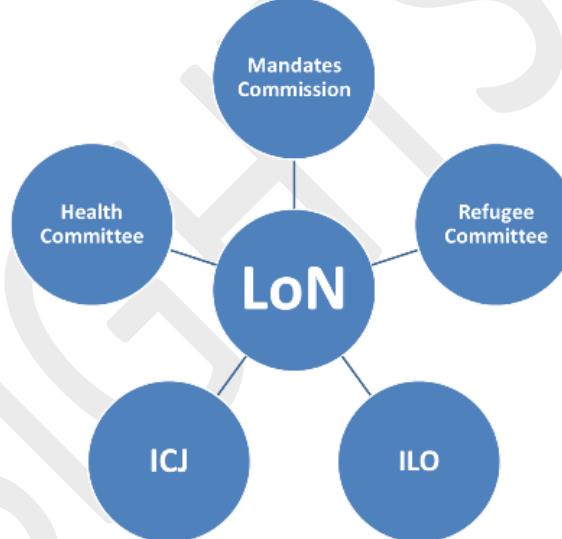
The failures of league of nation were

1. The "Versailles Treaty" had an upper hand where the Victors of 1st World War dictated terms of League of Nations as well as on other countries.



2. **Toothless Tiger:** League of Nations lacked enforceable rights. It did not have military force of its own. The League failed to implement its decisions in disputes, where the verdict of the League was against a major power. Aggressive regimes like Japan, Italy and Germany defied the League. Britain and France did not do much to give teeth to the League.
3. Germany was not allowed to join until 1926 and the USSR only became a member in 1934 (when Germany left). India which was not even an independent country was made a member. USA which played the leading role did not join it.
4. **Failure of collective responsibility:** In 1930s when many countries resorted to aggression, the League was ignored or defied. It did not come forward in case **Japanese attack on Manchuria in 1931 & Italy attack on Ethiopia in 1936.**
5. It recognized the division of spoils of the war and most of the colonies were transferred as mandates not to be annexed thus undermining the very ideals with which it was formed.
6. The **Conference of Ambassadors** undermined League's authority. The Conference of Ambassadors overruled the League's decisions. **Example:** in case of the Corfu incident (1923) involving Mussolini's Italy and Greece.
7. **Failure of Disarmament:** Security concerns lead to a race for armament. The **World conference on Disarmament** in 1932-34 was a failed effort of League of Nations as the major powers disagreed to disarm. This further strengthened Hitler's fascist agenda in Germany.
8. **Economic Crisis of 1929** led to poverty and unemployment and consequently, right wing governments came to power across the world. These governments were more aggressive and violated the League Covenant.

However in the socio-economic development context, it had its fair share of successes.



*up some of the organisations like International Labour Organisation, International court of justice which is still relevant even today.*

ILO took some reforms like

- Fixed maximum working days and minimum wages.
- Started old age pensions.
- Took actions in the area of welfare of the workers.

The Refugee Organization reforms:

- It helped the Prisoners of War in Russia to their homes outside Russia.
- In 1933, it helped the Jews, who were fleeing to escape Nazi persecution, to resettle in different countries where they would be safe.

**Resolution of minor International disputes by LoN:**

- Solved the dispute of smaller countries like Finland, Poland, Albania and Czechoslovakia.
- The League solved a territorial dispute between Peru and Columbia.
- Also in 1921, when there was a dispute regarding Upper Silesia (an industrial region) between Germany and Poland, the League successfully made both the parties reach a settlement and Upper Silesia was partitioned between the two.

**Conclusion:**

- League of Nations did important work for the **socio-economic development** across the world. However, it failed with respect to its aim of being a leading forum for resolution of international disputes and ensuring a peaceful world. These failures lead to the disastrous Second World War.

**Q) What led to the Yom-Kippur war of 1973 and what were the outcomes of the war.  
Discuss. (250 words)**

Norman Lowe; WORLD HISTORY; Conflict in Middle-East

***Directive word***

*Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.*

***Key demand of the question.***

*The question wants us to write in detail about the Yom-Kippur war. We have to discuss at length about the factors that led to the war and also what were the outcomes of the war.*

***Structure of the answer***

**Introduction**— write a few introductory lines about the Yom Kippur war. E.g the Yom Kippur war began was fought in 1973 between Arab states- Egypt and Syria on one side and Israel on the other. Mention the earlier wars of 1948, 1956, 1967 fought between Israel and several Arab states.

***Body-***

*Discuss the factors that led to the war. E.g*

- Pressure was brought to bear on the Arab states by the Palestine Liberation Organization (PLO) under its leader Yasser Arafat, for some further action. When very little happened, a more extreme group within the PLO, called the Popular Front for the Liberation of Palestine (PFLP), embarked on a series of terrorist attacks to draw world attention to the grave injustice being done to the Arabs of Palestine.
- Anwar Sadat, the president of Egypt since Nasser's death in 1970, hoped to win American support for the Arabs, so that the Americans would persuade the Israelis to agree to a peace settlement. However, the Americans refused to get involved.
- Sadat, together with Syria, decided to attack Israel again, hoping that this would force the Americans to act as mediators.

*Discuss the outcomes of the war. E.g*

- After some early Arab successes, the Israelis, using mainly American weapons, were able to turn the tables and was successful in hanging on to all the territory they had captured in 1967 and even crossed the Suez Canal into Egypt.
- Both the USA and the USSR decided it was time to intervene to try to bring about a peace settlement. Acting with UN cooperation, they organized a ceasefire, which both sides accepted.

***Conclusion— based on your discussion, form a fair and a balanced conclusion on the given issue.***

**Introduction:**

Yom Kippur War, also called the **October War**, the **Ramadan War**, or the **Fourth Arab-Israeli War**, was a damaging, inconclusive war and the fourth of the Arab-Israeli wars. The war was initiated by Egypt and Syria on October 6, 1973, on the Jewish holy day of Yom Kippur and during Ramadan, the month of fasting in Islam, and it continued until October 26, 1973. The war, which eventually drew both the United States and the Soviet Union into indirect confrontation in defence of their respective allies, was launched with the diplomatic aim of convincing a chastened—if still undefeated—Iraq to negotiate on terms more favourable to the Arab countries.

**Body:**

The attack by Egypt and Syria was a surprise to Israel after Israel conquered the Sinai Peninsula and the Golan Heights from Egypt in 1967. Egypt's army entered the Sinai Peninsula to retrieve their land from Israel.



The territories occupied by Israel in 1967 are shaded in brown (SINAI, WEST BANK and GOLAN HEIGHTS). The causes that led to the Yom-Kippur war are

**6-Day War of 1967:**

- The conditions that shaped the 1973 War were established six years.
- In 1967, Israel launched attacks on Egypt, Jordan and Syria, unleashing the June War, that resulted in the Israeli occupation of what remained of historic Palestine, as well as the Egyptian Sinai desert, and the Golan Heights from Syria.
- In a matter of six days, the Israeli army delivered a huge setback to the forces of three Arab countries and occupied territory that was three and a half times its size.

**Politics of the Cold War:**

- In the background, the politics of the Cold War between the Soviets – who supplied the Arab countries with weapons – and the US – which backed Israel – played out and inflamed the war.

**Secret agreement between Egypt and Syria:**

- Under Egyptian and Syrian former presidents Anwar Sadat and Hafez al-Assad, the two Arab nations concluded a secret agreement in January 1973 to unify their armies under one command.
- Aware that his country's weapons were dated and that it lacked the ability to liberate the Sinai in its entirety in a military operation, just four months after taking power, Sadat had offered the Israelis a peace deal if they would withdraw from Sinai. Golda Meir, the then Israeli prime minister, rebuffed the offer.

**Plans of a limited – war:**

- Sadat, on the other hand, had sought a limited war to focus the minds of the world's superpowers, and to jump-start the stalled peace process.

**Immediate cause:**

- The Egyptian and Syrian armies, with advanced Soviet weapons, launched a two-front offensive on Israel, from the north and the south.
- Under “Operation Badr” the Egyptian military forces managed to cross the Suez Canal and capture the Bar Lev Line – a fortified sand wall on the east bank of the canal.
- This initial military success, which came to be known to Egyptians as “the crossing,” served as a sign of victory after 25 years of defeat.
- On the northern front line, three Syrian infantry divisions crossed the 1967 ceasefire line known as the Purple Line.



- And, two hours into the war, the Syrians gained their first significant victory when they captured **Israel's Eye** – a key Israeli vantage point 2,000m above sea level on top of Mount Hermon.

### Consequences of the war:

#### Immediate:

- Both the Arabs and Israel declared victory in the war. The Arab countries managed to salvage their defeats after repeated losses in the 1948, 1956 and 1967 wars with Israel.
- This brought the two blocs (USA and USSR) to the brink of military conflict for the first time since the 1962 Cuban Missile Crisis.
- **Oil Embargo:** In response to U.S. support of Israel, the Arab members of OPEC, led by Saudi Arabia, decided to reduce oil production by 5% per month.
- Saudi Arabia declared an embargo against the United States, later joined by other oil exporters and extended against the Netherlands and other states, causing the **1973 energy crisis**.

#### Long-Term:

- The war has drawn permanent wedge between the Arab world and Israel. It further strengthened anti-Israel sentiments among the Arab countries, and is considered by many historians as the reason for the growth of Palestinian nationalism, and the creation of PLO.
- **Camp David Accords:** With USA as mediator, Israel made peace with Egypt following the Camp David Accords of 1978 and completed a staged withdrawal from the Sinai in 1982.
- Forty-five years since the October war in 1973, Israel still occupies Palestinian territories and Syrian Golan Heights.
- Jordan and Egypt eventually withdrew their claims to sovereignty over the West Bank and Gaza, respectively. Israel and Jordan signed a peace treaty in 1994.
- For Syria, the Yom Kippur War was a disaster. The unexpected Egyptian-Israeli cease-fire exposed Syria to military defeat, and Israel seized even more territory in the Golan Heights. In 1979, Syria voted with other Arab states to expel Egypt from the Arab League

#### Significance for India:

- India could associate herself with Israel, as she was more or less in a similar situation, surrounded by hostile neighbours like Pakistan and China at that time, with which wars had been fought in 1965 and 1962 respectively.
- The reduction in oil production and supply led to major price hikes around the world, causing oil-shocks to India.

#### Conclusion:

The Yom Kippur War **upset the status quo in the Middle East**, and the war served as a direct antecedent of the 1978 Camp David Accords. The war also had global repercussions especially in the cold-war and also strengthened the position of OPEC countries.

**Topic– capitalism, socialism etc.- their forms and effect on the society.**

**Q) The form of capitalism practised in the last 50 years is no longer tenable. Discuss. (250 words)**

Livemint

#### **Why this question**

*The article discusses the issues with the practice of capitalism in the current era where the contradictions highlighted by Marx in capitalist society is coming to the fore. As a result there is a need to have a discussion and form an opinion on the form of capitalism being practiced.*

#### **Key demand of the question**

*The question expects us to debate the nature of capitalism in our modern world, examine its pros and cons, discuss its impact and give our view on its future.*

#### **Directive word**

*Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.*



### ***Structure of the answer***

**Introduction** – Give an overview of the major issues arising out of capitalism such as concentration of wealth, destruction of forests etc and suggest that in this light, tenability of capitalism seems doubtful.

### ***Body***

Explain the form of capitalism being practiced// in the world today where the dominating strand is neoliberalism with states taking a back seat.

Highlight the issues with this model

- Concentration of wealth and glaring inequality
- Scant regard for the needs of the environment
- Pursuit of wealth sole motive etc

Discuss what sort of course correction is required

**Conclusion** – Give your view and discuss way forward.

### **Introduction:**

Currently, neoliberalism is most commonly used to refer to market-oriented reform policies such as “eliminating price controls, deregulating capital markets, lowering trade barriers”, and **reducing state influence on the economy, through privatization and austerity**. However, this has given rise to issues such as concentration of wealth in a few hands, destruction of forests in the name of development.

### **Body:**

- **Neoliberalism**, sometimes referred to as the “**Chicago school**” of economics and named after the University of Chicago, rose to prominence in response to the **breakdown of the international money system and the fiscal contradictions viewed as inherent in the welfare system**.
- This includes extensive economic liberalization policies such as privatization, fiscal austerity, deregulation, free trade, and reductions in government spending in order to increase the role of the private sector in the economy and society. These market-based ideas and the policies they inspired constitute a paradigm shift away from the post-war Keynesian consensus which lasted from 1945 to 1980. The implementation of neoliberal policies and the acceptance of neoliberal economic theories in the 1970s are seen by some academics as the root of financialization, with the financial crisis of 2007–08 as one of the ultimate results.

However, the **IMF paper (2016)** entitled “**Neoliberalism: Oversold?**” was also critical of some neoliberal policies, such as freedom of capital and fiscal consolidation for “increasing inequality, in turn jeopardizing durable expansion.” The report contends the implementation of neoliberal policies by economic and political elites has led to **following disquieting conclusions**.

- **Increase in corporate power:** The benefits in terms of increased growth seem fairly difficult to establish when looking at a broad group of countries.
- The costs in terms of increased inequality are prominent. Such costs epitomize the trade-off between the growth and equity effects of some aspects of the neoliberal Promotes exploitation and social injustice.
- **Increased inequality** in turn hurts the level and sustainability of growth. Even if growth is the sole or main purpose of the neoliberal agenda, advocates of that agenda still need to pay attention to the distributional effects. Neoliberal policies result in an expanding carceral state and the criminalization of poverty.
- **Labour-Market at mercy of Corporates:** Deregulation of the labour market produces flexibilization and casualization of labour, greater informal employment, and a considerable increase in industrial accidents and occupational diseases.
- **Anti-Democratic:** Globalization can subvert nations’ ability for self-determination. Some scholars contend that neoliberalism undermines the basic elements of democracy.



- The replacement of a government-owned monopoly with private companies, each supposedly trying to provide the consumer with better value service than all of its private competitors, removes the efficiency that can be gained from the economy of scale.
- **Environmental Impacts:** Trade-led, unregulated economic activity and lax state regulation of pollution lead to environmental impacts or degradation. “The era of neo-liberalization also happens to be the era of the fastest mass extinction of species in the Earth’s recent history.”
- **Consumers instead of Citizens:** Instead of communities, it produces shopping malls. The net result is an atomized society of disengaged individuals who feel demoralized and socially powerless. Neoliberalism holds that market forces should organize every facet of society, including economic and social life, and promotes asocial Darwinist ethic which elevates self-interest over social needs.

### Way Forward:

- Positive intervention by Government for equitable and sustainable economic development and not complete separation of state and market.
  - **Example:** Requirement of financial regulators such as SEBI in economies to safeguard interests of the common people. i.e. Control on secondary market and chit fund schemes (artificial demand creation).
- The market needs the state, more than the other way around. The market needs internal regulation, in order to function: the state, in the form of the legal system, ensures contracts are enforced.
  - **Example:** In the form of the police, it prevents theft and fraud. It establishes uniform systems of weights and measures, and a uniform currency.
- Adopting a system that is flexible to change with the need of the time and enable the government to pitch in whenever necessary will help.

### *Topic- Salient features of Indian Society*

**Q) The window of demographic dividend points to a differential approach to socio-economic policy planning. Examine. (250 words)**

Livemint

#### *Why this question*

*The article discusses the spread of demographic dividend in India across time and states and examines the kind of policy approach required to take advantage of such dividend.*

#### *Key demand of the question*

*The question expects us to bring out how demographic dividend in India points to a differential approach and the nature of socio economic planning required to reap dividends of this demographic dividend.*

#### *Directive word*

*Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .*

#### *Structure of the answer*

**Introduction** – explain about demographic dividend. Demographic dividend is said to be occurring when the ratio of the working age population is high and the dependency ratio in terms of proportion of children and elderly people low. This advantage can create the space needed to increase investments in enhancing human capabilities, which, in turn, can have a positive influence on growth and development.

#### *Body*

Explain that study on demographic dividend in India by United Nations Population Fund (UNFPA) throws up two interesting facts. One, the window of demographic dividend opportunity in India is available for five decades from 2005-06 to 2055-56, longer than any other country in the world.



Second, and more interesting, is the fact that this demographic dividend window is available at different times in different states because of differential behaviour of the population parameters.

Explain the reasons behind such an occurrence

Explain what kind of differential planning is required.

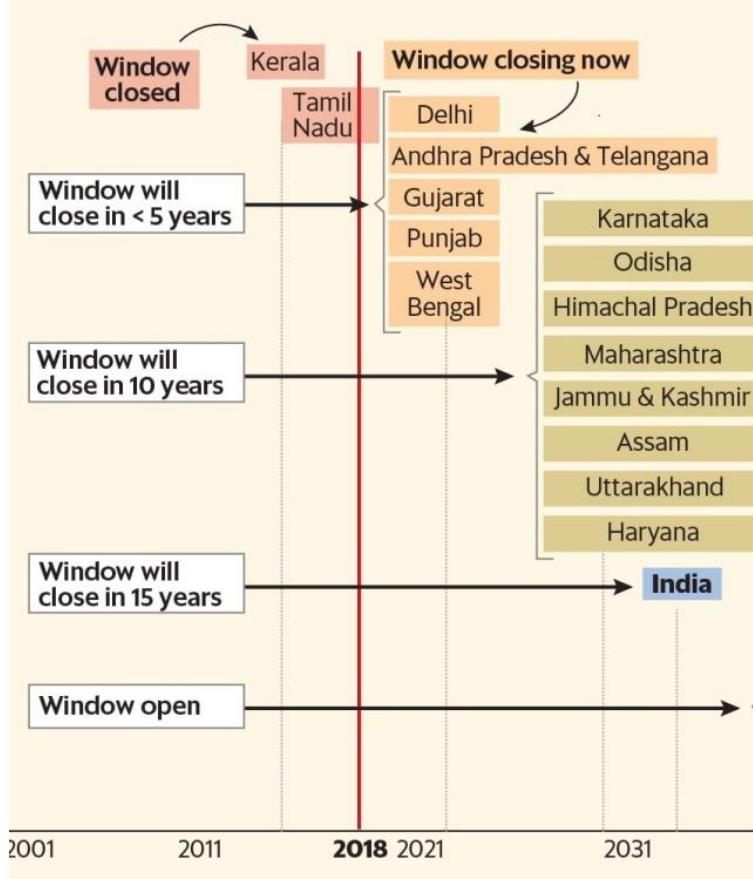
- For example, the focus in the states where the window is closing soon will have to be on ageing and migrant-friendly policies and programmes, while the focus in the states where the window is open and will close in the next 10-15 years will have to be on empowering girls and women, provisioning of health, education and skill development for young people, and employment generation.
- The focus in the states where the window is yet to open will have to be threefold—addressing harmful practices such as child marriage, access to quality sexual and reproductive health services and family planning services to all, and provisioning of health, education, life and vocational skills to all the young people.

**Conclusion – Give your view and discuss the way forward.**

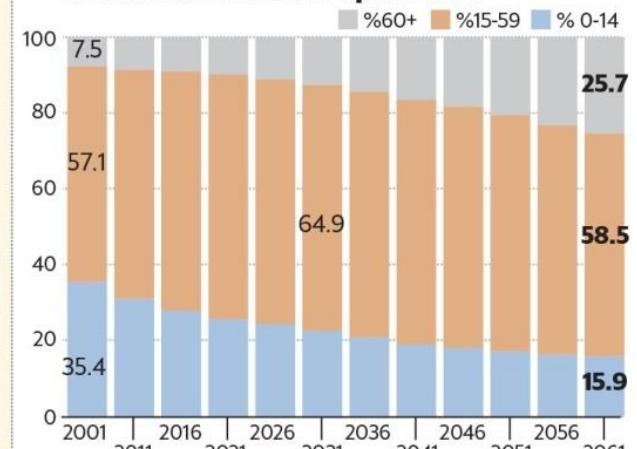
### Introduction:

Demographic dividend occurs when the proportion of working people in the total population is high because this indicates that more people have the potential to be productive and contribute to growth of the economy. In other words, the ratio of the working age population is high and the dependency ratio in terms of proportion of children and elderly people low. Reforms in the health and education sector, financial inclusion and adequate employment opportunities are essential pre-requisites to ensure that India's young population is truly an asset.

**Chart 2: demographic window of opportunity among Indian states**



**Chart 1: projected broad age distribution in India up to 2061**



**Window closing by a decade**

Chhattisgarh

Jharkhand

Madhya Pradesh

Rajasthan

Uttar Pradesh

Bihar

**Window fully open**

Source: UNFPA

**Body:**

The study on demographic dividend in India by United Nations Population Fund (UNFPA) throws up two interesting facts.

1. The window of demographic dividend opportunity in India is available for five decades from 2005-06 to 2055-56, longer than any other country in the world.
2. This demographic dividend window is available at different times in different states because of differential behaviour of the population parameters.

It also reveals the following findings:

- At present, India, overall as a country, has a large proportion of population that is young. Close to 30% of India's population is in the age group 0-14 years.
- The elderly in the 60-plus age group are still a small proportion (8%) of the country's population.
- The working age group 15-59 years accounts for 62.5% of India's population. The working-age population will reach the highest proportion of approximately 65% in 2036.

The reasons behind such an occurrence:

- Different states have behaved differently in the past and are projected to behave differently in terms of population parameters in future also.
- The **fertility decline** across states and regions has been different.
- Some states, especially in southern India, started seeing the fertility decline earlier than other states, especially the states in the hinterland. **Example:** Kerala:1.6 where as in Bihar:3.1
- This created regional variations in the degrees and timings of fertility decline.

Different sets of states have their windows of demographic dividend available at different time periods. As a result, there is need for a differential approach in forward-looking policymaking and programme planning to harness the demographic dividend opportunity.

- Where window is closing soon (example: Delhi, Gujarat, Punjab etc.)

Policy Priorities: ageing and migrant-friendly policies and programmes

- Where window is open and will close in the next 10-15 years (example: Karnataka, Odisha, HP etc.)

Policy Priorities: empowering girls and women, provisioning of health, education and skill development for young people, and employment generation

- Where window is yet to open (example: Bihar, UP, MP etc.)

Policy Priorities: **three-fold** – 1) addressing harmful practices such as child marriage. 2) Access to quality sexual and reproductive health services and family planning services to all. 3)provisioning of health, education, life and vocational skills to all the young people.

**Conclusion:**

Fine-tuning the planning and implementation of schemes and programmes by factoring in population dynamics is likely to yield greater socio-economic impact and larger benefits for people.

**Q) Isolation of indigenous groups is crucial today. Comment in light of the recent debate around the issue. (250 words)**

***Key demand of the question***

*The recent incident involving Sentinelese tribe has brought the attention on such indigenous tribes and our policy with respect to them. The article delves deep in the issue and discusses why it's important for us to leave such indigenous tribes alone.*

***Key demand of the question***

*The question expects us to bring out the current status of indigenous tribes, highlight our policy towards them, explain the reasons why it's important to leave them and discuss the way forward.*

***Directive word***

*Comment – When you are asked to comment, you have to pick main points and give your 'opinion' on them based on evidences or arguments stemming from your wide reading.*



### *Structure of the answer*

*Introduction – Discuss why this issue is in news.*

#### **Body**

*Discuss the status quo highlighting the situation of such tribes*

*Discuss how such tribes are protected currently – The Govt. of India issued the Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956 to declare the traditional areas occupied by the tribes as reserves, and prohibited entry of all persons except those with authorisation. Photographing or filming the tribe members is also an offence. The rules were amended later to enhance penalties. But restricted area permits were relaxed for some islands recently.*

*Discuss why it's important to leave them alone*

- *large chunk of the population of the 10 Great Andamanese tribes was wiped out after the indigenous peoples caught syphilis, measles, and influenza on an epidemic scale following contact with the early settlers etc*

*Conclusion – Give your view and discuss way forward.*

#### **Introduction:**

The death of an American Christian missionary whose covert expedition to convert the residents of North Sentinelese Island raised eyebrows across the world. The Sentinelese are the **world's last known pre-Neolithic tribal group**. The episode has cast a spotlight on the **threats faced by the world's remote indigenous groups**.

#### **Body:**

The current status of the indigenous groups is highly vulnerable. There are reasons for non interference in areas of indigenous groups. The indigenous groups face the following grave threats.

- **Dwindling Population:** Indigenous communities' combined share of the world population is now at just 4.5%. Colonial excesses had reduced aboriginal population in Andaman islands from more than 25 tribes to just four tribes
- **Threat of new diseases:** Indigenous tribes show aggression to outsiders mainly because they associate outsiders with violence and infectious diseases like small pox leading to their depopulation during colonization time.
- **Past Experiences:** British colonial excesses whittled down the aboriginal population of the Andaman Islands, which includes North Sentinel Island, from more than two dozen tribes 150 years ago to just four today.
- **Alienation:** This is due to increased encroachments of the lands they reside in. **Example:** Brazil's new President Jair Bolsonaro has threatened to repeal constitutional safeguards for aboriginal lands in order to expand developers' access to the Amazon rainforest.
- **Dwindling forestlands:** indigenous societies have been pitted against loggers, miners, crop planters and other interlopers. In the last 12 years alone, according to satellite data, Brazil's Amazon Basin has lost forest cover equivalent in size to the entire Democratic Republic of Congo

Due to the threats faced by them, the governments across the world have taken many measures to protect them.

- After decolonization period, many independent countries made "**no contact policy**" for indigenous tribes respecting their right to their ancestral land and maintaining seclusion.
- In **India, Andaman and Nicobar (Protection of Aboriginal Tribes) Regulation , 1956** declares areas of tribes as reserves and prohibits entry ,filming and photography. The rules were amended later to enhance penalties. But restricted area permits were relaxed for some islands recently.
- **United Nations Declaration on the Rights of Indigenous Peoples** provides universal framework of minimum standards for the survival, dignity and well-being of indigenous people

The indigenous tribes have to be left alone. Their way of living over centuries has helped them live in synergy with the nature. The importance of isolation of indigenous tribes are:

- **Right to Life:** Many of tribal groups have traditions and customs which are peculiar to them. They must be respected which is in accordance to their fundamental rights.



- **High Vulnerability:** Many primitive vulnerable tribes particularly in Andaman and Nicobar islands are vulnerable to even diseases such as common flu and their exposure to outside population would wipe out their existence.
  - **Example:** large chunk of the population of the 10 Great Andamanese tribes was wiped out after the indigenous peoples caught syphilis, measles, and influenza on an epidemic scale following contact with the early settlers
- **Natural way of Life:** Indigenous tribes have good understanding of and show reverence for nature.
  - **Example:** When the devastating 2004 Indian Ocean tsunami struck, more than a quarter-million people died across 14 countries, but the two isolated Andaman tribes, which rely on traditional warning systems, suffered no known casualties.
- **Protectors of Nature:** As world environmental sentinels, they **safeguard 80% of global biodiversity** and plays critical role in climate change adaptation and mitigation.
- They act as **hub of biological treasure for scientists** seeking to **reconstruct evolutionary and migration histories**.
- Past experiences of interference in their indigenous lives has led to many unfortunate events like **Insurgency and Extremism** as seen in Central and north eastern Indian tribes.

#### **Way forward:**

- Knee jerk reaction such as easing norms of Restricted area permit should be avoided.
- Integrational approaches involving interactions with such groups must be taken up.
- Complete assurance of their autonomy and preservation of their diversity should be the guiding principles.
- Providing infrastructure like proper health care facilities, educational facilities, access to modern technology can help them grow better.
- The **tribal policy of Panchasheel** can act as a guiding light in this direction.

#### **Conclusion:**

Indigenous people are an **essential element of cultural diversity and ecological harmony**. The least the world can do is to let them live in peace in the ancestral lands that they have honoured and preserved for centuries.

#### **Q) New India can't view empowerment of women merely as economic resource.**

**Comment. (250 words)**

Indian express

##### ***Why this question***

*The article examines the problems with the developmental narrative that sees improvement of status of women merely in terms of participation of women in labour force. There are several other issues faced by women which also need to be tackled to improve their overall status.*

##### ***Key demand of the question***

*The question expects us to first explain the statement given in the question. Thereafter, it expects us to bring out why thinking of development of women merely in terms of enhancing their contributions to GDP is not holistic. Bring out that there is a need to focus on other issues that confront women and the way forward.*

##### ***Directive word***

*Comment – When you are asked to comment, you have to pick main points and give your ‘opinion’ on them based on evidences or arguments stemming from your wide reading. Your opinion may be for or against, but you must back your argument with evidences.*

##### ***Structure of the answer***

***Introduction – explain the statement given in the question.***



### **Body**

Explain that Niti Aayog's released 'Strategy for New India @75' document falls short of engaging gender equality in a meaningful way. This important, over 200-page document includes only a short, four-page section on gender which discusses just one theme: The need to enhance female labour force participation, while neglecting a whole gamut of other issues.

Explain why it is problematic to focus on empowerment of women as an economic resource. Bring out the other issues faced by women and how to address them.

**Conclusion – Give a fair and balanced view and discuss way forward.**

### **Introduction:**

Niti Aayog's latest report on state-level progress across various indicators under the global Sustainable Development Goals (SDGs) reveals the comprehensive index score on **gender equality (Goal 5)** of all Indian states, except Kerala and Sikkim, fall in the red zone, signifying low performance.

### **Body:**

Niti Aayog's 'Strategy for New India @75' document falls short of engaging gender equality in a meaningful way, despite its own worrisome findings. The strategy document section on gender which discusses just one theme: **The need to enhance female labour force participation**, while neglecting a whole gamut of other issues. The strategy document aims to achieve a **female labour force participation of at least 30 per cent by 2022**.

The idea of women- empowerment just doesn't imply economic empowerment by increasing their Labour force participation, job creation, entrepreneurship opportunities. There is a **grave necessity of social and political empowerment** due to.

- **Crimes:**
  - Crimes against women are discussed merely as a **barrier to women's mobility**, one that hampers their supply in the labour market.
  - **NCRB** data recording an **83 per cent increase in crimes against women between 2007 and 2016**, and the Thomson Reuters Foundation's global poll in 2018 naming India as the most dangerous country for women.
  - The **MeToo** movement tumbled out many skeletons from the drawers showing most women kept quiet about the sexual harassment due to fear of losing jobs and affecting their livelihoods and career.
- **Social barriers:**
  - Married women are not allowed to work in some religions and culture. Further, the patriarchal mindset prevalent in Indian people forces such barriers on women.
  - According to recent research by Public Affairs Centre (PAC), a major metropolis like Delhi has only 196 female workers per 1,000 workers, and Mumbai has only 188. In contrast, a state like Nagaland, which has historically been matrilineal, has more than 500 women workers per 1,000 in most districts.
- **Unpaid care:**
  - Unpaid work done by women in the household demonstrates no understanding of how it constrains women from entering the labour force.
  - The lack of basic facilities like drinking water, cooking gas in rural areas forces women into drudgery to arrange the basic stuff.
- **Fixed Gender Roles:**
  - There are fixed gender roles in most families, again a consequence of patriarchal mindset.
  - The **concept of paternity leave and mainstreaming of gender education in schools** is still miles away in India.
  - Without the renegotiation of gender roles, most women will only juggle jobs and not enjoy fulfilling careers.
- **Gender-wage gap:**
  - Unequal pay for equal work is a stark feature which directly violates the fundamental right to equality of women.



- A government report in 2018 finding a **30 per cent wage gap even for men and women with the same qualifications.**
- Women also lack **equal inheritance rights** leading to **Feminization of poverty.**
- There is absence of any discussion on **over-representation of economically active women in the informal sector**, which leaves them poor and vulnerable, deprived of many work benefits.

### **Way Forward:**

- Implementation of the laws viz. Protection of women from sexual harassment at workplace act, maternity benefit Act in true letter and spirit.
- Breaking the social barriers by **gender sensitization and education at families, schools and workplaces.**
- Incentivising companies to employ women and promoting safe work spaces are necessary.
- Companies must compulsorily grant paternity leave so that the responsibility is shared.
- Gender-wage gap should be reduced by bringing in stringent laws.
- Formalization of jobs should be pushed to avail benefits to many women. Until then, social security benefits should be provided to women in unorganized sector.

### **Conclusion:**

The NITI Strategy document opted for a **GDP-centric approach focusing only on capitalisable gender dividend**. The strategy document should take into consideration the above lacunae and provide a holistic document rather than eyewash. The need of the hour to reap economic benefits is by **addressing the issues of gender rights and justice.**

### **Topic- Urbanization, their problems and their remedies.**

**Q) Delhi government's draft e-vehicle policy differs from similar policies of other state governments and does well to encourage the growth of an ecosystem around electric mobility. Comment. (250 words)**

#### Downtoearth

##### **Why this question**

*This article analyzes the recent draft e-vehicle policy of the government and discusses how it differs from the similar policies of other state governments. The focus here is on explaining how the policy could serve the e-vehicle industry well as well as smoothen the regulatory architecture going forward. Hence this question would enable you to be aware of what is happening in the policy space regarding e-vehicle.*

##### **Key demand of the question**

*The question expects us to first discuss the finer points of the policy and compare and contrast it with policies of other state government. Thereafter we have to analyze the pros and cons of the policy and discuss its usefulness for the future of the e-vehicle segment of the country.*

##### **Directive word**

*Comment – When you are asked to comment, you have to pick main points and give your 'opinion' on them based on evidences or arguments stemming from your wide reading. Your opinion may be for or against, but you must back your argument with evidences.*

##### **Structure of the answer**

**Introduction** – Highlight that to achieve the mission of 100% electric mobility by 2030, state governments are coming up with policy documents to accelerate the growth in the industry.

##### **Body**

###### *Discuss the key features of the policy*

- aim of 25 per cent new electric vehicle registrations by 2023



- Provides for Incentives on vehicles (subsidy) and mobility services
- Focuses on creating private charging infrastructure etc

*Compare and contrast the policy with those of other states*

- Most of the states, in their policies, primarily focused on the establishment of manufacturing and ancillary industries associated with the electric vehicle ecosystem. Others focused on the regulatory framework necessary to ease the operation of electric vehicles, including electricity supply.
- What sets Delhi's draft policy apart is that while its focus is on enabling the development of an electric mobility ecosystem within the state, it focuses on the state's role as a regulator of important components of the ecosystem such as a network for private and public charging infrastructure.

*Analyze whether the policy is a good start in achieving the aim with respect to e-vehicle*

- Delhi policy establishes small three-wheeler goods vehicles and public transport, including Intermediate Para Transit (IPT)—rickshaws and taxis as a segment of vehicles which have been identified for electrification by the state.
- attempted to fund this transition to electric vehicles through cross-subsidisation as a matter of policy which is important etc

**Conclusion – Give your view on the effectiveness of the policy and discuss way forward.**

### Introduction:

India seeks to turn 30 percent of vehicles battery-powered by 2030 to cut oil import bill and improve air quality, as part of **National Electric Mobility Mission Program**.

Delhi became the latest entrant to the band of states that have launched electric vehicle/mobility policies by releasing a draft Delhi Electric Vehicle Policy. It joined the likes of Karnataka, Maharashtra, Telangana, Kerala, Uttarakhand and Uttar Pradesh in drafting a medium-to long-term policy to encourage the growth of an ecosystem around electric mobility.

### Body:

#### Key features of the Delhi's Draft EV policy:

- **Primary Objective:**
  - It is to drive rapid adoption of battery-run electric vehicles (BEVs), upto **25 per cent of all new vehicle registrations by 2023**.
  - Target of bus fleet of 50% e-buses by 2023. The **C40 Fossil Fuel Streets Declaration**, signed by over 25 global cities commits to procure only zero emission busses by 2025, and to ensure that a major area of the city is zero emission by 2030.
- **Incentives on vehicles (subsidy) and mobility services:**
  - Waiver on road tax, registration fees, Municipal Corporation of Delhi (MCD) one-time parking fee and auto rickshaw permit fees for e-vehicles.
  - A whole lot of purchase incentives for e-Autos, e-Goods Carrier, e-Rickshaws etc.
- **Private charging infrastructure:**
  - Changes in building bye-laws to enable new charging infrastructure: All new non-residential buildings with parking space for more than 10 cars will need to have at least 20 per cent parking accessible to chargers and a 100 per cent access in such residential buildings, co-op, group housing societies and colonies managed by Residents Welfare Associations (RWAs)
  - For existing residential building owners, subsidy to install one charger for every three cars.



- **Public Charging and battery swapping infrastructure:**
  - This is to ensure public charging facilities within 3 kms from anywhere in Delhi. 11 charging energy operators (EOs) will be selected to set up multiple regular and fast chargers
- **Battery and vehicle recycling:**
  - Energy Operators and Battery Swapping Operators will serve as end of life battery recycling agencies.
  - EV batteries that cannot be re-used to be sent to recycling facilities
- **Funding:**
  - All petrol and diesel-powered vehicle users will pay a pollution cess on the sale of fuel beginning with April 2019.
  - An air quality parking surcharge will be levied on base parking fees on all non-electric vehicles
  - A congestion fee of up to 2.5 per cent on fare will be levied on all cab aggregator and taxi trips. This tax will be waived for rides taken in an e-two-wheeler, e-auto or e-cab

The Draft Policy of Delhi differs from similar policies of other state governments in the following way

- The focus is on enabling the development of an **electric mobility ecosystem** within the state.
- It focuses on the **state's role as a regulator** of important components of the ecosystem such as a network for private and public charging infrastructure.
- State provides for establishing a network of charging infrastructure. In other states, the onus of infrastructure is left to the private sector without much responsibility to the public sector.
- It also focuses to generate further funding for the creation of an EV ecosystem through the “**polluter pays**” mechanism—graded additional road taxes and parking fees for ICE vehicles.
- Most of the states, in their policies, primarily focused on the establishment of manufacturing and ancillary industries associated with the electric vehicle ecosystem.
- Others focused on the regulatory framework necessary to ease the operation of electric vehicles, including electricity supply. **Example:** Maharashtra focuses on manufacturing 5 lakh eVehicles, Karnataka targets on employment generation.

The Delhi Draft policy is **definitely a good start in achieving the aim with respect to e-vehicles**

- Policy establishes Small three-wheeler goods vehicles and public transport, including Intermediate Para Transit (IPT)—rickshaws and taxis as a segment of vehicles which have been identified for electrification by the state.
- The draft has also, for the first time, attempted to fund this transition to electric vehicles through cross-subsidisation.

#### **Way Forward:**

- Global best practices of Sweden’s plan to move towards 100% e-Mobility can be emulated.
- Convergence of policies like mobility and electricity, as electricity cost is a major factor in Delhi.
- PPP and other unique measures to fund the grand vision of Delhi Policy must be thought out.
- Delhi government should try to work with adjoining cities of Noida, Faridabad, Gurugram wherever possible to ensure that loopholes don’t exist and that a consistent policy message is sent across the whole metropolis.

#### **Conclusion:**

The policy takes a comprehensive, system-level approach to vehicle electrification, and could serve as a replicable blueprint for sub-national leadership.

#### **Topic- Salient features of world's physical geography.**

**Q) Discuss the different theories explaining the formation of Coral Islands. (250 words)**

Certificate Physical and Human Geography by Goh Cheng Leong; Islands and Coral Reefs

**Directive word**



**Discuss-** this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.

### Key demand of the question.

The question wants us to simply write in detail about the theories trying to explain the formation of Coral Islands across the world.

### Structure of the answer

**Introduction-**Mention that the subject of the origin of coral reefs has been debated for over one and a half centuries and several theories have been put forward but none has been universally accepted.

### Body-

Discuss the theory put forward by Charles Darwin- subsidence theory. E.g

- This theory assumes that all coral reefs began as fringing reefs around and Island are the topmost portions of extinct volcanoes that stood above ocean bed. Due to the general down-wrapping of the earth's crust, the islands gradually subsided but the corals continue to grow upwards to keep pace with the subsidence etc.

Discuss the theory put forward by R.A Dally- Glacial control theory. E.g

- This theory believes that during the height of Ice Age the water was too cold for any Coral growth take place but with the return of warmer climate water locked Up in ice sheets melted. Consequently, there was a rise in sea levels and columns begin to grow @ around 1 foot in a decade to keep pace with the rising water level etc.

**Conclusion-** based on your discussion, form a fair and a balanced conclusion on the given issue.

### Introduction:

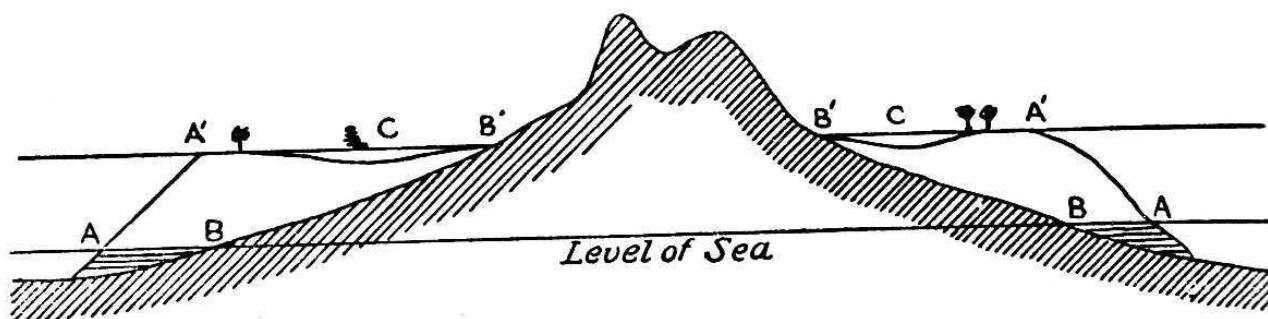
A coral reef is an underwater ecosystem characterized by reef-building corals. Reefs are formed of colonies of coral polyps held together by calcium carbonate. Most coral reefs are built from stony corals, whose polyps cluster in groups. Most reefs grow best in warm, shallow, clear, sunny and agitated water.

They occupy less than 0.1% of the world's ocean area, yet they provide a home for at least 25% of all marine species. They are also known as "rainforests of the ocean".

### Body:

The subject of origin of coral reefs has been studied and debated for over one and half centuries.

#### Darwin's theory of subsidence:

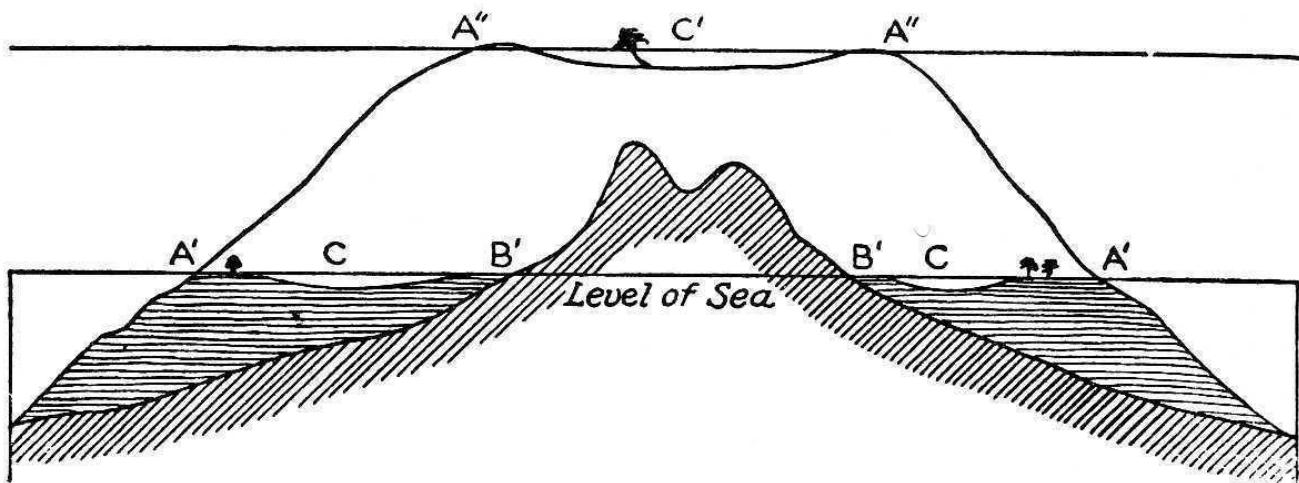


AA. Outer edges of the fringing-reef, at the level of the sea. BB. The shores of the fringed island.

A'A'. Outer edges of the reef, after its upward growth during a period of subsidence, now converted into a barrier, with islets on it B'B'. The shores of the now encircled island. CC. Lagoon-channel.

N. B.—In this and the following woodcut, the subsidence of the land could be represented only by an apparent rise in the level of the sea.

Figure 1: Transition from fringing to Barrier Reef



A'A'. Outer edges of the barrier-reef at the level of the sea, with islets on it. B'B'. The shores of the included island. CC. The lagoon-channel.

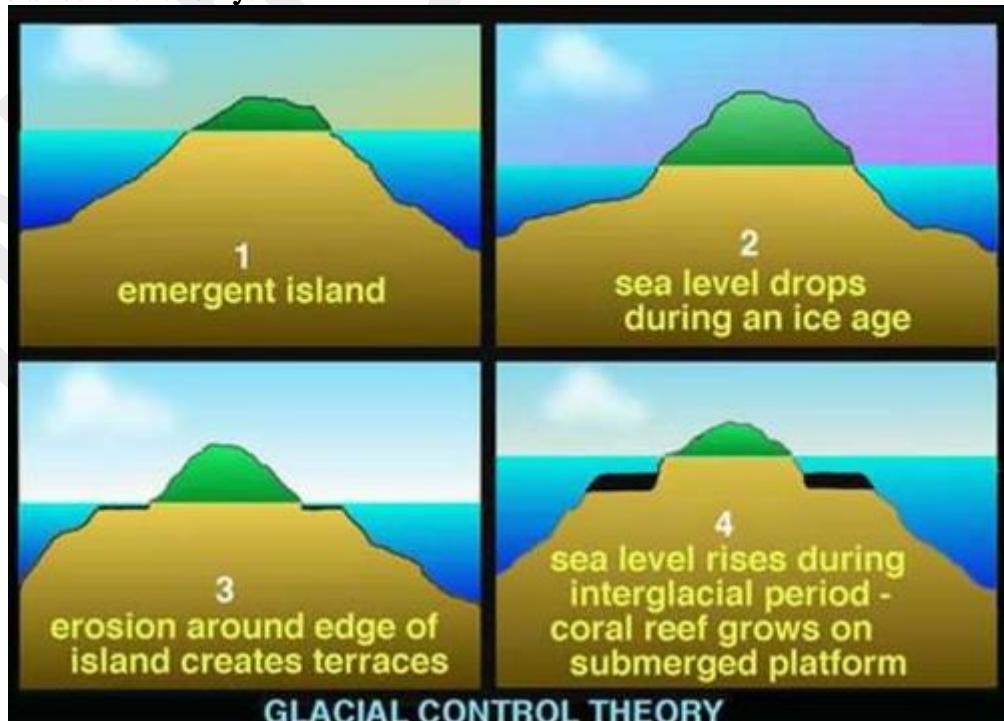
A''A''. Outer edges of the reef, now converted into an atoll. C'. The lagoon of the new atoll.

N. B.—According to the true scale, the depths of the lagoon-channel and lagoon are much exaggerated.

*Figure 2: Transition of an island from barrier reef to atoll.*

According to Darwin, coral would grow along the edges of a newly formed volcanic island, thereby forming a **fringing reef** (Figure 1). Due to a general down warping of earth's crust, the islands gradually subsided. The corals continued to grow upwards to keep pace with the subsidence. The growth was more vigorous at the outward edge than the landward edge because of the more favourable living conditions for the corals, so the encircling reef widened. It then formed a **barrier reef**, with a lagoon between the island and the reef. Eventually, when the land completely submerged, only the outer rims of the reef were seen, forming an **atoll** (Figure 2). The submerged island was covered by a layer of sediment so that the characteristic circular lagoon is generally shallow. Thus atolls mark the position of the former islands.

#### R.A Daly's glacial control theory:



Daly noticed a close relationship between glaciations and the development of coral reefs. He believed that during the heights of the Ice Ages, the water was too cold for any coral growth to take



place. With the absence of a coral barrier, **marine erosion** was able to attack and lower the islands. With the return of the warmer climate, the water that was locked up in the ice sheets melted. Consequently, there was a rise in the sea level which in some cases **submerged these lower islands**. On these wave-planed platforms, corals began to grow upwards at the rate of a foot in a decade to keep pace with the rising water level. **Coral Reefs**, where islands still project above sea level, and atolls were thus formed.

### **Conclusion:**

Recent evidences of boring through Coral formations seem to favour Daly's explanation of a change in sea level and consequent erosion of the Islands. However the deepest borings reveal basaltic rocks this corresponds to the subsided islands envisage by Darwin. Thus, a combination of the two theories accounts for all the important features of coral reefs and atolls.

### **Q) The Cool Temperate Continental Climate of the world is home to a flourishing lumber industry. Examine. (250 words)**

**Certificate Physical and Human Geography by Goh Cheng Leong; Cool Temperate Continental (Siberian) Climate**

#### **Directive word**

**Discuss-** this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.

The question wants us to write in detail about the Cool Temperate Continental Climate of the world and its flourishing lumber industry- why such climate supports lumber industry and the features of such climate as well as the industry.

#### **Structure of the answer**

**Introduction-** write a few introductory lines about the Cool Temperate Continental Climate/Siberian climate. E.g It is only experienced in the Northern Hemisphere where the continents inside the high latitudes have a large east-west spread, unlike the southern hemisphere.

#### **Body-**

Mention that the predominant vegetation in this climate is coniferous forests, which stretches in a vast continuous stretch across North America, Europe and Asia.

Discuss further, about coniferous forests in such climate. E.g no other trees are adapted to survive such hostile climates as the conifers.

- The conifers of Eurasia and N. America are the richest sources of softwood, used in building construction, pulp, matches, furniture, paper, rayon manufacturing etc.
- US leads in wood pulp while Canada tops in newsprint.
- The trees are present in pure strands and only a few species exist, which makes them highly advantageous for commercial exploitation.
- Conifers have moderate density, grow uniform and straight and tall, and are well spaced from each other.
- Snow Cover is exploited to transport/ haul the cut trees from one place to another etc.

**Conclusion-** based on your discussion, form a fair and a balanced conclusion on the given issue.

#### **Introduction:**

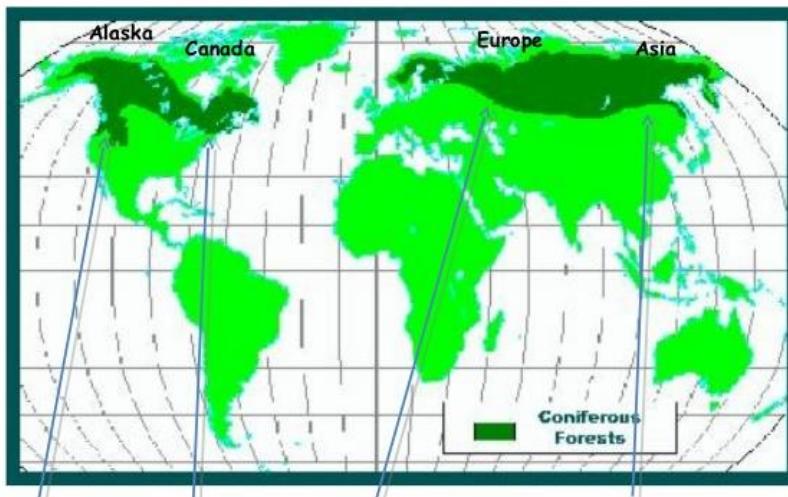
The cool temperate Continental climate is experienced only in the Northern hemisphere where the continents within the **high latitudes have a broad east west spread**. The Siberian climate is conspicuously absent in the southern hemisphere because of the **narrowness of the southern continents in the high latitudes and the strong oceanic influence which reduces the severity of winter**.

The predominant vegetation of this sub arctic type of climate is **evergreen coniferous forest**. The greatest single band of the coniferous forest is the **Taiga** in Siberia.



**Body:**

**Coniferous Forests lie just south of the frozen tundra in the northern parts of our Earth.**



In Alaska, Canada, northern Europe, and northern Asia

The **economic activity involving felling, hauling, logging of timber** is known as lumbering. It is well developed in the coniferous forest belt of the cool temperate lands. The factors responsible for its development are:

- **Homogeneous forests:** Tree species in temperate region are more or less homogeneous. Single species overwhelmingly dominate in separate regions —that helps immensely to locate and extract the trees. Besides, absence of undergrowth, bush or epiphytes makes extraction much easier. Absence of branches and shorter trees are other favourable factors which make lumbering in temperate regions more lucrative. **Example:** Pine, fir, spruce – northern forests; Larch-warmer south
- **Climate:** Climate in temperate region is conducive to lumbering. As the temperature is cool and pleasant, workers can continue their activities longer without much tiredness.
- **Easy transportation:** As trees are un-branched, shorter and lighter, transportation is easier. Customarily, **extraction is done during winter**, when the labour is cheaper and woods remain in the frozen river beds. During summer, when rivers melt, logs are automatically transported to the sawmills—without much cost.
- **Mechanization:** For cutting and felling of the logs, machines are used instead of manual labour. In this way, productivity can be raised and cost of production can also be minimized.
- **Cheaper power:** Power—particularly hydro-electric power—is cheaper in this region —an incentive to sawmills.
- **Steady -demand:** Demand of **soft conifer wood** is increasing day by day. For the **preparation of pulp in paper industry and cellulose for synthetic textile industry**, **demand of softwood is increasing faster**.
- **Development of Forest Management:** Unlike tropical world —where forest is unprotected and unmanaged — temperate forest management is scientific and careful. Afforestation is done along with **preventive measures against soil erosion and forest fire**.
- **Other products:** Temperate forests provide ample products other than woods, **Example:** gums, fruits, oils etc. — these are making lumbering more, profitable. They are used for making wood pulp, paper, newsprint, synthetic fabric, and sports goods; packing boxes, match sticks, rayon manufacturing etc
- **Ready market:** The adjacent countries of temperate coniferous forest are, by and large, highly developed and industrially prosperous. Their purchasing power and great requirement of wood accelerated lumbering industry in this part of the globe. Finland, Sweden, Norway, U.S.A. and Canada earn sizeable revenue to their national exchequer from export of lumbering products.
- **Government policies:** Governments are playing crucial role to increase environmental awareness through proper forest management and also giving assistance to forest research projects. **Example:** US leads in wood pulp while Canada tops in newsprint



### Conclusion:

Nearly 80% of lumbering products are obtained from temperate coniferous forest spread over North America and Europe. Here, lumbering industry is integrated, coordinated, well-organized and well-managed. The scale of operation and number of people involved in this industry is massive. Various geographical, socio-economic and cultural factors have contributed significantly for its origin and development.

### Q) Explain the formation of thousands of islands in Indonesian and Philippines archipelagos. (250 words)

#### *Key demand of the question*

*The question expects us to explain the formation of these islands with detailed explanation of the processes entailed therein.*

#### *Structure of the answer*

**Introduction** – Explain what archipelago is. Highlight that Indonesia and Philippines constitute two of the five main archipelagos in the world, with Indonesia being the largest archipelagic state in the world, in terms of area and population.

**Body** – Explain the geography of the region like the fact that it falls at the boundary of continental plates. Explain the reasons for the formation of these island. Both Indonesia and Philippines archipelagos are a result of a combination of volcanic activity and tectonic plate movement. Both islands have been hotbeds of volcanic and seismic activity due to the convergence of continental plates. Explain the physical processes involved in the formation of these islands.

**Conclusion** – highlight that the region is prone to volcanoes and tsunamis.

#### Introduction:

An archipelago is a group of islands closely scattered in a body of water. Most archipelagos are made of oceanic islands. This means the islands were formed by volcanoes erupting from the ocean floor. An archipelago made up of oceanic islands is called an **island arc**.

#### Body:

Indonesia and Philippines constitute two of the five main archipelagos in the world, with Indonesia being the largest archipelagic state in the world, in terms of area and population.

Indonesian Archipelago is made up of approximately 17,500 islands out of which more than 6,000 are populated. It has 60 tiny archipelagos and five core islands. Out of 400, about 150 are active volcanoes.

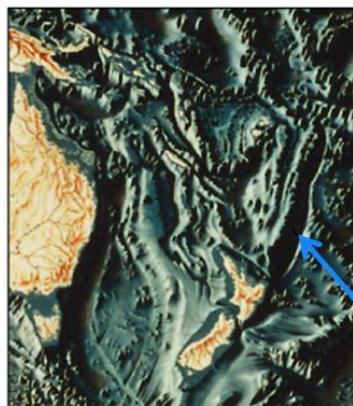
#### Geographic Location:





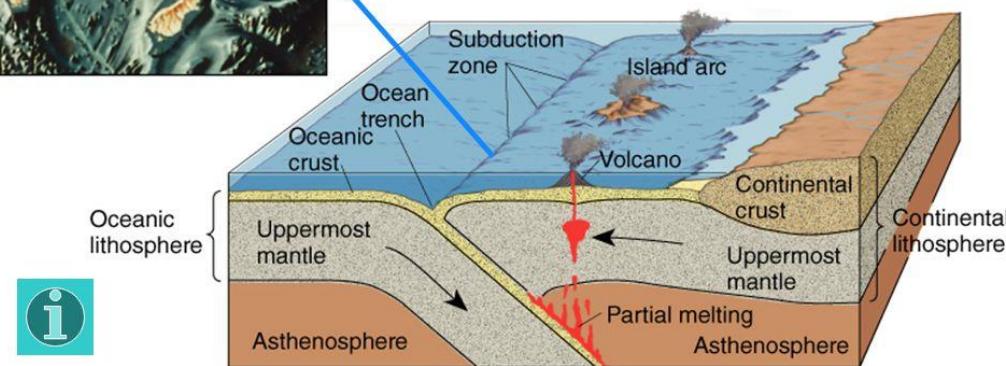
- It falls at the boundary of continental plates.
- Indonesia sits between the world's most active seismic region, the notorious Pacific Ring of Fire , and the world's second most active region — the Alpide belt.

**Formation:**



## Oceanic-Oceanic Convergent Boundary

Subduction processes in oceanic-oceanic plate convergence form volcanic island arcs along side deep ocean trenches



- Both Indonesian and Philippines archipelagos are a result of a combination of volcanic activity and tectonic plate movement. It is a result of **Oceanic-Oceanic Convergent Boundary**.
- Both islands have been hotbeds of volcanic and seismic activity due to the convergence of continental plates.
- The islands are initially caused by the volcanoes, and later the shifting of tectonic plates (Eurasian plate, Philippines plate) results in their consolidation as a grouping of small islands in a relatively small area.
- Underwater volcanoes lead to seepage of magma onto the sea, thereby creating rock formation. Continual release of magma causes these rock formations to emerge onto the surface of the sea, thus creating an island.
- The **shifting tectonic plates and existence of subduction zone** in the area where the Indonesian and Philippines Islands are located causes the formation of an island arc or archipelago.

**Importance for India:**

- The fact that Indonesia and Philippines Archipelago is in the **Pacific Ring of Fire**, they are prone to multiple earth-quakes and volcanic eruptions.
- These can in turn trigger **Tsunamis** which has the potential to affect India's vast coastline as seen during 2004 Tsunami.
- Further, the presence of Mallaca strait, Sunda strait and other straits in the proximity can affect the sea lanes of communication.
- Air traffic disruption due to eruption of volcanoes is a possibility.

**Way Forward:**

Being sandwiched between such seismicity has meant the islands experience some of the strongest earthquakes and most powerful volcanic eruptions known on Earth. Thus, it is important to understand the geology to reduce the destruction to man and material.



**Q) Explain some of the physical features that are formed in the upper courses of the river ? (250 words)**

GC Leong – Ch5

***Key demand of the question***

*The question expects us to name and explain the physical features as a result of erosion in upper reaches of the river.*

***Structure of the answer***

***Introduction – Explain that the course of the river can be divided into three main stages and in the upper stages the physical features formed are a result of the erosional action of the rivers.***

***Body***

- *Explain the phenomena of river capture and the associated physical features such as wind gap, pirating stream, pirated stream etc.*
- *Explain how rapids, cataracts and waterfalls are formed*
- *Also explain how duns are formed. Draw diagrams to explain more clearly*

***Conclusion – Highlight that these features are formed as a result of high pace of river in the upper courses.***

**Introduction:**

The course of a river may be divided into three distinct parts:

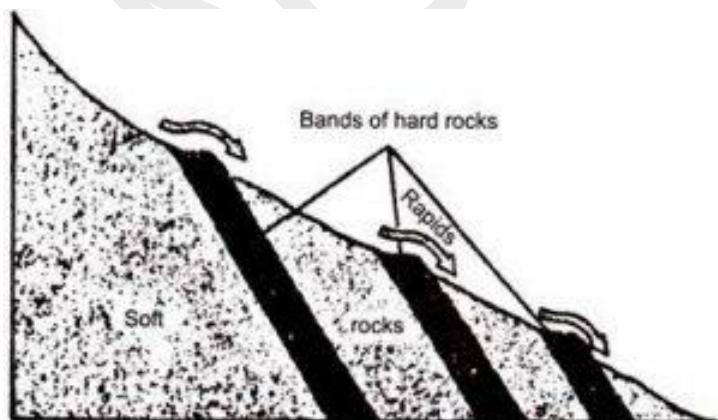
- the upper or the mountain course (in the stage of youth)
- the middle or Valley course (in the stage of maturity)
- the lower or plain course (in the stage of old age)

Erosion and transportation are the main activities of a river in the upper course.

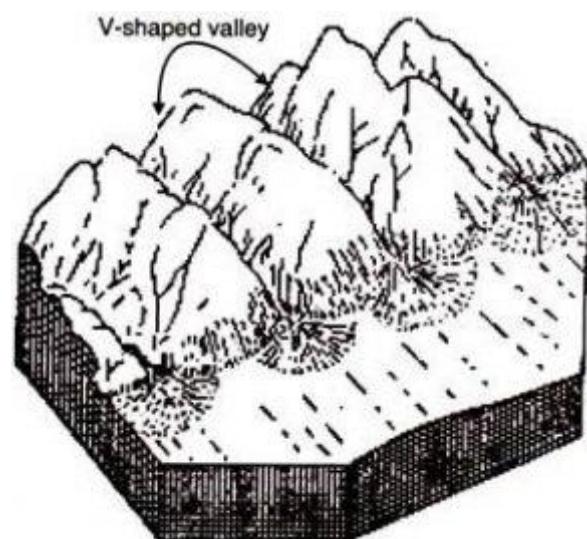
**Body:**

In the mountainous course, a river passes through a steep slope. Its water, therefore, rushes down with great speed. Under such a condition the water can dig the river bed very deeply and carries or pools down heavy boulders and pebbles.

**V-SHAPED VALLEYS:** A river has a deep and narrow channel in this stage. Moreover, some of the rocks over which a river flows are very hard, while the others are soft. As a result of this, the river course is not smooth. The **deep and steep-sided river valley is V-shaped** here. Both erosion and transportation are active at this stage.



**Fig. 3.7: Rapids**



**Fig. 3.8: V-shaped valley**

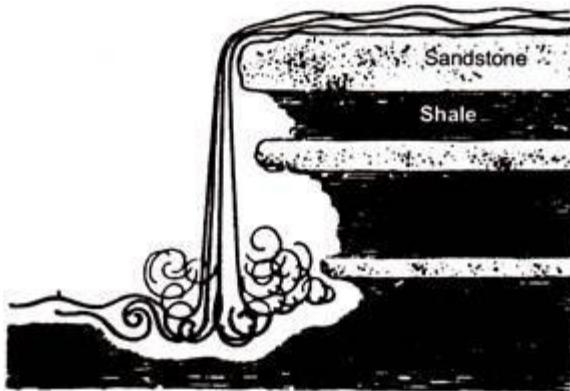
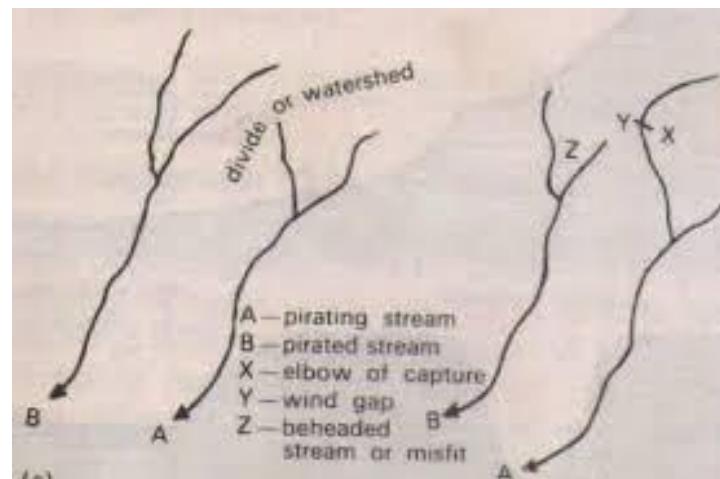


Fig. 3.9: Waterfall



- **GORGES:** Sometimes, the river flows through very hard rocks. In that situation the two sides of the river become so steep that they become almost vertical. The formation is known as **Gorge**. There are many gorges on the upper course of the Brahmaputra, the Indus, and the Ganges. Again when river flows through dry desert its bed becomes very deep and the two sides become vertical. The river valley takes the shape of I instead of V.
- **INTERLOCKING SPURS:** As the river erodes the landscape in the upper course, it winds and bends to avoid areas of hard rock. This creates interlocking spurs, which look a bit like the interlocking parts of a zip.
- **RAPIDS and CATARACTS:** When a river runs over alternating layers of hard and soft rock, rapids and waterfalls may form. Due to the unequal resistance of hard and soft Rocks traversed by a river the outcrop of a band of hard rock may cause a river to jump or fall down stream. Thus, rapids are formed. Similar falls of Greater dimensions are also referred to as cataracts.
- **WATERFALLS:** Waterfalls commonly form where water rushes down steep hillsides in upland areas. They are typical of the upper valley but can be found in the rivers lower courses. This typically occurs in areas where alternating bands of rock, made up of soft and hard rock, form the bedrock. Some types of rocks (shale, for example) wear away more easily than others (such as sandstone or limestone).
- Waterfalls form when waterfalls onto soft rock after flowing over hard rock. Falling water and rock particles erode the soft rock below, forming a plunge pool. Processes of erosion, such as **hydraulic action, abrasion and corrosion** further erode the plunge pool and the back wall of the waterfall, undercutting the hard rock above. Eventually, the hard rock will no longer be supported and it will collapse. The waterfall continues to retreat leaving behind a **steep-sided gorge**.
- **RIVER CAPTURE:** a natural process which is more active in the youthful stage of the valley development because the streams are actively engaged in head-ward erosion and valley lengthening. The stronger and more powerful streams (in terms of channel gradient, stream velocity and discharge and kinetic energy) capture the upper courses of weak and sluggish streams.

There are four major evidences of river capture. The **elbow of capture** denotes the point where the course of the captured stream has been diverted to the course of the captor stream. Generally, the elbow of capture denotes sharp turn in the course of a river almost at right angle. The **water gap** denotes the deep and narrow valley in the form of a gorge formed by the captor stream through headward erosion across the ridge. **Wind gap (col)** is the dry portion of the beheaded stream just below the elbow of capture. The **misfit or under-fit stream** is the lower course of the captured stream. It is called misfit because of the fact that the former valley of the captured stream becomes too large and wide for the beheaded stream because of substantial decrease in the volume of water due to diversion of its water to the captor stream.

### Conclusion:

India has many rivers at the youthful stage originating in Himalayas. The evolution of various landforms due to the high pace of rivers has its impacts on the geography, economy and people. With climate change, the rate of melting of glaciers is high leading to changes in river water flow. Thus, it is imperative to understand the river geomorphology.



**Q) While the earth's crust is undergoing constructive changes to create new relief, external forces of nature are working vigorously to level this down". Explain. (250 words)**

GC Leong – Ch4

#### **Key demand of the question**

The question expects us to explain that the earth's crust is a result of the constructive changes as a result of orogenesis and the external forces that are aggressively working to wear away the surface. Explain what these forces are and how they impact the formation of earth's crust.

#### **Structure of the answer**

**Introduction** – Highlight that earth's crust is a result of the constructive changes as a result of orogenesis and the external forces that are aggressively working to wear away the surface.

#### **Body**

Explain that orogenesis builds new mountains, folding and faulting causes uplift or depression in certain areas and volcanic disruptions also modify the surface

Thereafter explain the various external forces that work against such forces such as weathering, erosion, transportation and depositing. Explain how they impact the relief features seen on earth's crust

**Conclusion** – Explain what is the impact of such forces.

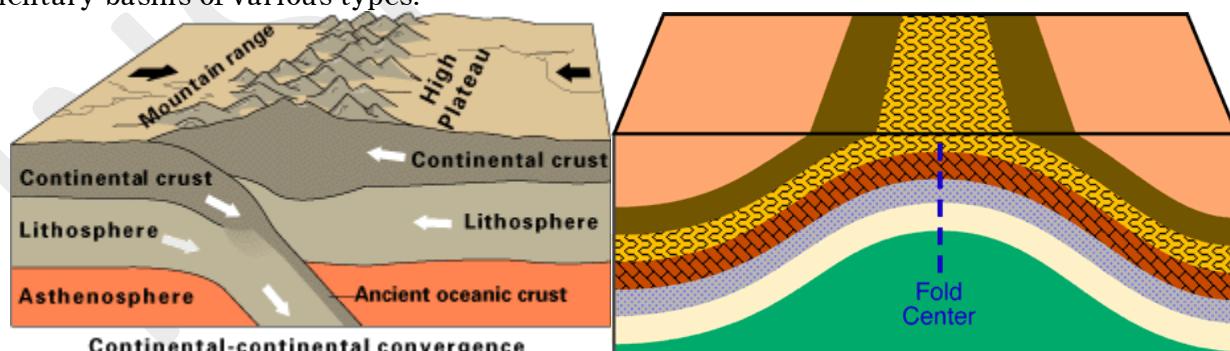
#### **Introduction:**

The earth's crust is constantly undergoing geological changes caused by **Endogenic (internal) forces** which create new relief features. Meanwhile **Exogenic (external) forces** are working vigorously to wear away the surface.

#### **Body:**

The various internal forces that help in formation of various landforms are **Orogenesis, Folding and Faulting, volcanic disturbances**.

**Orogenesis** is the process of building new mountain ranges by the convergence of tectonic plates. This takes place by **ocean-continent collision** (e.g., the Andes), **continent-continent collision** (the Alps and the Himalayas), or **island arc-continent collision** (e.g., New Guinea). All these tectonic processes create sedimentary basins of various types.

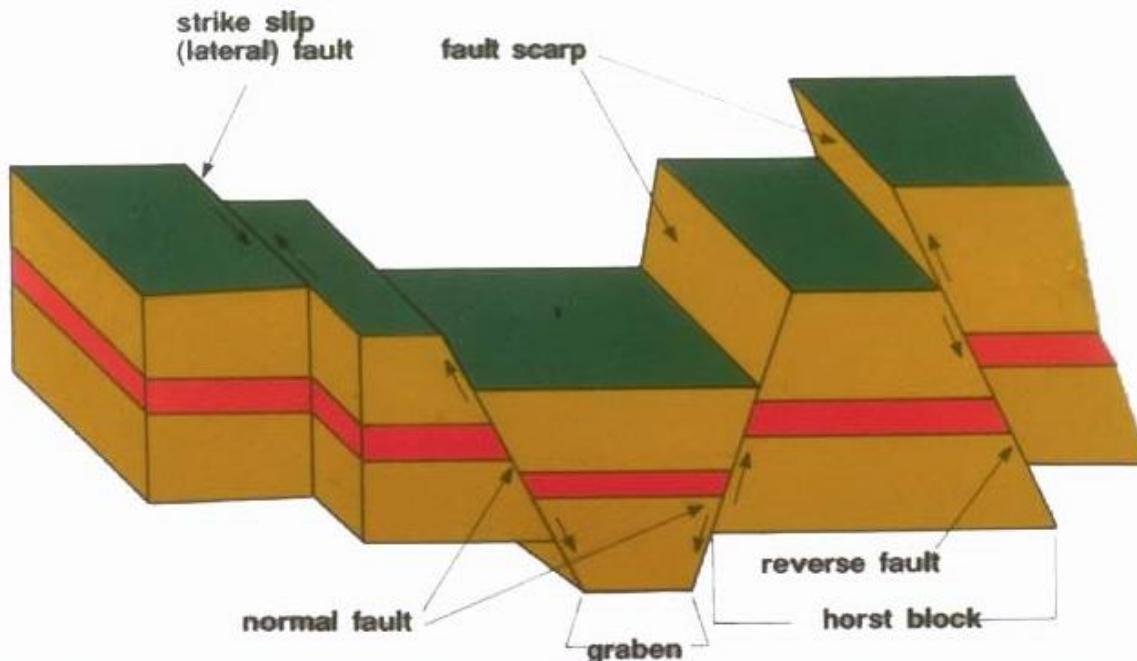


- **Folding:** A fold can be defined as a bend in rock that is the response to compressional forces. Folds are most visible in rocks that contain layering. It causes uplift of particular area. The simplest type of fold is called a **monocline**. This fold involves a slight bend in otherwise parallel layers of rock. An **anticline** is a convex up fold in rock that resembles an arch like structure with the rock beds (or limbs) dipping way from the center of the structure.
- **Faulting** causes depression of particular areas. These faults are named according to the type of stress that acts on the rock and by the nature of the movement of the rock blocks either side of the fault plane. **Normal faults** occur when tensional forces act in opposite directions and cause one slab of the rock to be displaced up and the other slab down. **Reverse faults** develop when compressional forces exist. Compression causes one block to be pushed up and over the other block. A **graben**



**fault** is produced when tensional stresses result in the subsidence of a block of rock. On a large scale these features are known as **Rift Valleys**. A **horst fault** is the development of two reverse faults causing a block of rock to be pushed up.

## THREE MAIN TYPES OF FAULT MOTION



**Volcanic disturbances** also modify the landscape. It is release of hot magma from earth's surface due to convectional cells operating underneath giving rise to features such as batholiths, phacoliths etc. underneath and volcanic mountains above earth's surface.

The various external forces that work against constructive forces are **weathering, erosion, transportation and depositing**.

- **Weathering:** The gradual disintegration of rocks by atmospheric or weathering forces. They are of two kinds
  - **Chemical Weathering:** basic process by which denudation occurs. Extremely slow and gradual decomposition of rocks due to exposure to air and water. Solution, Oxidation and Decomposition by Organic Acids are few processes.
  - **Physical or Mechanical weathering:** physical disintegration of a rock by the actual prising apart of separate particles. Repeated temperature changes, Repeated wetting and drying, Frost action and Biotic factors are processes.
- **Erosion:** The active wearing away of the earth's surface by moving agents like running water, wind, ice and waves. **Example:** formation of waterfalls, rapids, sea caves, sprayholes.
- **Transportation:** the removal of the eroded debris to new positions. Various types include mass movements like Soil Creep, Landslides. **Example:** Formation of Sand dunes in deserts, Barchans etc.
- **Deposition:** the dumping of the debris in certain parts of the earth, where it may accumulate to form new rocks. **Example:** Beaches

**Anthropogenic activities, Climate change, global warming** are further increase the pace of the external forces. **Example:** The deforestation helps in quickening the Erosion process leading to quicker denudation.

**Conclusion:**

The interaction of these constructive and destructive forces gives rise to great diversity of present day landforms.

**Q) Why was most of the Earth's coal made all at once during the Carboniferous period? Discuss. (250 words)**

Reference

Wikipedia

**Directive word**

*Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.*

**Key demand of the question.**

*The question wants us to discuss as to why most of the world's coal was formed during a particular period/ era- Carboniferous period.*

**Structure of the answer-** write a few introductory lines about the

**Body-**

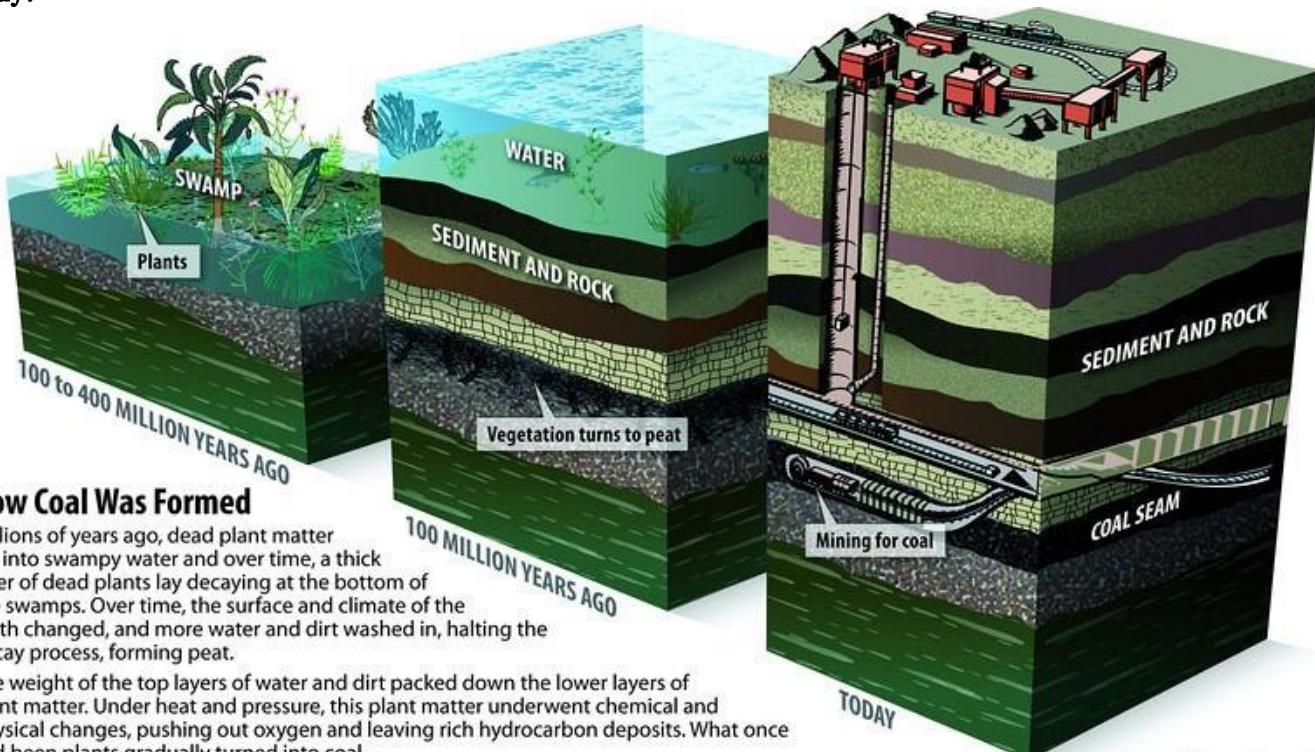
*Discuss why most of the coal was formed during the Carboniferous period. E.g*

- While coal deposits formed both before and after the Carboniferous, this period provided the mother lode. It occurred a bit over 300 million years ago.
- The evolution of the wood fiber lignin and the bark-sealing, waxy substance suberin variously opposed decay organisms so effectively that dead materials accumulated long enough to fossilise on a large scale.
- The second factor was the lower sea levels that occurred during the Carboniferous as compared to the preceding Devonian period. This promoted the development of extensive lowland swamps and forests in North America and Europe.
- During this period club mosses grew to the size of trees while insects also reached comparatively gigantic proportions due to the higher-than-modern oxygen concentration.
- The reason all that oxygen was present is the vast burial of organic material before it could be eaten by oxygen-respiring organisms.
- And while oxygen rose, atmospheric CO<sub>2</sub> fell, eventually leading to glacial conditions. It was a massive carbon-cycle experiment that mirrored our current one but with carbon moving in the opposite direction, from the atmosphere into the ground, where it formed the coal.
- During the Carboniferous, the Pangaea supercontinent was coming together. And in a tropical swath along the equator, a mountain range (now the Appalachians) was being pushed up by continental collision.
- On either side of that growing mountain range, the crust bowed downward a bit as a result. Those ever-deepening bedrock buckets were positioned right beneath soggy tropical wetland regions etc.

**Conclusion-** based on your discussion, form a fair and a balanced conclusion on the given issue.

**Introduction:**

The Carboniferous is a geologic period and system that spans 60 million years from the end of the Devonian Period 358.9 million years ago (Mya), to the beginning of the Permian Period, 298.9 Mya. The name Carboniferous means “coal-bearing”. The Carboniferous coal beds provided much of the fuel for power generation during the Industrial Revolution and are still of great economic importance.

**Body:**

Most of the coal was formed during the Carboniferous period. The reasons for the same are

- **Abundance of Lignin:** The appearance of wood tissue and bark-bearing trees. The evolution of the wood fiber **lignin** and the bark-sealing, waxy substance **suberin** variously opposed decay organisms so effectively that dead materials accumulated long enough to fossilise on a large scale. Most organisms couldn't eat the tough barks, except for the white rot fungus that lives on dead trees.
- **Reduced Sea Level:** The second factor was the lower sea levels that occurred during the Carboniferous as compared to the preceding Devonian period. This promoted the development of extensive lowland swamps and forests in North America and Europe.
- **Biotic Evolution:** Coal deposits formed both before and after the Carboniferous, this period provided the mother lode. It occurred a bit over 300 million years ago and species of club mosses grow to the size of trees. Insects also reached comparatively gigantic proportions due to the higher-than-modern oxygen concentration.
- **Abundance of Oxygen:** The reason all that oxygen was present is the vast burial of organic material before it could be eaten by oxygen-respiring organisms. Atmospheric CO<sub>2</sub> fell, eventually leading to glacial conditions. It was a massive carbon-cycle experiment with carbon moving in the opposite direction, from the atmosphere into the ground, where it formed the coal.
- **Late Evolution of Bacteria:** Based on a genetic analysis of mushroom fungi, it was proposed that large quantities of wood were buried during this period because animals and decomposing bacteria had not yet evolved enzymes that could effectively digest the resistant phenolic lignin polymers and waxy suberin polymers. They suggest that fungi that could break those substances down effectively only became dominant towards the end of the period, making subsequent coal formation much rarer.

However, there are objections to the above theory as lignin isn't even the only type of organic matter in Carboniferous-age coals. Thus, all the Carboniferous world's lignin couldn't have made its way into coal and at least some of it must have decayed.

**Alternative Theory:** The formation of coal requires two steps.

- First, there is a need of swampy environment where peat can accumulate in low-oxygen conditions that wards off decay.
- Second, the need to bury the whole organic matter quite deeply, allowing pressure and temperature to turn the peat into coal.



**Explanation:** During the Carboniferous, the Pangaea super-continent was coming together. And in a tropical swath along the equator, a mountain range (now the Appalachians) was being pushed up by continental collision. On either side of that growing mountain range, the crust bowed downward a bit as a result. Those ever-deepening bedrock buckets were positioned right beneath soggy tropical wetland regions. The end result was lots of deeply buried peat.

There was one other time in North American history with significant coal formation, and that was a period bracketing the mass extinction of the dinosaurs. Then, too, there was mountain-building (this time the Rockies) with a neighbouring basin, and hot, wet climate conditions.

### Conclusion:

In India, the Gondwana coal (about 250 mya) belongs to the carboniferous period. Gondwana coal makes up to 98 per cent of the total reserves and 99 per cent of the production of coal in India.

**TOPIC: Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone etc**

### Q) Discuss the distribution of volcanoes in the world ? (250 words)

GC Leong – CH3: volcanoes and earthquakes

#### **Key demand of the question**

*The question expects us to discuss the distribution of volcanoes and the reasons behind such a distribution.*

#### **Directive word**

*Discuss – here your discussion should bring out the areas where volcanoes are found and why.*

#### **Structure of the answer**

##### **Introduction – Explain about volcanoes**

**Body – Explain the distribution of volcanoes in the world and the reason it is so. Here you have to explain about the areas where volcanoes are caused such as divergent plate boundaries, volcanoes caused by subduction where there are convergent plate boundaries, also where hot spots are located. Explain about the ring of fire.**

##### **Conclusion – Summarize your answer.**

### Introduction:

A volcano is a rupture in the crust of a planetary-mass object, such as Earth, that allows hot lava, volcanic ash, and gases to escape from a magma chamber below the surface. The process is called Volcanism and has been ongoing on Earth since the initial stages of its evolution over 4 billion years ago.

### Body:

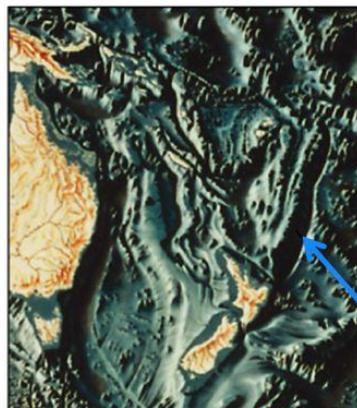
Volcano eruptions on land in the last century alone have produced one and half billion tons of material per year, while the volume of basalts erupted by submarine volcanoes in mid-ocean rifts and along fracture zones is several times higher. Volcanic activity is widespread over the earth, but tends to be concentrated in specific locations. Volcanoes are most likely to occur along the **margins of tectonic plates**.

- **Volcanoes at convergent plate boundaries:**

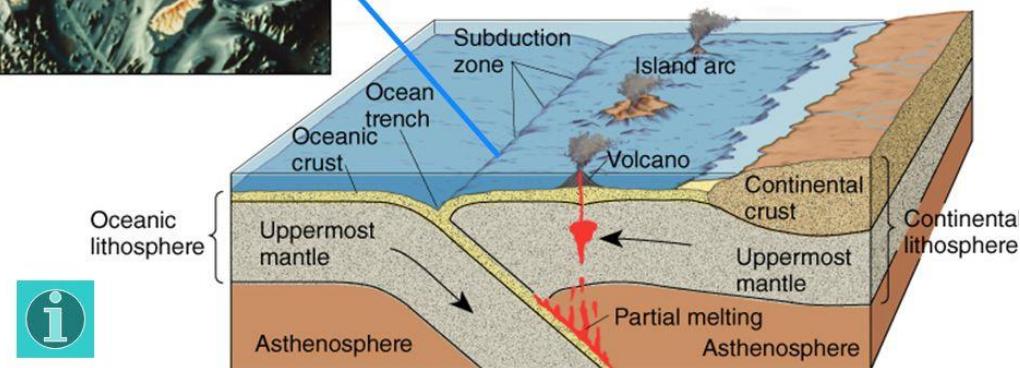
- **Ocean-Ocean plate collision and Ocean – Continent plate collision:** In subduction zones where oceanic plates dive under continental plates. As the oceanic plate subducts beneath the surface, intense heat and pressure melts the rock. Molten rock material, magma, can then ooze its way toward the surface where it accumulates at the surface to create a volcano.



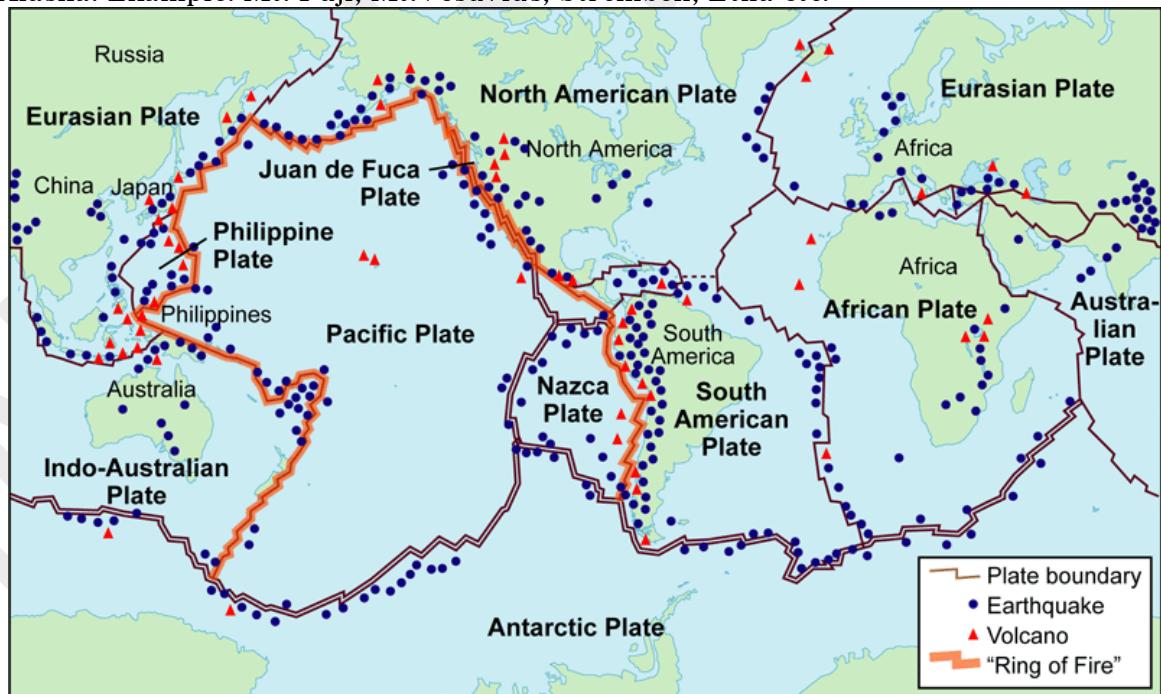
## Oceanic-Oceanic Convergent Boundary



**Subduction processes in oceanic-oceanic plate convergence form volcanic island arcs along side deep ocean trenches**



- **Circum-Pacific Region:** Also known as “**Pacific Ring of fire**” : about two-thirds of the world’s volcanoes are found in this region. The chain of volcanoes extends from Aleutian islands into Kamchatka, Japan, the Philippines and Indonesia, southward into Pacific Islands of Solomon, Tonga and New Zealand. On the other side of the pacific, the chain continues from the Andes to Central America (Guatemala, Costa Rica and Nicaragua), Mexico and right up to Alaska. Example: Mt. Fuji, Mt.Vesuvius, Stromboli, Etna etc.

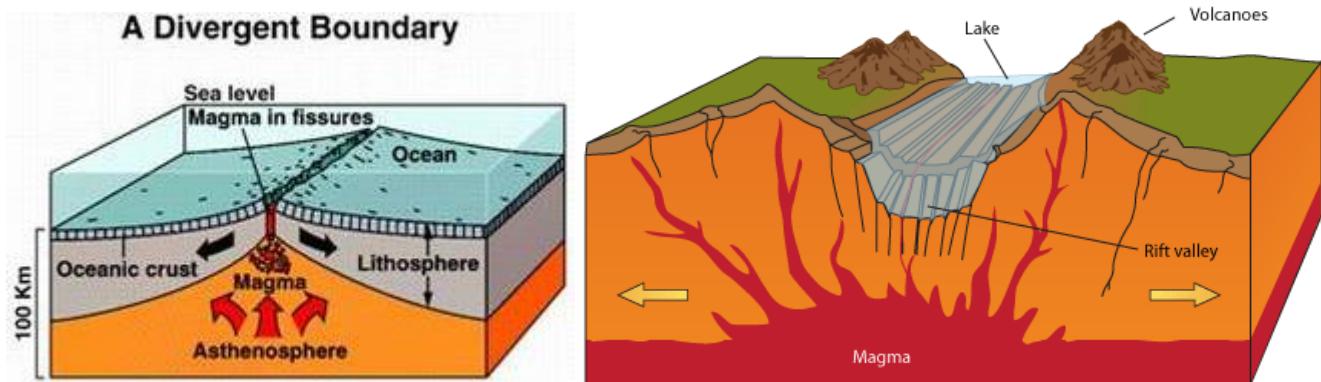


- **Volcanoes at Divergent plate boundaries:**
  - Divergent boundaries within continents initially produce rifts which eventually become **rift valleys**. Example: In Africa’s **East African Great Rift Valley**– Mt.Kilimanjaro, Mt. Kenya, Mt. Cameroon.
  - Most active divergent plate boundaries occur between oceanic plates and exist as **mid-oceanic ridges**. Example: Mid- Atlantic ridge where there is a constant sea-floor spreading



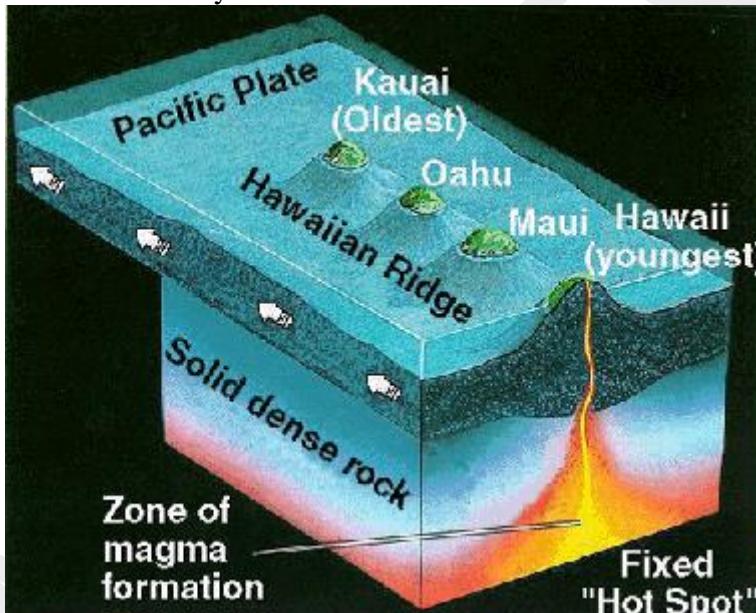
and formation of new plate boundaries. Iceland is a remarkable location in that a section of the north-Atlantic mid-ocean ridge is exposed on land.

- Divergent boundaries also form volcanic islands which occur when the plates move apart to produce gaps which molten lava rises to fill.



- **Volcanoes due to Hot Spots:**

- Hot spots are places where a chamber of magma has accumulated at depth beneath the surface. The volcanic islands of Hawaii are a notable example of this.
- The Hawaiian Islands ride atop the Pacific plate as it moves in a north-westerly direction over the hot spot that creates the volcanoes. Therefore, the oldest volcanic island is found at the northwest end of the chain and the youngest to the southeast.
- Volcanic activity ceases as the older islands move off the hot spot.



#### Way Forward:

Volcanoes have a huge impact on man and material as urbanization and globalization increases. The effects has impacts on flora, fauna and the global warming which can accelerate the climate change.

**Q) Explain the various landforms associated with volcanic activities ? (250 words)**  
GC Leong – Ch 3

#### **Key demand of the question**

*The question expects us to discuss the various intrusive and extrusive landforms associated with volcanism.*

#### **Structure of the answer**

**Introduction** – Explain that volcanic activities have a profound influence on the earth's landform.

**Body** – Explain the various intrusive igneous landforms associated with volcanoes. Eg lopoliths, phacoliths, batholiths and laccoliths etc.



Explain the various extrusive landforms associated with volcanoes such as lava plains and basalt plateaux. Draw diagram to explain it in a more lucid manner.

**Conclusion – Emphasize that volcanoes have a huge bearing on the landforms.**

### Introduction:

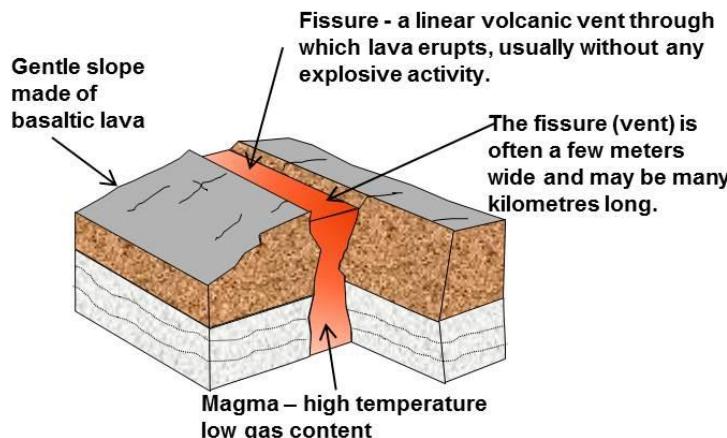
A volcano is a rupture in the crust of a planetary-mass object, such as Earth, that allows hot lava, volcanic ash, and gases to escape from a magma chamber below the surface. The process is called Volcanism and has been ongoing on Earth since the initial stages of its evolution over 4 billion years ago.

### Body:

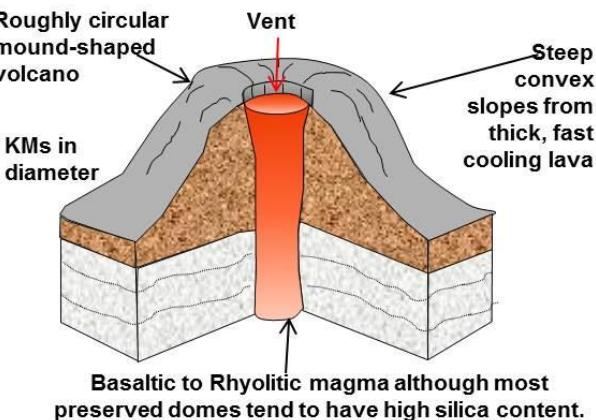
Volcanic landforms are divided into extrusive and intrusive landforms based on whether magma cools within the crust or above the crust. Rocks formed by either plutonic (cooling of magma within the crust) or volcanic (cooling of lava above the surface) are called '**Igneous rocks**'.

**Extrusive Volcanic Landforms:** These are formed from material thrown out during volcanic activity. The materials thrown out during volcanic activity include lava flows, pyroclastic debris, volcanic bombs, ash and dust and gases such as nitrogen compounds, sulphur compounds and minor amounts of chlorine, hydrogen and argon.

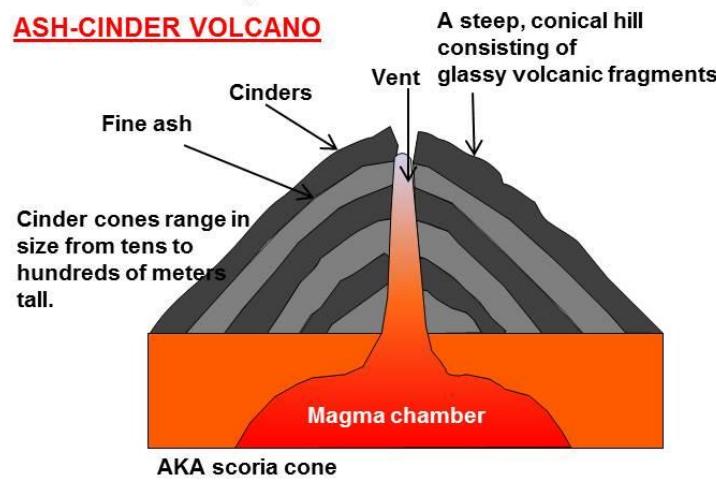
#### FISSURE VOLCANO



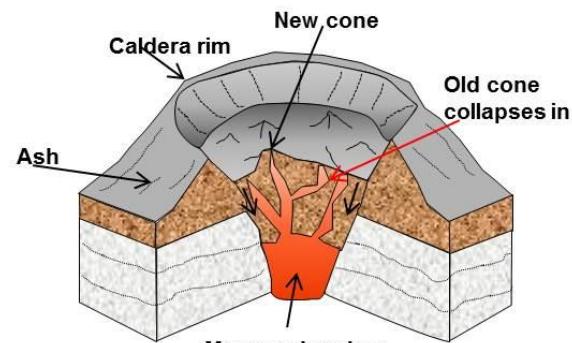
#### DOME VOLCANO



#### ASH-CINDER VOLCANO



#### CALDERA VOLCANO



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- **Conical Vent and Fissure Vent :**

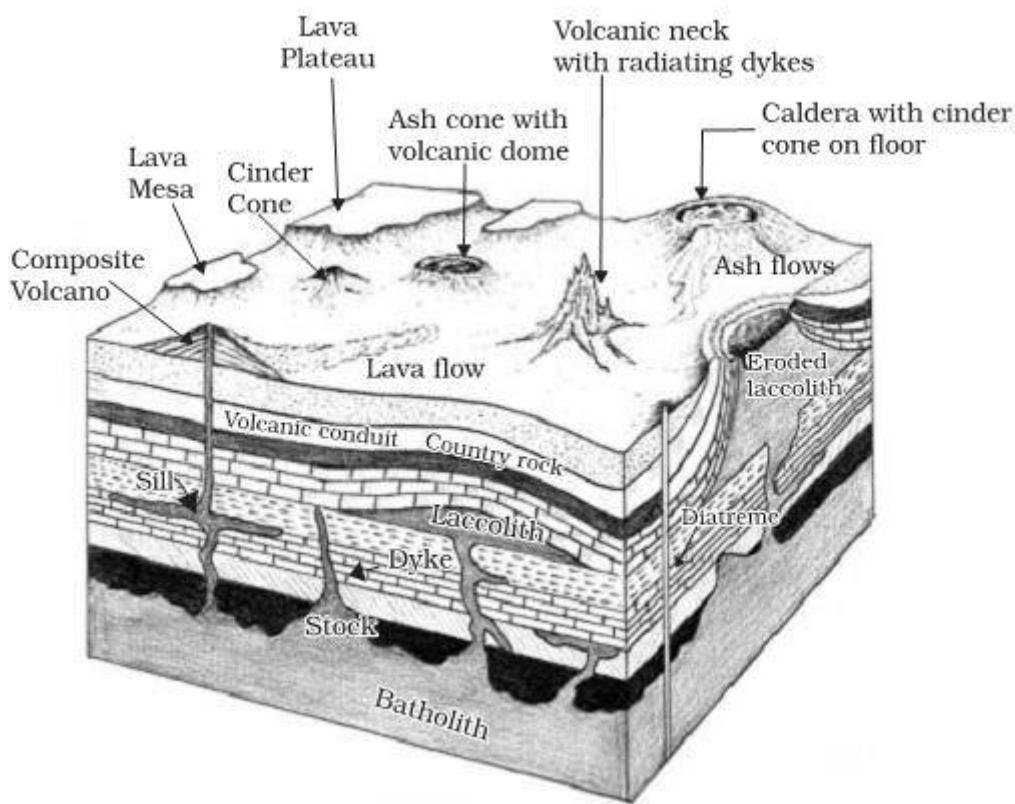
- A conical vent is a narrow cylindrical vent through which magma flows out violently. Conical vents are common in **andesitic (composite or strato volcano) volcanism**.
- A **fissure vent**, also known as a volcanic fissure or eruption fissure, is a narrow, linear volcanic vent through which lava erupts, usually without any explosive activity. The vent is often a few meters wide and may be many kilometres long. Fissure vents are common in **basaltic volcanism**.



- **Composite Cones or Strato volcanoes:**
  - They are conical or central type volcanic landforms.
  - Along with andesitic lava, large quantities of pyroclastic material and ashes find their way to the ground.
  - They are accumulated in the vicinity of the vent openings leading to formation of layers, and this makes the mounts appear as composite volcanoes.
  - The highest and most common volcanoes have composite cones.
  - **Example:** Vesuvius, Mt. Fuji, Stromboli (Lighthouse of the Mediterranean) etc.
- **Shield Volcanoes or Lava domes:**
  - These volcanoes are mostly made up of basalt, a type of lava that is very fluid when erupted. They are not steep.
  - They become explosive if somehow water gets into the vent; otherwise, they are less explosive.
  - **Example:** Mauna Loa (Hawaii).
- **Lava Plains and Basalt Plateaus:**
  - Sometimes, a very thin magma escapes through cracks and fissures in the earth's surface and flows after intervals for a long time, spreading over a vast area, finally producing a layered, undulating (wave like), flat surface.
  - **Example:** Deccan traps (peninsular India), Snake Basin, U.S.A, Icelandic Shield, Canadian Shield etc.
- **Cinder cone (Tephra cones):**
  - Cinder cones are small volume cones consisting predominantly of tephra that result from strombolian eruptions.
  - They usually consist of basaltic to andesitic material.
- **Calderas:**
  - After the eruption of magma has ceased from the cones, the crater frequently turns into a lake at a later time.
  - Water may collect in the crater. This lake is called a 'caldera'.
  - **Example:** Lake Toba in Sumatra, Crater Lake in Oregon, USA.
- **Mid-Ocean Ridges**
  - These volcanoes occur in the oceanic areas. There is a system of mid-ocean ridges more than 70,000 km long that stretches through all the ocean basins. The central portion of this ridge experiences frequent eruptions.
  - The lava is basaltic in nature.
  - Cools slowly and flows through longer distances.
  - The lava here is responsible for **sea floor spreading**.
  - **Example:** Mid-Atlantic ocean ridge; extension is seen in the Iceland.

**Intrusive Volcanic Landforms:** Intrusive landforms are formed when magma cools within the crust. The intrusive activity of volcanoes gives rise to various forms.

- **Batholiths:**
  - These are huge mass of igneous rocks, usually of granite.
  - These rock masses formed due to cooling down and solidification of hot magma inside the earth.
  - They appear on the surface only after the denudation processes remove the overlying materials and may be exposed on surface after erosion.
  - **Example:** Wicklow mountains of Ireland; the uplands of Brittany, France.
- **Laccoliths:**
  - These are large dome-shaped intrusive bodies connected by a pipe-like conduit from below.
  - These are basically intrusive counterparts of an exposed domelike batholith.
  - **Example:** The laccoliths of Henry mountains in the Utah, USA.



- **Lopolith:**
  - As and when the lava moves upwards, a portion of the same may tend to move in a horizontal direction wherever it finds a weak plane.
  - In case it develops into a saucer shape, concave to the sky body, it is called Lopolith.
  - **Example:** The Bushveld lopolith of Transvaal, South Africa.
- **Phacolith:**
  - A wavy mass of intrusive rocks, at times, is found at the base of synclines or at the top of anticline in folded igneous country.
  - Such wavy materials have a definite conduit to source beneath in the form of magma chambers (subsequently developed as batholiths). These are called the Phacoliths.
  - Example: Corndon hill in Shropshire, England.
- **Sills:**
  - These are solidified horizontal lava layers inside the earth.
  - The near horizontal bodies of the intrusive igneous rocks are called sill or sheet, depending on the thickness of the material.
  - The thinner ones are called sheets while the thick horizontal deposits are called sills.
  - Example: Great whin sill of NE England
- **Dykes:**
  - When the lava makes its way through cracks and the fissures developed in the land, it solidifies almost perpendicular to the ground.
  - It gets cooled in the same position to develop a wall-like structure. Such structures are called dykes.
  - These are the most commonly found intrusive forms in the western Maharashtra area. These are considered the feeders for the eruptions that led to the development of the Deccan traps. Cleveland Dyke of Yorkshire, England.

#### Conclusion:

Volcanic activities have a profound influence on earth's landforms. Solid, liquid or gaseous materials may find their way to the surface from some deep-seated reservoir beneath.



**Q) Differentiate between between cyclone, hurricane, tornado and twister. Explain the necessary conditions for their formation. Which of these are generally observed in India and at which places ? (250 words)**

#### **Key demand of the question**

*The question is quite straightforward and expects us to first explain the differences between the aforementioned terms. Next, it expects us to list out the conditions necessary for their formation and finally explain which of the above occur in India and why.*

#### **Structure of the answer**

**Introduction – Explain that these 4 are closely related.**

#### **Body**

*Cyclone is weather situation characterised by a rotating organized system of clouds coupled with thunderstorms and has low pressure centre and closed low-level atmospheric circulation. Hurricane is also similar weather phenomenon. They differ in name based on location where the storm occurs. While in the Atlantic and Northeast Pacific such weather phenomenon is termed as “hurricane”, in the South Pacific and Indian Ocean the same is referred as “cyclone”.*

#### **Discuss the conditions for their formation**

- *The temperature of tropical waters must be at least 26.67° for up to 165 feet below the ocean's surface.*
- *Cyclone is referred as hurricane when the maximum sustained wind speed reaches 74 miles per hour or higher.*
- *Coriolis effect must be present for initiating and maintaining the cyclone*
- *Explain the difference between tornadoes and twisters – Tornado is a violent storm. It is characterised by rapidly rotating column of air that is in contact with both the surface of the Earth and cumulonimbus cloud. Tornadoes are formed over hot land surfaces. Twister is just another name for tornado.*

#### **Discuss when they are formed**

- *Cyclones as well as tornadoes both occur in India. However, unlike cyclones the frequency of tornadoes outbreak is very low. Cyclones originate in the Bay of Bengal region as well as in the Arabian Sea region. Tornadoes of weak strength occur in north-western and north-eastern region of the country.*

#### **Introduction:**

Cyclone, Hurricane, Tornado and Twister are all closely related weather phenomena associated with **low-pressure wind systems**.

#### **Body:**

##### **Cyclone and Hurricane:**

- A **tropical cyclone** is a generic term used by meteorologists to describe a rotating, organized system of clouds and thunderstorms that originates over tropical or subtropical waters and has **closed, low-level circulation**.
- Once a tropical cyclone reaches maximum sustained winds of 74 miles per hour or higher, it is then classified as a hurricane, typhoon, or cyclone **depending upon where the storm originates in the world**.
- The **only difference** between a hurricane, a cyclone, and a typhoon is **the location where the storm occurs**.
- In the Atlantic and Northeast Pacific, the term “**hurricane**” is used. The same type of disturbance in the Northwest Pacific is called a “**typhoon**” and “**cyclones**” occur in the South Pacific and Indian Ocean.
- Tropical cyclones rotate **counter-clockwise in the Northern Hemisphere**.



- Cyclones are an oceanic phenomenon that fizzles out once they reach land because they lose their source of moisture. They can last for days.
- Hurricanes/typhoons/cyclones are storm systems formed when warm tropical waters release heat as moist air rises, causing condensation of the water vapour in the air. These storm systems are characterized by a low pressure center and if the conditions last, they can result in severe thunderstorms, violent winds, heavy flooding, and devastating waves.

### Conditions for formation:

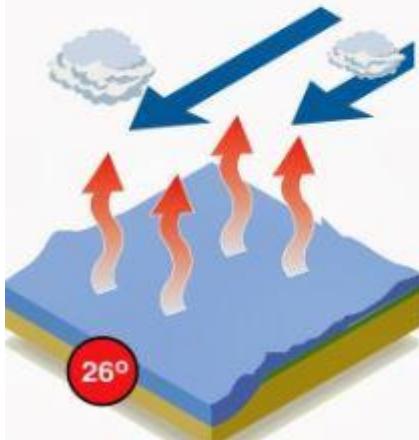
The formation of a cyclone is called **Cyclogenesis**.

- Large sea surface with temperature higher than 27° C.
- Presence of the Coriolis force enough to create a cyclonic vortex.
- Small variations in the vertical wind speed.
- A pre-existing weak low-pressure area or low-level-cyclonic circulation.
- Upper divergence above the sea level system.

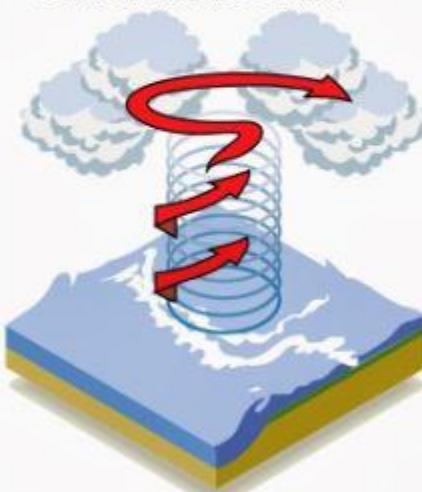
## How tropical storms are formed

High humidity and ocean temperatures of over 26°C are major contributing factors

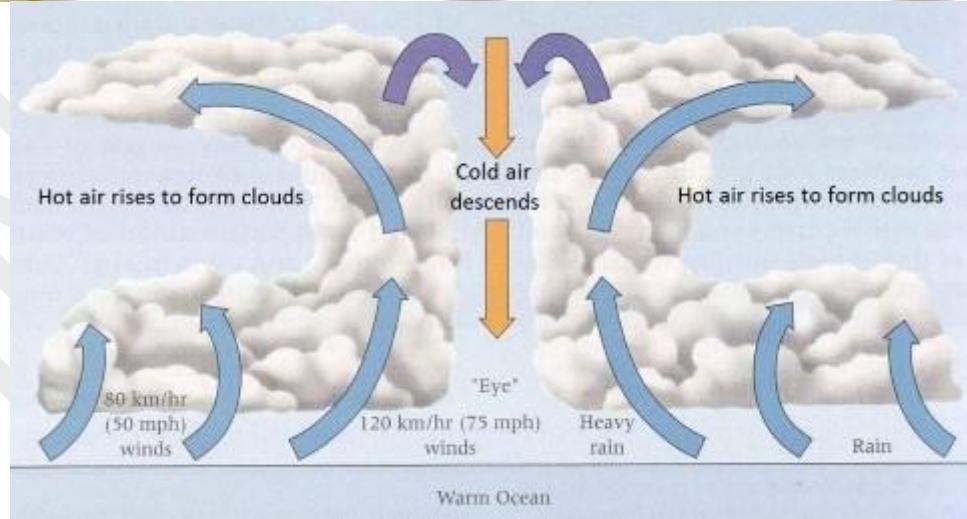
**Water evaporates** from the ocean surface and comes into contact with a **mass of cold air**, forming clouds



A column of low pressure develops at the centre. Winds form around the column



As pressure in the central column (the eye) weakens, the speed of the wind around it increases



### Tornado and Twister:

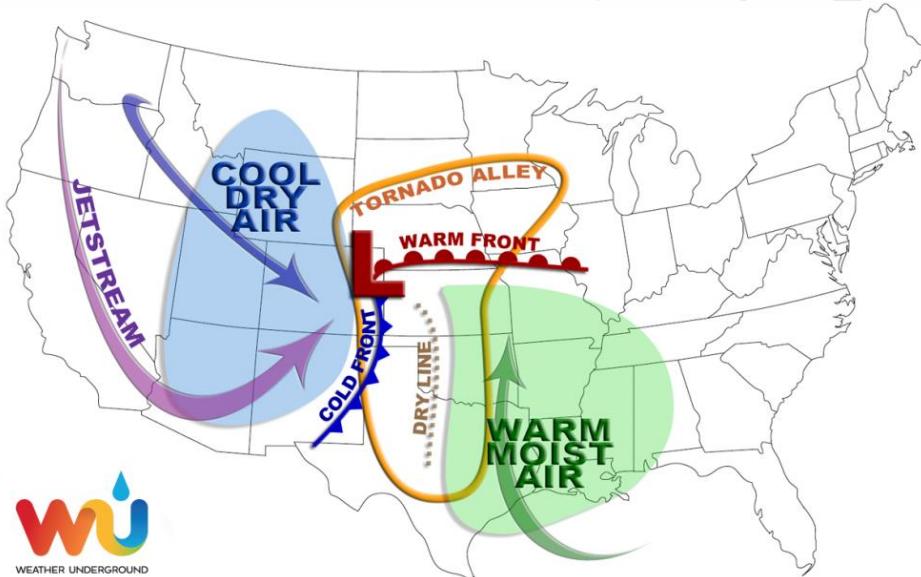
- Tornado and twister are **different names for the same type of storm**—a violently rotating column of air over land associated with a severe thunderstorm.
- Tornadoes are usually a downward spiral stemming from a cumulonimbus cloud and are often accompanied by rain, hail, or sleet.
- Tornadoes occur almost exclusively over land.



- Tornadoes range in diameter from metres to hundreds of metres and **generally last from a few seconds up to half an hour.**
- They have an intense updraught near their centre, capable of lifting heavy objects such as cars and trees and causing enormous damage.

#### Conditions for formation:

- **Instability** refers to unusually warm and humid conditions in the lower atmosphere, and possibly cooler than usual conditions in the upper atmosphere.
- **Wind shear** in this case refers to the wind direction changing, and the wind speed increasing, with height.
- An example would be a southerly wind of 15 mph at the surface, changing to a southwesterly or westerly wind of 50 mph at 5,000 feet altitude.
- Tornadoes form when warm air meets cold air, causing unstable pressures.

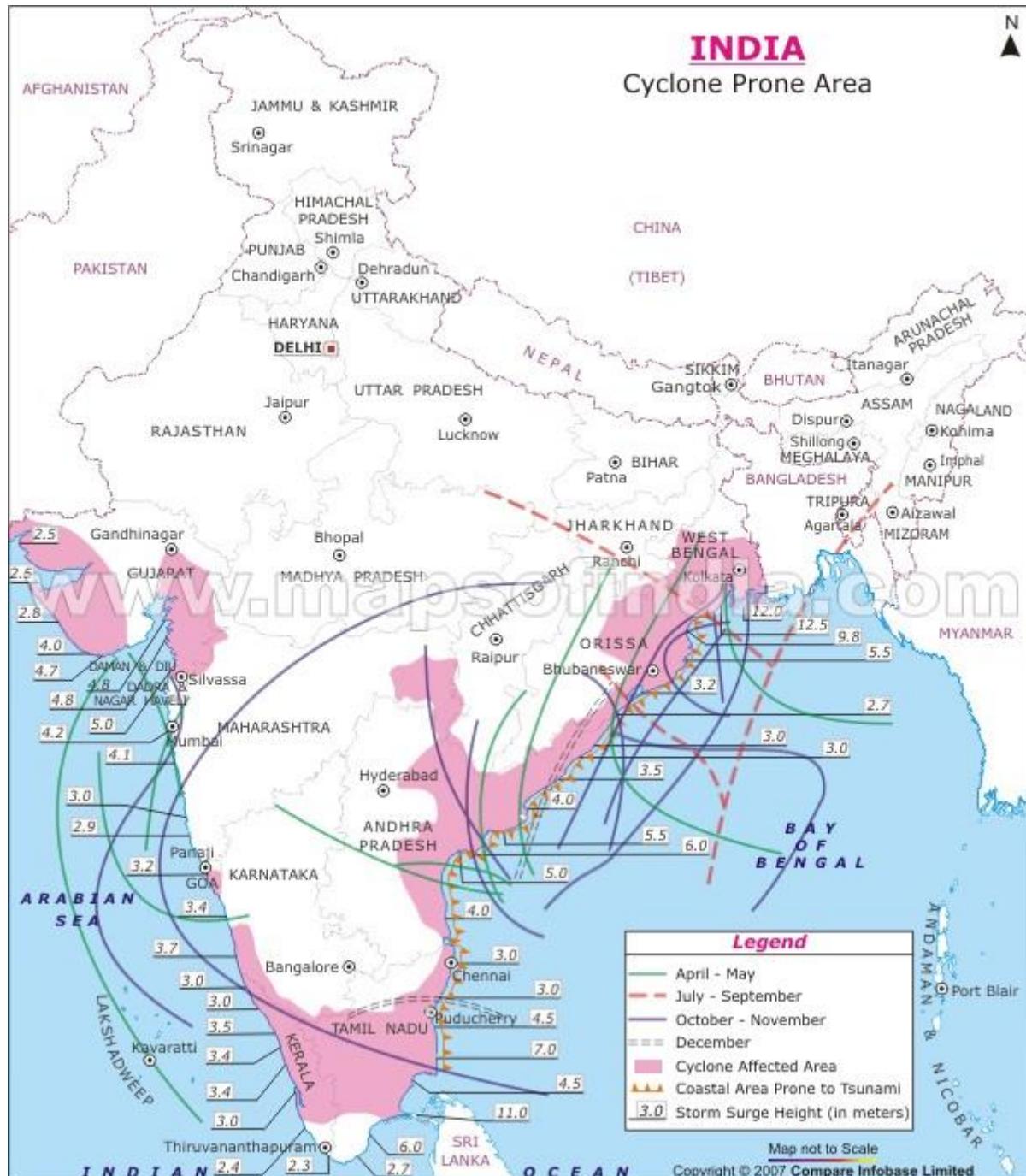


#### Occurrence in India:

- Cyclones as well as tornadoes both occur in India.
- Cyclones originate in the Bay of Bengal region as well as in the Arabian Sea region. The eastern coast of India is more prone to cyclones than the western coast. Most of the cyclones originate in the Bay of Bengal, hence east coast is vulnerable.
- Tornadoes of weak strength occur in north-western and north-eastern region of the country. It mostly affects Bangladesh.
- However, unlike cyclones the frequency of tornadoes outbreak is very low.

#### Conclusion:

India is prone to cyclones and tornadoes. With increasing global warming, the conditions for formation of cyclones are more favourable. This has lead to increased weather events causing damage to man and material.



**Q) Why are the world's fold mountain systems located along the margins of continents? Bring out the association between the global distribution of Fold Mountains and the earthquakes and volcanoes. (250 words)**

#### ***Key demand of the question***

*The question is quite straightforward in its demand. In the second part of the answer we have to separately bring out the relation between the global distribution of fold mountains and volcanoes and earthquakes with examples.*

#### ***Structure of the answer***

***Introduction – Explain what fold mountains are. You can draw a diagram to show how they are formed.***



### Body

- Explain why fold mountains are formed at the margins of continents – fold mountains are formed from the folding of crust and uprising of the sediments accumulated by rivers along the margins of the continents by the collision of two continental plates or a continental plate and an oceanic plate. An example of fold mountains formed by converging of two continental plates are Himalayas mountains and fold mountains formed by convergence of a continental plate and an oceanic plate are Andes mountains, Appalachians mountains etc.
- Explain the relation between fold mountains and Earthquakes – with the passage of long time the folding continues and crust becomes overfolded and strata(layers) of rock develop. It is called Over-thrust fold. Now, further folding leads to fracture in rock called Nappe. Upper layer of rock slides over lower layer leading to release of tremendous amount of energy which causes Earthquakes.
- Explain the relation between fold mountains and volcanoes – As two plates converge, the denser plate subducts under the lighter plate. This subducted plate enters onto the Mantle region of earth which causes melting of rocks to form Magma. Due to high pressure underneath this magma comes out from the up-lying continental plate in the form of Lava, causing the formation of volcanoes at some distance from continental margins.

**Conclusion – Give examples.**

### Introduction:

Fold Mountains are the mountains formed from the **folding of the earth's crust**. These movements are caused due to various factors like movements in the mantle, expansion and contraction of some parts of the Earth. They are formed **when two tectonic plates move towards each other** leading to the **folding of the layers of the Earth**. The up folds are called **anticlines** and the down folds are called **synclines**.

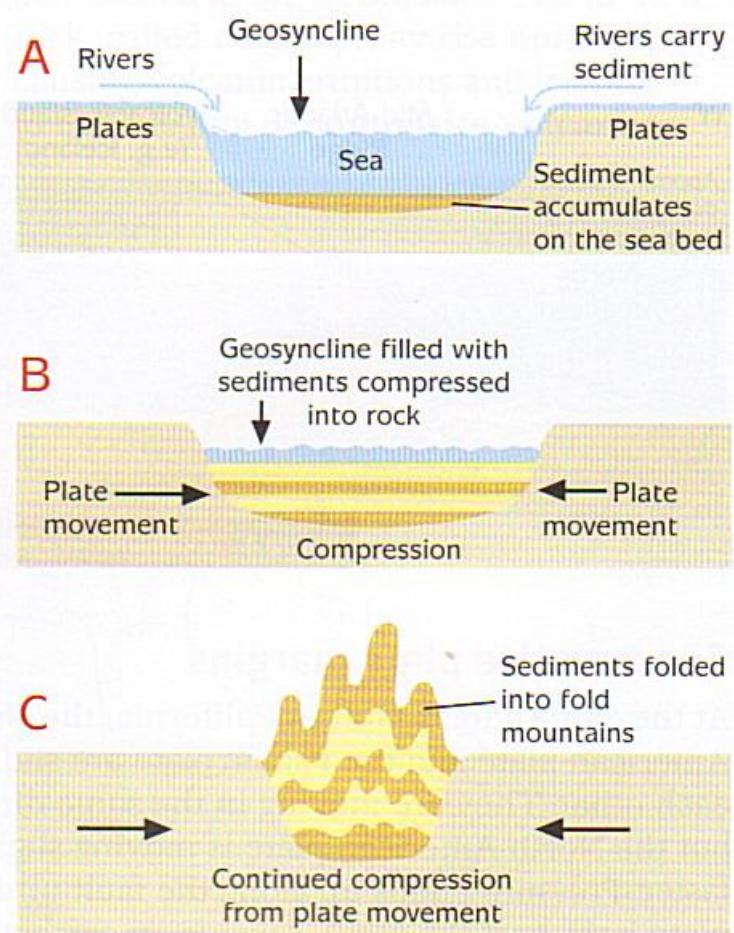
The Himalayas in Asia, the Andes Mountains in South America and the Alps Mountains in Europe are some examples of Fold Mountains.

### Body:

**Orogenesis** is the process of building new mountain ranges by the convergence of tectonic plates.

**Fold Mountains are formed at the margins of continents due to:**

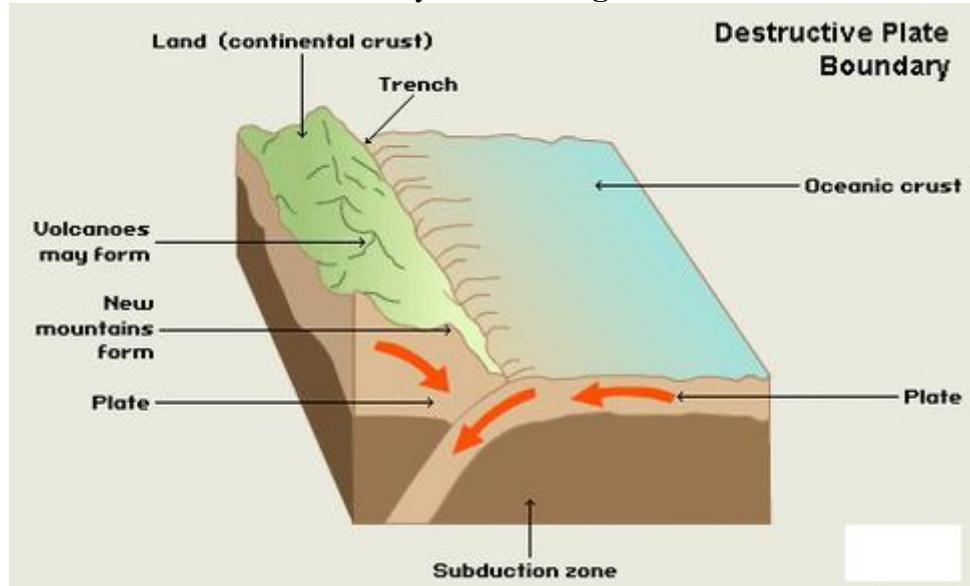
- Fold Mountains are formed from the **folding of crust and uprising of the sediments accumulated by rivers along the margins of the continents**.
- This takes place by **ocean-continent collision** (e.g., the Andes), **continent-continent collision** (the Alps and the Himalayas).
- All these tectonic processes create sedimentary basins of various types.



**Figure 2 The formation of fold mountains.**



- The Himalayas are formed at the **convergent boundary** of Indo-Australian continental plate and **Eurasian continental plate**. Both plates are continental ones, and so can neither sink nor be destroyed. The material between them is therefore forced upwards to form the mountains.
- The mountains such formed are usually more in length instead of breadth.



#### The relation between Fold Mountains and Earthquakes:

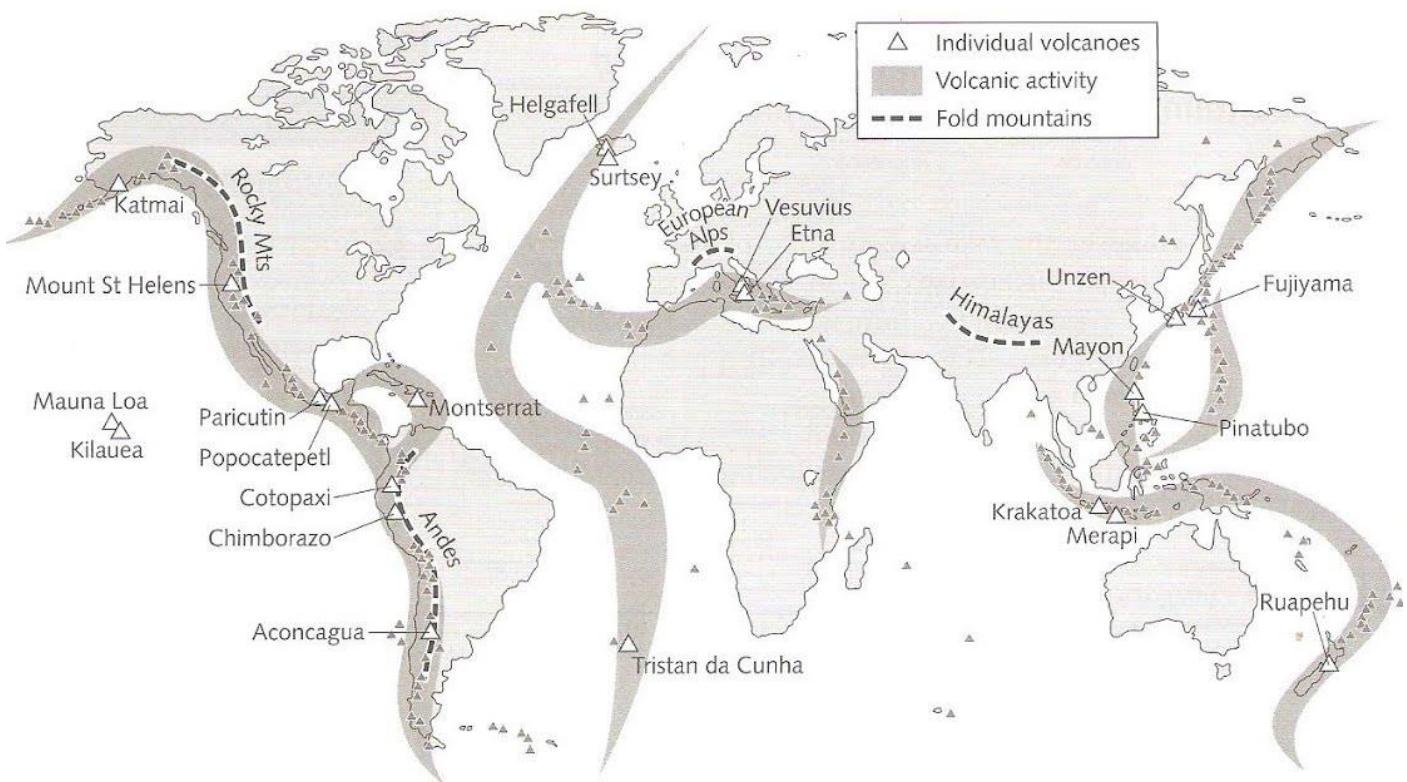
- Continental-continental convergence** is associated with earthquakes as a huge amount of energy is released when denser plate pushes lighter plate creating **fault zone** along the margin.
- With the passage of long time the folding continues and crust becomes over folded and strata (layers) of rock develop. It is called **Over-thrust fold**.
- Now, further folding leads to fracture in rock called **Nappe**.
- Upper layer of rock slides over lower layer leading to release of tremendous amount of energy which causes Earthquakes.
- Mostly earthquakes occur in the belt of young-fold Mountains because young fold mountains are formed because of tectonic activities.
- In case of **Oceanic-continental convergence**, subducting oceanic plate grinds against the surrounding denser medium producing mostly deep seated earth quakes.
- The earthquakes also occur when the **plates slide past each other**.

#### The relation between Fold Mountains and Volcanoes:

- Volcanism is observed in Continental -Oceanic convergence and is almost absent in Continental-Continental convergence.
- At a destructive plate boundary the oceanic plate is subducted beneath the continental one.
- The molten material then rises to the surface to form volcanoes, either in an **island arc** (e.g. the West Indies) or on the **continental land mass** (e.g. the volcanoes of the Andes). In both cases Fold Mountains can be formed.
- When the Nazca plate dives under the South American one, their motion forward also has been pushing sediment together.
- This, over millions of years, has been pushed up into huge fold mountains: **The Andes**.
- Within them there are also volcanoes as **the mountains are above the subduction zone**.
- If an island arc has been formed, the same idea occurs. Over millions of years the movement of the two plates together will push the island arc nearer to the continent.
- As this occurs the sediments on the seabed are folded up to become huge mountains.

#### Conclusion:

The global distribution of the Fold Mountains is due to the **interaction between the various tectonic plates**. Thus, there is a close relation between the volcanoes, earthquakes and the Fold Mountains. **Example: The Rocky Mountains, the Andes at the edge of the Pacific Ring of Fire.**



**Q) "The Himalayas are highly prone to landslides." Discuss the causes and suggest suitable measures of mitigation. (250 words)**

#### **Key demand of the question**

The question expects us to explain the reasons why himalayas are prone to landslides. Thereafter, we need to bring out the impact of such landslides and how such impacts can be mitigated.

#### **Directive word**

*Discuss – Here your discussion should focus around answering the key demand of the question.*

#### **Structure of the answer**

**Introduction** – Explain that The Himalayas are highly prone to landslides, leading to heavy loss of both life & property. Explain what landslides are – Landslides are mass movement of soil or rocks along the slopes of mountains

#### **Body**

##### **Explain the causes of such landslides**

- Natural causes such as earthquakes, rainfall, slope
- Man made causes such as deforestation, jhum cultivation, illegal mining and industrial activities etc

##### **Discuss the impact of such landslides**

- Highlight how such situation can be improved
- Tree plantation
- Building catchment areas to capture extra rainfall water
- Stopping Jhum cultivation.
- Teaching people about landslides & ways to mitigate.



- Constructing a permanent assessment team comprising scientists & geologists that would look into the matter

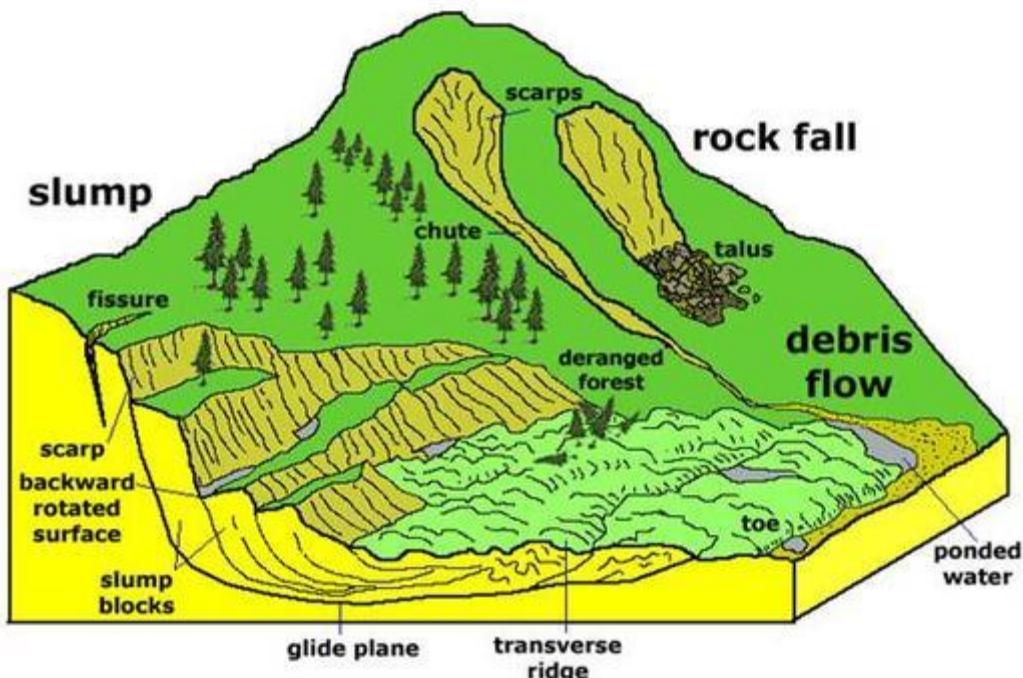
**Conclusion – Comment on the general environmental degradation taking place in Himalayas and discuss way forward.**

## Introduction:

A **landslide** is defined as the movement of a mass of rock, debris, or earth down a slope. Landslides are a type of “**mass wasting**,” which denotes any down-slope movement of soil and rock under the direct influence of gravity.

The Himalayas are highly prone to landslides during the monsoon season from June to September. The landslides usually occur in the altitudes between 500m to 3500m. Himalayan mountains are a result of complex geological, geomorphological and geohydrological factors.

## Body:



The causes of the landslides can be studied under the following heads.

- **Natural Causes:**
  - **Earthquakes:** Himalayas are situated at the convergent plate boundary zone of two continental plates viz. Indo-Australian plate in the south and Eurasian plate in the north. Thus geologically Himalayas are highly active seismic zone and Orogenesis is still in process. The earthquakes loosen the soil, which trigger the landslides.
  - **Rainfall:** Himalayan region receives quite heavy rainfall that leads to percolation of water in the lower layers, soil erosion, solifluction & landslides.
  - **Slope:** The steep slopes of Himalayan Mountains are one of the major reasons of frequent landslides than any other mountain ranges in India.
  - **Structure:** large portion of Himalayas is made up of sedimentary Rock which is more fragile.
- **Anthropogenic Causes:**
  - **Jhum Cultivation:** popularly known as slash & burn type of cultivation practiced particularly in the Himalayan region.
  - **Deforestation & Grazing:** Himalayan region is centre of huge diversity when it comes to trees & this diversity has led to indiscriminate chopping of trees. The trees help in holding the soil together, curbing the erosion and landslides to maximum extent. Increased grazing has led to wiping out of many grassland areas causing soil erosion and easy prey for landslides.



- **Illegal mining & Industrial activities:** The rampant commercial activities have huge impact on the sensitive zones of Himalayas. The constant blasting of rocks, increased vibrations due to drilling, boring etc. lead to loosening of rocks and soil particles in turn causing landslides when there is enough fluidity.
- **Infrastructure projects:** Himalayas being source of many rivers has led to construction of multipurpose dam projects like **Tehri**. This has affected the already fragile Himalayas. There has been increase in number of developmental projects of highways, tunnels through hills which cause **stress and sheer** in the surrounding regions. **Example:** Chenani-Nashri tunnel project.
- **Unsustained Urbanization and Tourism:** Increasing migration to cities has led to urban sprawl clearing the forest areas. Increased vehicular traffic, clearing of forest land to build infrastructure like roads, hotels etc. have affected the geography of the region.
- **Climate change:** Global warming has led to quicker melting of snow and more percolation of water within the underlying surface of hill.

The **impacts** of the landslides are:

- Every year, landslides in the region kill dozens of people and cause widespread damage to several villages such that they have now become **almost unfit for habitation**.
- They create **blockades in the road network and river system**, which in turn, cause **floods**.
- The **terraced farm fields have been destroyed** that cannot be easily renovated or made productive again.
- The **road network remains closed for long periods** causing indescribable hardship to the villagers who get their basic supplies and provisions from the neighbouring areas.
- **Water sources are disrupted and choked by debris** from landslides.
- The **river sediment load is increased** considerably, causing irregular courses and frequent breaching of the banks- resulting into **unexpected floods**.
- The water channels are affected from the up hillside due to which the villagers are **devoid of water for irrigation purposes**. This adversely affects agriculture production in the region.

The measures to control landslides are

- **Structural measures:**
  - Stopping Jhum cultivation.
  - Store Excess water in catchments areas to reduce the fury of flash floods, recharge the ground water and improve the environment. Dig runoff collection ponds in the catchments.
  - Grow fuel /fodder trees in all of the common lands.
  - **Plantation in barren areas**, especially on slopes, with grass cover is an important component of integrated watershed management programme.
  - Grazing should be restricted. The grasses of industrial importance should also be planted so that there is some economic return to the farmers as well.
  - Use the **surface vegetative cover** to protect the land from raindrop's beating action, bind the soil particles and decrease the velocity of flowing water.
  - Construction of engineering structures like **buttress beams, retaining walls, geogrids, nailings, anchors** to stabilise the slopes.
- **Non-structural measures:**
  - **Environmental Impact Assessment of the infrastructure projects** before commencing the work.
  - Declaration of **eco-sensitive zones** where mining and other industrial activities are banned. **Eco-tourism** should be promoted.
  - **Hazard mapping** of the region to identify the most vulnerable zones and take measures to safeguard it.
  - **Local Disaster Management** force for quick relief and safety of the people affected by landslides.
  - Teaching people about landslides & ways to mitigate.
  - Constructing a **permanent assessment team comprising scientists & geologists** for better mitigation and adaptation techniques.
  - **Involving the local people** for sustainable development of Himalayas

**Conclusion:**

- Himalayas are of vital importance to India in terms of climate, monsoon, water source and a natural barrier safeguarding the peninsula. The **National Mission for Sustaining the Himalayan Ecosystem** under NAPCC is a step ahead to address a variety of issues Himalayas is facing today.

**TOPIC: Changes in critical geographical features (including water bodies and ice-caps) and in flora and fauna and the effects of such changes.**

**Q) What are the causes and effects of El-Nino. Discuss.**

**(250 words)**

Reference

**Directive word**

*Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.*

**Key demand of the question.**

*The question wants us to write at length about the causes/factors which lead to El-Nino and also write in detail about its effects on the world climate and geography.*

**Structure of the answer**

**Introduction**— write a few introductory lines about the El-Nino. E.g El Niño is a naturally occurring phenomenon that is linked to a periodic warming in sea surface temperatures across the central and east-central Equatorial Pacific. El Niño is Spanish for “the boy child,” which is often used to refer to Jesus Christ, and the phenomenon earned this name because it typically occurs in December around Christmas. El Niño occurs every 2-7 years, and can last anywhere between nine months and two years.

**Body-**

*Discuss the causes of El-Nino. E.g*

- *The trade winds push warm water on the surface of the ocean from east to west (westerly). This causes the warm water to build up on the western side of the ocean near Asia. Meanwhile, on the eastern side of the ocean, near Central and South America, cold waters are pushed up towards the surface.*
- *Because of this, there is a difference in temperature across the equatorial pacific, with warm water to the west and cold water to the east. The warm water in the west heats the air, making the warm air rise and leading to drastic weather, including rain and thunderstorms.*
- *The rising warm air causes a circulation between east and west in the Pacific, with the warm, moist air rising in the west, and cool, dry air descending in the east. All of these natural occurrences lead to a reinforcement of the easterly winds, and cause a self-perpetuating motion in the air in the Pacific.*
- *Under the proper conditions, the trade winds are weakened, causing less warm surface water to be pushed to the west, and less cold water to be pulled to the surface in the east. Parts of the ocean that are cold during the usual self-perpetuating cycle become warmer, cancelling out the normal difference in temperature in the equatorial Pacific between east and west etc.*

*Discuss the effects of El-Nino. E.g*

- *In South America, there is a drastic increase in the risk of flooding on the western coast, while there is an increase in the risk of droughts on parts of the eastern coast.*
- *In eastern countries, like India and Indonesia, there is an increase in droughts. In general, El Niño causes vast amounts of rainfall in the eastern parts of the Pacific (the western coast of South America), and very dry weather on the western parts (India, Indonesia).*



- With all the extra heat at the surface of the Pacific Ocean, energy is released into the atmosphere, causing an overall warming of the global climate temporarily. Years in which El Niño occurs tend to feature higher temperatures across the globe.
- The effects of El Niño on the weather peak in December and can last for several months after that etc.

**Conclusion-** based on your discussion, form a fair and a balanced conclusion on the given issue.

### Introduction:

El Niño is a naturally occurring phenomenon that is linked to a **periodic warming in sea surface temperatures across the central and east-central Equatorial Pacific**. El Niño is Spanish for “the boy child,” which is often used to refer to Jesus Christ, and the phenomenon earned this name because it typically occurs in December around Christmas. El Niño occurs every 2-7 years, and can last anywhere between nine months and two years.

### Body:

El Niño, an oceanic phenomenon usually occurs with Southern Oscillation, an atmospheric phenomenon. Together they are called **El Niño Southern oscillation (ENSO)**. ENSO is one of the most important climate phenomena on Earth due to its ability to change the global atmospheric circulation, which in turn, influences temperature and precipitation across the globe. El Niño Southern Oscillation (ENSO) is the term used to describe the oscillation between the El Niño phase and the La Niña, or opposite phase.

### The causes for El Niño are:

The two opposite phases, “El Niño” and “La Niña,” require certain changes in both the ocean and the atmosphere because ENSO is a coupled climate phenomenon. “Neutral” is in the middle of the continuum.

#### Neutral phase:

- In the neutral state (neither El Niño nor La Niña) trade winds blow east to west across the surface of the tropical Pacific Ocean, bringing warm moist air and warmer surface waters towards the western Pacific and keeping the central Pacific Ocean relatively cool. The thermocline is deeper in the west than the east.
- This means that under “normal” conditions the western tropical Pacific is 8 to 10°C warmer than the eastern tropical Pacific. This warmer area of ocean is a source for convection and is associated with cloudiness and rainfall.

#### El Niño:

- The trade winds push warm water on the surface of the ocean from east to west (westerly). This causes the warm water to build up on the western side of the ocean near Asia. Meanwhile, on the eastern side of the ocean, near Central and South America, cold waters are pushed up towards the surface.
- Because of this, there is a difference in temperature across the equatorial pacific, with warm water to the west and cold water to the east. The warm water in the west heats the air, making the warm air rise and leading to drastic weather, including rain and thunderstorms.
- The rising warm air causes a circulation between east and west in the Pacific, with the warm, moist air rising in the west, and cool, dry air descending in the east. All of these natural occurrences lead to a reinforcement of the easterly winds, and cause a self-perpetuating motion in the air in the Pacific.



## NORMAL YEAR



## EL NIÑO YEAR



Source: Louis Sayles depiction based on source data from National Oceanic and Atmospheric Administration (NOAA), National Aeronautics and Space Administration (NASA) and various media reports.

**Impacts:** The main impacts of El Niño occur in and around the Tropics.

- **Extreme Weather events:**
  - Normal or High rainfall in Eastern/Central Pacific, Drought or scant rainfall in western pacific/Asian region.
- **Disasters:**
  - Forest fires in Indonesia leading to wiping out of Equatorial rainforest regions.
  - Heat-waves in India leading to deaths of people and fauna.
  - Water sources dry up leading to increased distress migration and climate refugees.
- **Economic impacts:**
  - Agriculture dependent countries like India face huge losses due to drought conditions. Crop yields are affected leading to food inflation. To tackle food inflation, tweaks in monetary policies to make it tighter, leading to lesser available money supply.
  - Fishing in equatorial coastal countries like Ecuador and Peru becomes difficult, as fish in the waters near these countries tend to disappear in the months of December and January.



- **Social Impacts:**
  - A WHO Paper said that El Nino 2015-2016 is affecting more than 60 million people.
  - Rising temperatures and more variable rainfall patterns can often reduce crop yields, compromising food security.
  - This can lead to social unrest, civil wars, increased inequality between people.
  - El Nino conditions can cause a wide range of health problems, including disease outbreaks, malnutrition, heat stress, and respiratory diseases.
- **Environmental impacts:**
  - Effect on aquatic species and sea birds: fish either migrate to other regions or die during an El Nino because they lack adequate food for growth and survival.

#### Way Forward:

- The government must expand the farm insurance cover and advice banks and financial institutions to settle crop insurance claims in the drought-hit areas without delay.
- High quality seeds of alternative crops must be distributed among farmers in the drought-affected areas.
- Technologies like drip and sprinkler irrigation, precision agriculture.
- Monetary Control measures to tackle inflationary trends in country.
- Financial support from global organizations for rehabilitation and rebuilding.
- **Disaster Response Forces** to tackle floods and droughts.
- **Developing early warning systems** and alerting the people much in advance.
- **Global co-operation** to tackle the climate change which can further aggravate El- Nino and La-Nina conditions.

**Q) Coastal districts of India must continue to take measures to make them more resilient against extreme weather events. Discuss. (250 words)**

#### *Key demand of the question*

*The question expects us to explain that coastal areas have become more susceptible to extreme weather events and thus there is a greater need to make them more resilient and discuss the ways in which this can be done.*

#### *Directive word*

*Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments*

#### *Structure of the answer*

*Introduction – Explain the report of IPCC etc which has warned about the increased frequency and intensity of such extreme weather events.*

#### *Body*

*Explain about the various extreme weather events such as tsunamis, cyclones etc which impact the coastal regions and the kind of devastation it causes with examples of cyclone gaja etc*

*Explain the measures taken by the government to make coastal regions more resilient*

#### *Discuss what more needs to be done*

*Coastal States must, therefore, focus on reducing the hazard through policies that expand resilient housing, build better storm shelters and create financial mechanisms for insurance and compensation.*

*Conclusion – Give your view and discuss way forward.*

#### **Introduction:**

India has a vast coastline comprising of 53 coastal districts and six union territories, 15% of the total population lives in these areas. About 5770 km of coastline out of a total 7516 km is prone to Cyclone and Tsunami. The IPCC's "Special Report on Global Warming of 1.5°C" revealed that the impacts and costs of 1.5 degrees Celsius of global warming will be far greater than expected. While



changing climate poses challenges to humanity as a whole, the available evidence suggests that the developing countries are particularly vulnerable.

### **Body:**

India, which is located in the sub-tropics and surrounded by water on three sides, is vulnerable to many weather events. It faces many **cyclones** every year which are destructive. Approximately **12% (About 40 million hectares of land)** is prone to flood and river erosion. The floods caused due to incessant rains in Kerala last year, Cyclones like Gaja, Vardah, Titli are a few instances. The super cyclone of 1999 which made a landfall in Odisha killed more than 10,000 people. The Tsunami in 2004 wiped out many coastal districts on the eastern coast of India.

Apart from the damages to human lives, these weather events have an impact on the flora and fauna located on the coastal regions. The Mangrove forests, marine national parks, estuaries are affected. **Critical Infrastructure** like the nuclear power plants (Ex: Kudankulam), Airports, Seaports, Oil Rigs are at risk too.

The Governments at central and state level Measures taken by Government to reduce the impacts are:

#### **Structural Mitigation measures:**

- **Cyclone walls built and Coral reef development promoted.**
- **Cyclone Shelters** in high vulnerability areas.
- **Natural Bio-shields (Mangroves) and Shelter belt plantations (Casuarinas)** are done along the coasts. Maintaining **Natural Sand dunes**.
- Public Address systems and SMS service to alert the coastal citizens.

#### **Non-Structural mitigation measures:**

- **Integrated Coastal Zone Management** is as an essential institutional mechanism that can deal with all competing pressures on a coast, including short-, medium-, and long-term
- **Cyclone zone mapping** and Vulnerability index of the zones created.
- Strict implementation of **Coastal Regulations Zone Act** – (no development within 500 m of the high tide line with elevation of less than 10m above m.s.l).
- **Land-Use Zoning** done in accordance to Coastal Regulation Zone guidelines.
- The **National Cyclone Risk Mitigation Project** started by the Ministry of Home Affairs should be strengthened to reduce the impact of catastrophic events.

#### **Way Forward:**

- Co-ordinated working of the **National and State Disaster Management Authorities** to tackle the issues more efficiently.
- The recently released **National Disaster Management Plan** based on the lines of **Sendai Plan** should be effectively implemented.
- Coastal States must focus on reducing the hazard through policies that expand resilient housing, build better storm shelters and create financial mechanisms for insurance and compensation.
- Coastal cities should be retrofitted using the smart cities initiative to make them more resilient.

#### **Conclusion:**

Coastal zones are prone to weather events. Therefore, it is upon us to mitigate and adapt accordingly to such catastrophes.

**Q) What could be the effects of warming of ocean waters across the world. Discuss. (250 words)**

#### Reference

##### ***Directive word***

*Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.*

##### ***Key demand of the question.***

*The question wants us to write in detail about the possible anticipated effects of warming ocean waters on the planet- on environment and ecology and economy and society.*



### **Structure of the answer**

**Introduction**— write a few introductory lines about the warming ocean waters as has been witnessed in recent decades. E.g

### **Body-**

Discuss in points, the effects being witnessed and possibly anticipated in future, due to warming of ocean waters. E.g

Rise in sea-levels.

Rise in frequency of extreme weather events

Threat and loss of Coral reefs

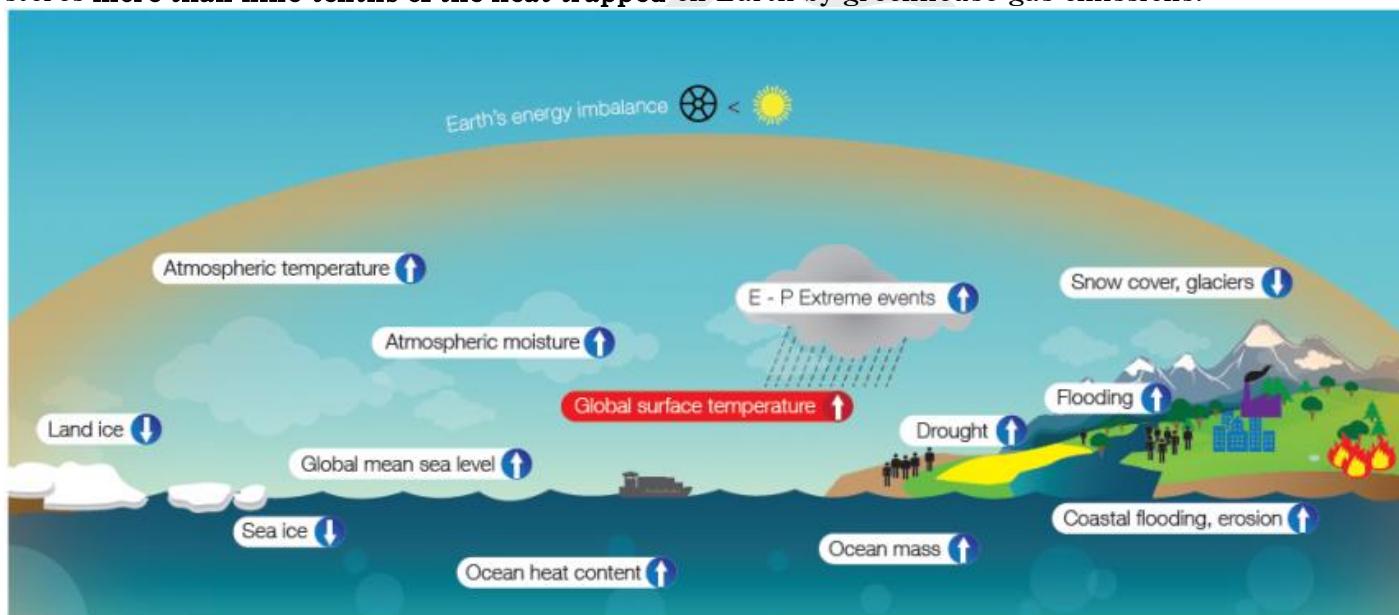
Severe food security risks especially in the tropics where fisheries form a significant source of food.

Melting of sea ice and threat to biodiversity- like the polar bears, of those areas etc.

**Conclusion**- based on your discussion, form a fair and a balanced conclusion on the given issue.

### **Introduction:**

The ocean covers almost three-quarters of the planet. It is divided into five basins: the Pacific, the Atlantic, the Indian, the Arctic and the Southern oceans. Climate and weather systems depend on the temperature patterns of the ocean and its interactions with the atmosphere. **Changing temperatures and chemistry, overfishing and pollution** have stressed its ecosystems for decades. The ocean stores more than nine-tenths of the heat trapped on Earth by greenhouse-gas emissions.



### **Body:**

2018 was the warmest year on records for the oceans. The **Fifth Assessment Report published by the Intergovernmental Panel on Climate Change (IPCC) in 2013** revealed that the ocean had absorbed **more than 93% of the excess heat** from greenhouse gas emissions since the 1970s. This is causing ocean temperatures to rise. As oceans get warmer, there are many ramifications:

- **Rising sea levels:**

- When water heats up, it takes up more space. That means as oceans warm, sea levels rise. The study says this effect alone could make sea levels rise 30cm (12 inches) by the end of the century.
- Many large cities around the world, much built on reclaimed land, that are not more than 30cm above sea level. **Example:** Mumbai, Sydney
- But on top of that, warming oceans are causing polar ice sheets to melt faster, which will make sea levels rise even more.



- The combination of melting ice and expanding water could cause sea levels to rise by up to a meter by 2100. Hundreds of millions of people could be forced to be **climate refugees**.
- **Extreme weather gets more extreme:**
  - Warmer oceans make tropical storms more intense and longer lasting.
  - Cyclones become worst by unusually warm ocean temperatures.
  - For coastal areas already struggling with rising seas, those storms will bring even more flooding.
  - Warming temperatures also mean changing rainfall patterns. Redistribution of water vapour in the atmosphere takes place. Higher temperatures lead to more evaporation, so parts of the earth will get wetter and parts will get drier.
- **Ocean life under threat:**
  - Thermal expansion leads to **de-oxygenation**. Some areas of Japan, Taiwan and the Baltic Sea are seeing dramatic die-offs of fish because of low oxygen.
  - **Coral Bleaching:** Coral reefs are especially sensitive to warmer seas. Between 2016 and 2017, half the corals at the Great Barrier Reef were killed by two ocean heat waves.
  - Almost three-quarters of the world's coral reefs were affected by those heat waves and experts say warmer oceans mean these sorts of die-offs will become much more common.
  - Another problem for sea life is that increased flooding causes more nutrients to be washed into the sea. This leads to **plankton blooms** and ultimately causes some parts of the sea to be starved of oxygen, making it hard for fish to live there.
- **Food security:**
  - Fish species respond to warmer oceans by migrating to cooler areas. But the waters in some parts of the world are getting too warm for any fish — and that could lead to food shortages in those areas.
  - A **2012 report by the Food and Agriculture Organization** of the United Nations estimates that marine and freshwater capture fisheries and aquaculture provide 4.3 billion people with about 15% of their animal protein.
  - There is a severe food security risk in the tropics.
- **Melting sea ice:**
  - Warmer seas are causing sea ice to melt. Sea ice floats on the ocean surface, so when it melts it doesn't affect sea levels. But it means there's less sea ice to reflect heat from the sun back into space, which means the planet gets warmer.
  - It's bad news for animals that depend on sea ice to survive — including polar bears. But it's also a problem for some Arctic communities.
  - The Inuit living in Canada, for example, is a culture based on sea ice. They get their food by hunting seals and polar bears from sea ice, or fishing from sea ice. When the sea ice is disappearing that's not possible, so the whole culture is being lost.
- **Newer threats:**
  - Increasing the prevalence of diseases.
  - Mutations leading to more superbugs.

### Way Forward:

- **Limiting greenhouse gas emissions:** There is an urgent need to achieve the mitigation targets set by the Paris Agreement on climate change and hold the increase in the global average temperature to well below 2°C above pre-industrial levels.
- **Protecting marine and coastal ecosystems:** Well-managed protected areas can help conserve and protect ecologically and biologically significant marine habitats. This will regulate human activities in these habitats and prevent environmental degradation.
- **Restoring marine and coastal ecosystems:** Elements of ecosystems that have already experienced damage can be restored. This can include building artificial structures such as rock pools that act as surrogate habitats for organisms, or boosting the resilience of species to warmer temperatures through assisted breeding techniques.
- **Improving human adaptation:** Governments can introduce policies to keep fisheries production within sustainable limits, for example by setting precautionary catch limits and eliminating subsidies to prevent overfishing. **Coastal setback zones** which prohibit all or certain types of



development along the shoreline can minimise the damage from coastal flooding and erosion. New monitoring tools can be developed to forecast and control marine disease outbreaks.

- **Strengthening scientific research:** Governments can increase investments in scientific research to measure and monitor ocean warming and its effects. This will provide more precise data on the scale, nature and impacts of ocean warming, making it possible to design and implement adequate and appropriate mitigation and adaptation strategies.

#### **Conclusion:**

- Thus, a global effort is imperative to reduce the effects of warmer oceans. Mitigation and Adaptation measures will help us more resilient against extreme weather events.

#### **Q) Discuss the factors responsible for the extinction of flora and fauna being witnessed today across the world. (250 words)**

##### Reference

##### *Directive word*

*Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.*

##### *Key demand of the question.*

*The question wants us to write in detail about the factors and reasons that have led to the extinction of flora and fauna being witnessed today, across the world.*

##### *Structure of the answer*

***Introduction-** write a few introductory lines about the decrease in flora and fauna. E.g briefly mention the recent Living Planet Index report of WWF.*

##### *Body-*

*Discuss in points the factors responsible for the extinction of flora and fauna across the world. E.g*

- *Overexploitation of species either for human consumption, use, elaboration of byproducts, or for sport.*
- *Habitat destruction;*
- *Habitat fragmentation;*
- *Habitat degradation*
- *Climate Change*
- *The spread of non-native species around the world;*
- *a single species (us) taking over a significant percentage of the world's physical space and production; and,*
- *human actions increasingly directing evolution.*
- *chemical products associated with agriculture or other productive processes have affected many species such as honeybees and other pollinators etc.*

***Conclusion-** based on your discussion, form a fair and a balanced conclusion on the given issue.*

##### **Introduction:**

The **Living Planet Report** (By World Wildlife Fund) uses the **Ecological Footprint** and additional complementary measures to explore the changing state of global biodiversity and human consumption. The **Living Planet Report 2018** released in October 2018 shows that the **over-exploitation of ecological resources by humanity has contributed to a 60 percent plunge in wild vertebrate populations from 1970 to 2014**. According to **Global Footprint Network**, humanity is currently using the **resources of 1.7 planets** to provide the goods and services we demand when we only have one Earth.

**Body:**

- ***Extra information: Findings of the report:-***
- ***The vast and growing consumption of food and resources by the global population is destroying the web of life, billions of years in the making, upon which human society ultimately depends for clean air, water and everything else.***
- ***Freshwater habitats:***
  - *Freshwater habitats are the worst hit, with populations having collapsed by 83%. As a result of the collapse, Indian crocodiles are on the verge of extinction.*
  - *Three-quarters of all land on Earth is now significantly affected by human activities. Killing for food is the next biggest cause – 300 mammal species are being eaten into extinction – while the oceans are massively overfished, with more than half now being industrially fished.*
- ***Species disappearing:***
  - *The index of extinction risk for five major groups: birds, mammals, amphibians, corals and an ancient family of plants called cycads shows an accelerating slide towards oblivion.*
  - *From 1970 to 2014, 60% of all animals with a backbone like fish, birds, amphibians, reptiles and mammals were wiped out by human appetites and activity, according to WWF's "Living Planet" report, based on a survey of more than 4,000 species spread over 16,700 populations scattered across the world.*
- ***Boundaries breached:***
  - *Humans have clearly breached two of the so-called planetary boundaries: species loss and imbalances in Earth's natural cycles of nitrogen and phosphorous (mainly due to fertiliser use).*
  - *Ocean acidification and freshwater supply are not far behind.*
  - *More generally, the marginal capacity of Earth's ecosystems to renew themselves has been far outstripped by humanity's ecological footprint, which has nearly tripled in 50 years.*
- ***Forests shrinking:***
  - *Nearly 20% of the Amazon rainforest, the world's largest, has disappeared in five decades. Tropical deforestation continues unabated, mainly to make way for soy beans, palm oil and cattle.*
- ***Oceans depleted:***
  - *Since 1950, Humans have extracted 6 billion tonnes of fish, crustaceans, clams, squids and other edible sea creatures.*
  - *Climate change and pollution have killed off half of the world's shallow water coral reefs, which support more than a quarter of marine life.*
  - *Coastal mangrove forests, which protect against storm surges made worse by rising seas, have also declined by up to half over the last 50 years.*

The factors responsible for the extinction of flora and fauna across the world are as follows

- ***Overexploitation of species:*** either for human consumption, use, elaboration of by-products, or for sport. Poaching has been a major threat which is going on unabated.
- ***Habitat Loss:***
  - ***Habitat destruction:*** People directly destroy habitat include filling in wetlands, dredging rivers, mowing fields, and cutting down trees. Commercial activities like mining, quarrying has destroyed many eco-sensitive zones. **Example:** Iron ore mining in the Western Ghats of India.
  - ***Habitat fragmentation:*** Much of the remaining terrestrial wildlife habitat has been cut up into **fragments by roads and development**. Aquatic species' habitats have been fragmented by **dams and water diversions**. These fragments of habitat may not be large or connected enough to support species that **need a large territory where they can find mates and food**. Also, the loss and fragmentation of habitats makes it **difficult for migratory species to find places to rest and feed along their migration routes**.
  - ***Habitat degradation:*** Pollution, invasive species, and disruption of ecosystem processes (such as changing the intensity of fires in an ecosystem) are some of the ways habitats can become so degraded they can no longer support native wildlife.



- **Climate Change:**
  - As climate change alters temperature and weather patterns, it also impacts plant and animal life. Scientists expect that the number and range of species, which define biodiversity, will decline greatly as temperatures continue to rise.
  - The burning of fossil fuels for energy and animal agriculture are two of the biggest contributors to global warming, along with deforestation.
  - As people increase their level of income, they consume more meat and dairy products. The populations of industrial countries consume twice as much meat as those in developing countries. Worldwide meat production has tripled over the last four decades and increased 20 percent in just the last ten years.
- **The spread of non-native species around the world:** a single species (us) taking over a significant percentage of the world's physical space and production; and, human actions increasingly directing evolution.
  - **Reduced Diversity: Biological homogenization** qualifies as a global environmental catastrophe. The Earth has never witnessed such a broad and complete reorganization of species distribution, in which animals and plants (and other organisms for that matter) have been translocated on a global scale around the planet.
  - Humans are directing evolution in numerous other ways as well, manipulating genomes by artificial selection and molecular techniques, and indirectly by managing ecosystems and populations to conserve them.
- **Other:**
  - In countries around the world, policies have been enacted that have led to extinction or near extinction of specific species, such large predators in the US and Europe.
  - Chemical products associated with agriculture or other productive processes have affected many species such as **honeybees and other pollinators**.

#### Way forward:

- Sustainable practices like ZBNF, Organic farming, in-situ, ex-situ conservation techniques must be adopted.
- Global initiatives like CITES, REDD has to be followed in letter and spirit. The Paris Summit which was agreed upon in 2015 should be implemented to cut down further global warming.
- The **CBD 2050** vision is that “biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people”. This needs to be kept in mind while achieving environmental targets by nations.
- Conservation scientists propose a **2020-2050 ‘blueprint for biodiversity’**: a vision for the future through the Convention on Biological Diversity.
- Scenarios and indicators can help imagine the future and create good policies, monitor progress and identify potential win-win solutions for both nature and for people.

#### Conclusion:

Humanity has begun using 25-40% of the planet's net primary production for its own. As we keep expanding our use of land and resources, the capacity of species to survive is constantly reduced. The huge loss is a tragedy in itself but also threatens the survival of civilisation.

#### **Q) What do you understand by tropospheric and stratospheric polar vortex? How is it related to deep freeze in USA ? (250 words)**

##### Reference

##### *Why this question*

*Parts of USA are expected to remain colder than Antarctica in the days to come. It is important for us to understand what will cause this deep freeze.*

##### *Key demand of the question*

*The question expects us to first explain what polar vortex is and examine the role that it would play in the deep freeze in USA.*

##### *Structure of the answer*

*Introduction – Highlight the news that weather reports have predicted deep freeze in USA .*



## **Body**

*Explain what is a polar vortex. Thereafter, explain what are tropospheric and stratospheric polar vortex*

- One exists in the lowest layer of the atmosphere, the troposphere, which is where we live and where the weather happens. The other exists in the second-lowest, called the stratosphere, which is a shroud of thin air that gets warmer at higher altitudes.
- The low-level vortex in the troposphere is a large mass of brutally cold air and swirling winds coiled around omnipresent polar low pressure. The year-round cold temperature causes air to condense and shrink in size, which creates a vacuum effect that draws air inward. The tropospheric polar vortex is the one that affects our weather. Most of the time, its harsh conditions are out of reach. But every so often, lobes of it pinch off from the main flow and crash south. This can lash the Lower 48 with piercing shots of cold, intense bouts of storminess and bitter wind chills well below zero.
- stratospheric polar vortex lives above and separate from the troposphere. It is much more compact than its tropospheric cousin. It forms in a similar way but is smoother and maintains a much sharper edge. That is because there is very little mixing with the air below it. With lots of rotational energy, this counterclockwise gyre can speed with little to slow it down.

*Explain their impact on weather – Most of the time, the stratospheric polar vortex has little impact on our weather. The two layers of the atmosphere remain largely disconnected. Once in a while, the stratospheric vortex gets disrupted – a sudden stratospheric warming event. When this happens, the vortex can split and affect the weather below it. It can cause kinks in the jet stream so that, instead of flowing west to east, there are a lot of dips and ridges. And the waves in the jet stream can disrupt the lower (tropospheric) polar vortex, break off a lobe and force it south causing extreme chill in parts of USA.*

**Conclusion – Summarize your answer by focussing on the impact of polar vortex.**

## **Introduction:**

A record-breaking cold wave has swept through the US Midwest, with 22 states hitting sub-zero temperatures. The extreme cold has been caused by a blast of Arctic air, which in turn is a result of what is known as a “**polar vortex**” event. It has forced residents to huddle indoors, closed schools and businesses and cancelled flights.

## **Body:**

### **Polar vortex:**

- Essentially a low-pressure area, it is a wide expanse of swirling cold air **surrounding both polar regions**.
- The counter-clockwise flow of air helps keep the colder air near the poles.
- In winter, the polar vortex sometimes becomes less stable and expands.
- Many times during winter in the northern hemisphere, the [north] polar vortex will expand, sending cold air southward with the jet stream.
- It is not confined to the US either. Portions of Europe and Asia also experience cold surges connected to the polar vortex.

There are **two polar vortexes in each hemisphere**, North and South.

### **Tropospheric Polar Vortex:**

- The one that exists in the lowest layer of the atmosphere, the troposphere, which is where we live and where the weather happens is the Tropospheric Polar Vortex.
- The low-level vortex in the troposphere is a large mass of brutally cold air and swirling winds coiled around omnipresent polar low pressure.
- The year-round cold temperature causes air to condense and shrink in size, which creates a vacuum effect that draws air inward.
- The tropospheric polar vortex is the one that affects our weather.

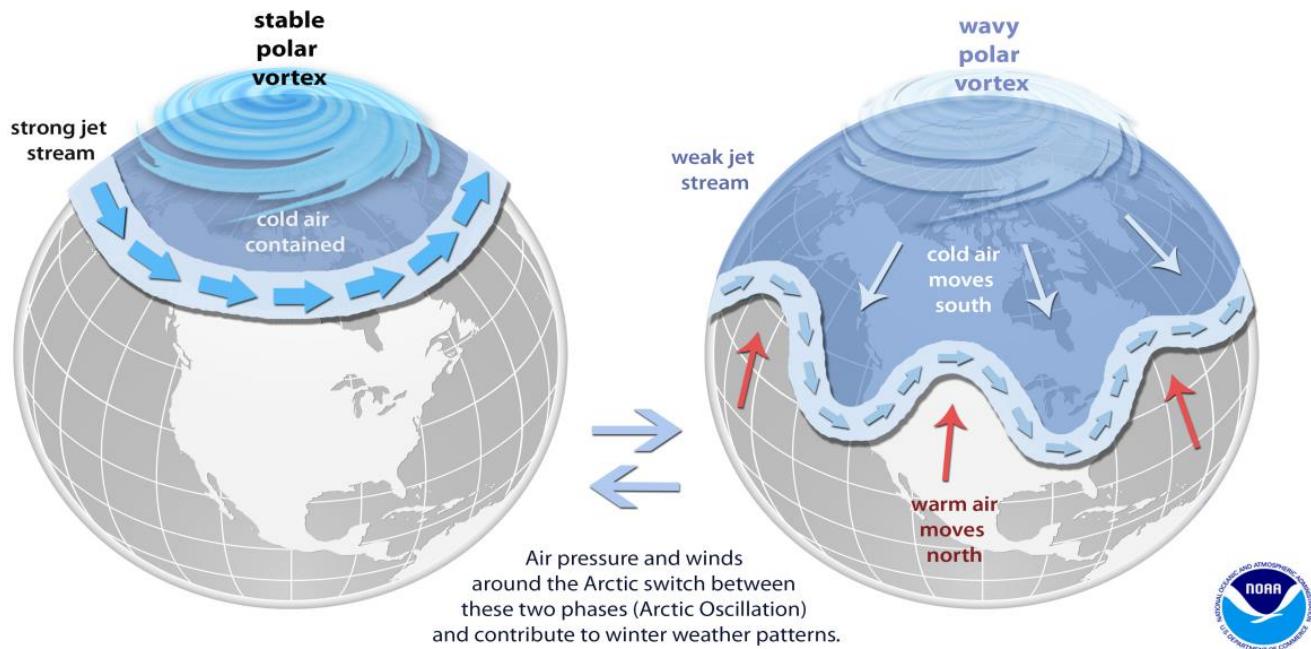


- Most of the time, its harsh conditions are out of reach.
- But every so often, lobes of it pinch off from the main flow and crash south.

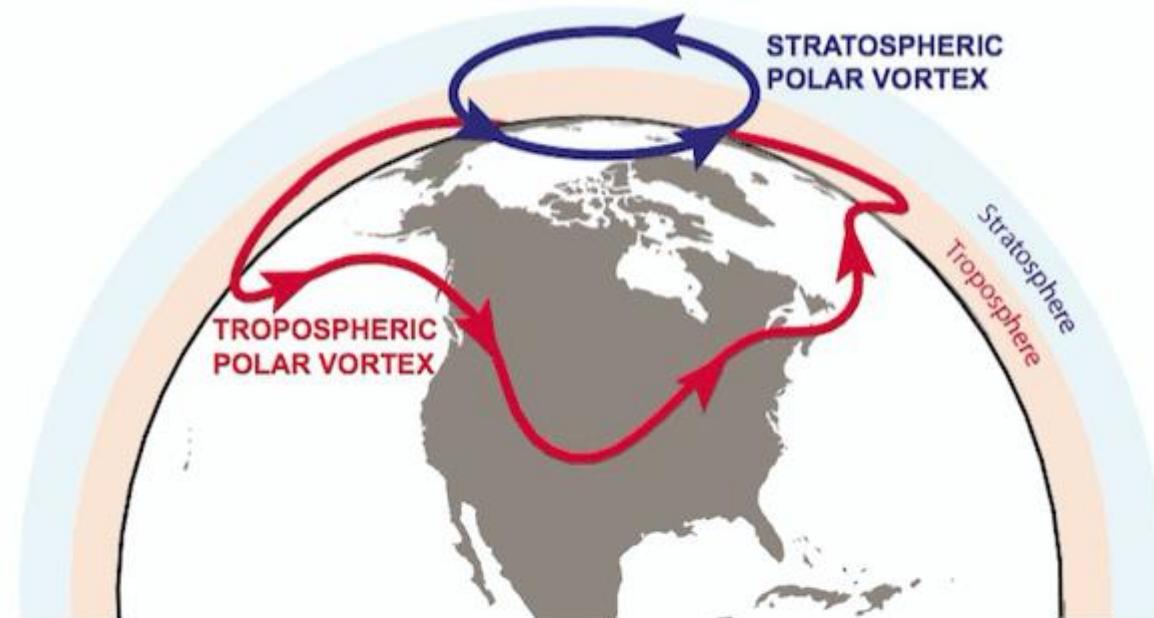
## The Science Behind the Polar Vortex

The polar vortex is a large area of low pressure and cold air surrounding the Earth's North and South poles. The term vortex refers to the counterclockwise flow of air that helps keep the colder air close to the poles (left globe). Often during winter in the Northern Hemisphere, the polar vortex will become less stable and expand, sending cold Arctic air southward over the United States with the jet stream (right globe).

The polar vortex is nothing new — in fact, it's thought that the term first appeared in an 1853 issue of E. Littell's *Living Age*.



### Stratospheric Polar Vortex:



- The other exists in the **second-lowest**, called the **stratosphere**, which is a shroud of thin air that gets warmer at higher altitudes.
- The stratospheric polar vortex lives above and separate from the troposphere.
- It is much more compact than its tropospheric cousin.
- It forms in a similar way but is smoother and maintains a much sharper edge. That is because there is very little mixing with the air below it.



- With lots of rotational energy, this counter-clockwise gyre can speed with little to slow it down.
- The stratospheric polar vortex does not stick around year-long: It disintegrates around March and starts to regenerate again in September; that is when the sun sets on the North Pole for the last time until spring.
- By December and January, the stratospheric polar vortex is a full-fledged machine. But a strong polar vortex does not mean storms for us. In fact, it is the contrary.

#### **Impact on weather:**

- Most of the time, the stratospheric polar vortex has little impact on our weather.
- The two layers of the atmosphere remain largely disconnected.
- Once in a while, the stratospheric vortex gets disrupted – a sudden stratospheric warming event.
- When this happens, the vortex can split and affect the weather below it.
- It can cause kinks in the jet stream so that, instead of flowing west to east, there are a lot of dips and ridges.
- And the waves in the jet stream can disrupt the lower (tropospheric) polar vortex, break off a lobe and force it south causing extreme chill in parts of USA.

#### **Conclusion:**

- Scientists say higher temperatures in the Arctic have led to historically low levels of ice there. That, in turn, has led changes in the jet stream, causing the polar vortex to buckle. Adaptation and mitigation strategies need to be relooked at global platforms for such extreme weather events arising out of Global warming. Need of the hour is consensus among nations to tackle global warming.

#### **TOPIC: Economic, Human geography**

**Q) Despite a ban, rat-hole mining remains a prevalent practice in Meghalaya. Explain what is rat hole mining and the issues associated with it ? (250 words)**

#### Economictimes

##### **Why this question**

*The incident in Meghalaya where miners are trapped in one of the rat hole mines exposes the issues with this unsafe mining practice and also brings out the fact that NGT orders are being violated. It is important to understand what rat hole mining is and the issues associated with it.*

##### **Key demand of the question**

*The question expects us to bring out what rat hole mining is, explain the 2014 NGT order regarding the ban on rat hole mining and why such mining practices are still being continued. Finally, we need to discuss ways through which such practices can be stopped.*

##### **Structure of the answer**

**Introduction** – Explain about the recent incident in Meghalaya which is the reason why rat hole mining is in news.

##### **Body**

Explain what rat hole mining is – involves digging of very small tunnels, usually only 3-4 feet high, which workers (often children) enter and extract coal. Rat-hole mining is broadly of two types – side-cutting procedure, where narrow tunnels are dug on the hill slopes and workers go inside until they find the coal seam, box-cutting, a rectangular opening is made, varying from 10 to 100 sq m, and through that is dug a vertical pit, 100 to 400 feet deep. Once the coal seam is found, rat-hole-sized tunnels are dug horizontally through which workers can extract the coal.

Explain that the National Green Tribunal (NGT) banned it in 2014, and retained the ban in 2015, on grounds of it being unscientific and unsafe for workers. The state government has appealed the order in the Supreme Court.

Discuss the reasons why rat hole mining was banned and the reasons why it continues despite the ban

**Conclusion** – emphasize on the ill effects of rat hole mining and discuss solutions to the problem.



## Introduction:

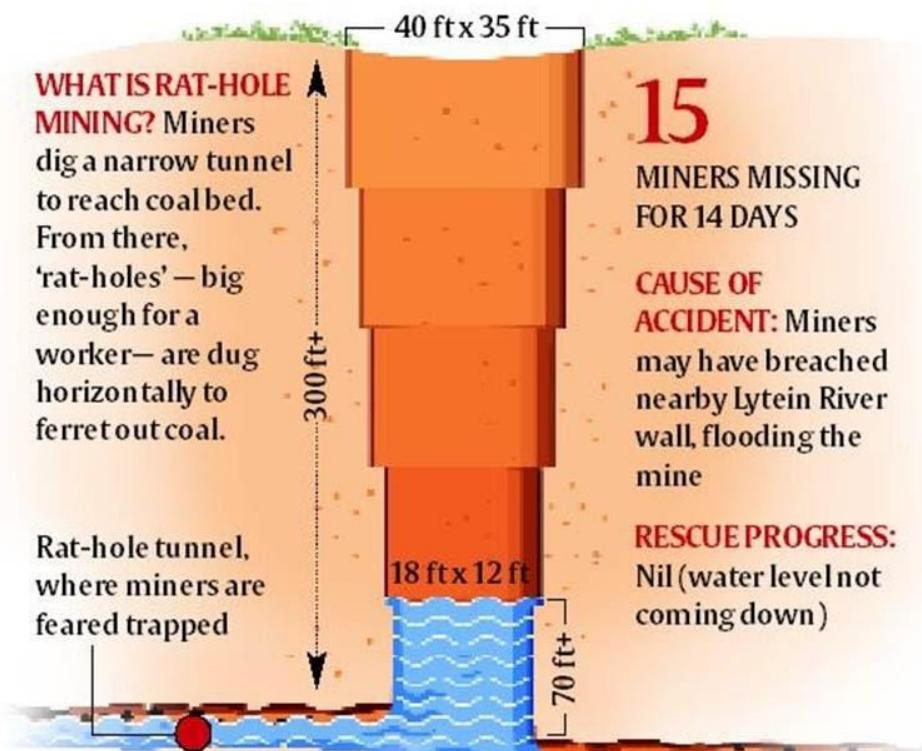
- The collapse of a coal mine in Meghalaya's East Jaintia Hills, trapping at least 15 workers who are still missing and are feared dead, has thrown the spotlight on a procedure known as "rat-hole mining". Although banned by the National Green Tribunal in 2014 and upheld by the Supreme Court, it remains the prevalent procedure for coal mining in Meghalaya.

## Body:

Rathole mining involves digging of very small tunnels, usually only 3-4 feet high, which workers (often children) enter and extract coal. It is broadly of two types.

- Side-cutting procedure:** Narrow tunnels are dug on the hill slopes and workers go inside until they find the coal seam. The coal seam in hills of Meghalaya is very thin, less than 2 m in most cases.
- Box-cutting procedure:** A rectangular opening is made, varying from 10 to 100 sq. m, and through that is dug a vertical pit, 100 to 400 feet deep. Once the coal seam is found, rat-hole-sized tunnels are dug horizontally through which workers can extract the coal.

## DECEMBER 13 ACCIDENT: THE MINE SHAFT



## NGT ban on Rathole Mining:

The National Green Tribunal (NGT) banned it in 2014, and retained the ban in 2015, on grounds of it being **unscientific and unsafe** for workers. The NGT order bans not only rat-hole mining but all "unscientific and illegal mining". The court placed much emphasis on a report of **O P Singh**, professor of environmental studies of North Eastern Hills University of Shillong that explained the grave environmental concerns and health concerns.

## Major issues associated with Rathole Mining:

### Ecology:

- In their petition to the NGT, Assam's All Dimasa Students' Union and the Dima Hasao District Committee complained that rat-hole mining in Meghalaya had caused the water in the **Kopili** river (it flows through Meghalaya and Assam) to turn acidic.
- No biological lives are seen in the river. The rocks in the river bed turned yellowish, which also indicates flow of acid mine drainage
- Ecologically Sensitive Zones are being degraded due to increased mining activities.
- Entire roadsides in and around mining areas are used for piling of coal which is a major source of air, water and soil pollution.



- Off road movement of trucks and other vehicles in the area caused further damage to the fragile ecology of the area which lies in the Zone 5 seismic area.

#### Risk to lives:

- During the rainy season, water floods into the mining areas resulting in death of many employees/workers.
- Health hazards due to poisonous gases like Hydrogen Sulphide, Methane can cause instant death of miners.
- The lack of regulations, treacherous work conditions lead to over-work and meagre pay.

#### Economic:

- According to government reports, the coal mining industry was among the biggest revenue earners for the state, generating about Rs. 700 crore annually, prior to its ban in 2014.
- The value of extracted coal stored in Meghalaya was officially estimated at over Rs. 3,078 crore four years ago.
- The Katoki panel reported that nearly 24,000 illegal mines are present in Meghalaya as interpreted from satellite images.

#### Reasons for its continuance:

##### Loopholes in the law:

- The ban has been rendered meaningless by the Supreme court-sanctioned permission to transport “already-mined” coal till January 2019. Mine owners have used this loophole to continue mining operations illegally.
- The State of Meghalaya has promulgated a mining policy of 2012, which does not deal with rat-hole mining, but on the contrary, deprecates it.
- Meghalaya comes under the 6<sup>th</sup> Schedule of Constitution. The provisions allow for community ownership of land and autonomy over its use. However they are taken over by private players and tribals are left helpless.

##### Lack of Political and Executive will:

- The unholy nexus of Politicians and Contractors: About 33% of political candidates have stakes in coal mining and transport companies, thus lobbying against the ban order.
- A committee (headed by Retired Justice B.P. Katoki) appointed by the National Green Tribunal (NGT) has blamed poor implementation of NGT order by executive.
- The committee revealed that the state government shockingly has no records about the rat-hole mines, number of workers involved and any other data relating to death or injuries to the workers.

##### Geological Conditions:

- No other method would be economically viable in Meghalaya, where the coal seam is extremely thin unlike that in Jharkhand (where open-cast mining is followed).
- Sustainable extraction methods are likely to be technology-intensive and expensive. Not the preferred option of mine owners, legal and otherwise.

##### Lack of Alternate Sources of Livelihood:

- It takes long to locate the quarry as local people were scared to divulge information, fearing a backlash from mine owners and lose their livelihood.
- It gives quick money for day-to-day survival.
- It is a cheap method for the mine owners to extract coal and presence of abundance of Migrant labour.

##### Way Forward:

- The Supreme Court must rectify this situation by banning transport of all coal, or by lifting the ban but enforcing regulation to make the mining non-polluting and safe.
- The State mining policy should include ways of alternative towards Rathole mining.
- The Schedule VI provisions must be implemented in true letter and spirit by granting community ownership rights. Involvement of Autonomous District and Regional Councils to further implement the orders is needed.
- Alternative employment or economic engagement for the coal mine owners and labourers must be provided. g.: MGNREGA.



- Strict implementation of Child labour prevention laws and Right to Education Act for the children involved in mining.
- Use of Satellite imagery and drone technology to find the locations of illegal mines as suggested by **BP Katoki committee**.
- Involvement of Social Activists, NGO's and Local community and education of the people about perils of rathole mining.

### **Conclusion:**

- The road ahead is to restore the environmentally degraded areas and rehabilitate exploited labour force.

**Q) India's unprecedented economic growth during the last two decades has been spearheaded by lopsided spatial development, with clusters of economic activity concentrated in a few highly dense megacities. Examine. (250 words)**

Livemint

#### **Why this question**

*This article rues the fact that spatial development in India both in manufacturing and services has been uneven which has affected employment, inequality, growth etc. The article provides a good perspective on the issue and needs to be prepared.*

#### **Key demand of the question**

*The question expects us to first shed light on the statement mentioned by explaining what is meant by uneven spatial development, and how it manifests. Thereafter, we need to explain the reasons behind such uneven spatial development, discuss its impact and suggest ways through which this trend can be reversed.*

#### **Directive word**

*Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any.*

#### **Structure of the answer**

**Introduction** – Explain that uneven spatial development means that industries and services are concentrated in high density economically developed area and engines of growth have failed to spread to less dense secondary cities.

#### **Body**

Highlight that uneven spatial development can be seen both in manufacturing as well as services sector. Explain that unlike in China, Europe and the US, where the engines of growth and job creation have spread to the secondary cities, in India medium-sized cities remain mired in joblessness and poverty.

Highlight that India's manufacturing sector is spatially spreading at a much faster pace than the services sector. The low-density manufacturing districts are growing at a much faster pace than high-density districts in India.

#### **Discuss the reasons for such uneven spatial development**

- manufacturing sector has not spread to all districts. Only those districts that have improved their physical and human infrastructure have attracted manufacturing enterprises
- While large manufacturing enterprises are moving away from more congested megacities into secondary cities, this is not happening at a faster pace to create more jobs.
- High-density service clusters have continued to grow at a much faster pace than less dense areas and more dense locations have become more concentrated over time.
- Examine the impact of such uneven spatial development such as poverty, joblessness, inequality, social disharmony etc



*Discuss how this trend can be reversed*

**Conclusion – Highlight that the trend needs to change and discuss the way forward.**

### Introduction:

Uneven spatial development refers to the concentration of industries and services in high density economically developed areas. In other words, the clusters of economic activity are concentrated in a few highly dense megacities and engines of growth have failed to spread to less dense secondary cities.

India's unprecedented economic growth during the last two decades has been spearheaded by lopsided spatial development.

### Body:

#### Trends of Uneven Spatial Development in India:

- Uneven spatial development is common in many countries, but it is much more pronounced in India.
- A majority of the population in India still lives outside megacities, this has created huge spatial disparities.
- Unlike in China, Europe and the US, where the engines of growth and job creation have spread to the secondary cities, in India medium-sized cities remain mired in joblessness and poverty.
- India's **manufacturing sector** is spatially spreading at a much faster pace than the services sector.
- The low-density manufacturing districts are growing at a much faster pace than high-density districts in India.
- High-density service clusters (**Example:** Bangalore, Mumbai) have continued to grow at a much faster pace than less dense areas (**Example:** Pune, Chandigarh) and more dense locations have become more concentrated over time.

#### The reasons for such uneven spatial development are

- **Infrastructure:**
  - The manufacturing sector has not spread to all districts. Only those districts that have **improved their physical and human infrastructure** have attracted manufacturing enterprises.
- **Employment Density prioritised:**
  - Spatial development in any location is determined by the **trade-offs between the forces of agglomeration economies and congestion costs**.
  - Usually, Agglomeration economies are concentrated in locations with employment density below 150 employees per sq. km. **Example:** USA
  - In India, the concentration is in regions having density around 1000 employees per sq. km, giving higher priority to **availability of labour**.
- **Knowledge Spillover Benefits:**
  - India's megacities suffer from severe congestion costs, they also **benefit from huge agglomeration economies and knowledge spillovers**.
  - This leads to growth of many ancillary industries, start-ups especially in the services industry. With the IR4.0 on the rise, the congestion costs are overlooked for knowledge spillovers.
- **Spatial development policies and frictions:**
  - Poor developmental policies in secondary cities.
  - Poor access to telecommunication and post-secondary education in secondary cities.
  - Some states offer Tax-Holidays for companies which attract them over others.
  - Failure of models like SEZ in India vis-a-vis China.
- **Economic Opportunities:**
  - **Push and Pull Migration factors** are still largely at play.
  - This leads to migration of a lot of people to Megacities, in search of job opportunities.

#### The impacts of uneven spatial development are

- **Congestion Costs:**
  - Locations with employment density above 150 employees per sq. km have experienced **reduced employment growth**, indicating important congestion costs.



- UN Population Fund predicts that by Urbanization in India will rise to 40% by 2030.
- **Environmental Costs:**
  - Unsustainable development of cities has huge ramifications on the environment.
  - **Example:** India already hosts 14 out of 15 most polluted cities in the world.
  - Other impacts like depletion of groundwater, reduced green lung spaces.
- **Economic Costs:**
  - Concentration of high demand in few megacities leads to high cost of rents and in turn high cost of living.
  - Real Estate Bubble leading to increased Black Money circulation.
- **Social Costs:**
  - Lack of economic activity in smaller cities leads to inequality, poverty and conflicts.
  - The poor socio-economic development can lead to extremism, secessionism and other dangerous trends.

### Way Forward:

- Quick need to increase connectivity and Infrastructure of the secondary cities. Initiatives like AMRUT, Smart cities, Digital India, BharatMala, PMGSY etc. can play a big role in spreading the manufacturing sector evenly.
- Proper planning of peri-urban areas, increased connectivity to spread out the population evenly. **Example:** RURBAN scheme
- Policymakers should improve access to telecommunication and post-secondary education in secondary cities. This will help in the spread of service sector to these cities.
- Incentivisation for setting up manufacturing industries in underdeveloped areas. Example: National Industrial Manufacturing Zones can be set up.
- Strengthening the allied activities like Food Processing through Food Parks. This will reduce the Push and Pull migration.
- MSME's are responsible for more than 14 crore jobs in India. Their growth must be boosted in smaller cities.

### Conclusion:

The flawed perception of Engines of Growth are tied to big cities must be shed. Secondary cities and the rural areas should be developed to reduce the lopsided spatial development currently happening in India.

**Q) What are the factors affecting the location of industries. Discuss in context of the movement of Iron and Steel industry. (250 words)**

ncert

#### *Directive word*

*Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.*

#### *Key demand of the question.*

*The question wants us to write in detail about the factors influencing the location of Industries in general and historical movement of Iron and Steel industry across the world.*

#### *Structure of the answer*

**Introduction**— Mention the relationship between location of Industries and the physical and human geography as well as history and politics of the region.

#### *Body-*

*Briefly discuss the factors affecting location of industries. E.g availability of raw material, land, water, labour, power, capital, transport and market etc.*

*Discuss the movement witnessed in Iron and Steel Industry. E.g*



- The inputs for the industry include raw materials such as iron ore, coal and limestone, along with labour, capital, site and other infrastructure. The process of converting iron ore into steel involves many stages.
- Before 1800 A.D. iron and steel industry was located where raw materials, power supply and running water were easily available.
- Later the ideal location for the industry was near coal fields and close to canals and railways.
- After 1950, iron and steel industry began to be located on large areas of flat land near sea ports. This is because by this time steel works had become very large and iron ore had to be imported from overseas etc.

**Conclusion**– based on your discussion, form a fair and a balanced conclusion on the given issue.

### Introduction:

Industry refers to an economic activity that is concerned with production of goods, extraction of minerals or the provision of services.

### Body:

Many important geographical factors involved in the location of individual industries are of relative significance. But besides such purely geographical factors influencing industrial location, there are factors of historical, human, political and economic nature which are now tending to surpass the force of geographical advantages. Consequently, the factors influencing the location of industry can be divided into two broad categories – Geographical and Non-Geographical factors.

#### Geographical factors:

- **Raw Materials:** The location of industrial enterprises is sometimes determined simply by location of the raw materials. Modern industry is so complex that a wide range of raw materials is necessary for its growth. Further, finished product of one industry may well be the raw material of another. **Example:** pig iron, produced by smelting industry, serves as the raw material for steel making industry. Industries which use heavy and bulky raw materials in their primary stage in large quantities are usually located near the supply of the raw materials.
  - Industries are often located with no reference to raw materials and are sometimes referred to as 'footloose industries' because a wide range of locations is possible within an area of sufficient population density.
- **Power:** Regular supply of power is a pre-requisite for the localisation of industries. Coal, mineral oil and hydro-electricity are the three important conventional sources of power. Most of the industries tend to concentrate at the source of power.
  - The iron and steel industry which mainly depends on large quantities of coking coal as source of power are frequently tied to coal fields. Tata Iron and Steel Plant at Jamshedpur, the new aluminium producing units at Korba (Chhattisgarh) and Renukoot (Uttar Pradesh), the copper smelting plant at Khetri (Rajasthan) and the fertilizer factory at Nangal (Punjab) are near the sources of power and raw material deposits, although other factors have also played their role
- **Labour:** The prior existence of a labour force is attractive to industry unless there are strong reasons to the contrary. Labour supply is important in two respects (a) workers in large numbers are often required; (b) people with skill or technical expertise are needed.
- **Transport:** Transport by land or water is necessary for the assembly of raw materials and for the marketing of the finished products. The development of railways in India, connecting the port towns with hinterland determined the location of many industries around Kolkata, Mumbai and Chennai.
- **Market:** The entire process of manufacturing is useless until the finished goods reach the market. Nearness to market is essential for quick disposal of manufactured goods. It helps in reducing the transport cost and enables the consumer to get things at cheaper rates.
- **Water:** Water is another important requirement for industries. Many industries are established near rivers, canals and lakes, because of this reason. Iron and steel industry requires large quantities of water (about 3 lakh litres per tonne), for their proper functioning.



- **Site:** Site requirements for industrial development are of considerable significance. Sites, generally, should be flat and well served by adequate transport facilities. Large areas are required to build factories. Now, there is a tendency to set up industries in rural areas because the cost of land has shot up in urban centres.
- **Climate:** Climate plays an important role in the establishment of industries at a place. Harsh climate is not much suitable for the establishment of industries. There can be no industrial development in extremely hot, humid, dry or cold climate.

#### **Non- Geographical factors:**

- **Capital:** Modern industries are capital-intensive and require huge investments. Capitalists are available in urban centres. Big cities like Mumbai, Kolkata, Delhi, and Chennai are big industrial centres, because the big capitalists live in these cities.
- **Government Policies:** Government activity in planning the future distribution of industries, for reducing regional disparities, elimination of pollution of air and water and for avoiding their heavy clustering in big cities, has become no less an important locational factor.
- **Industrial Inertia:** Industries tend to develop at the place of their original establishment, though the original cause may have disappeared. This phenomenon is referred to as inertia, sometimes as geographical inertia and sometimes industrial inertia. The lock industry at Aligarh is such an example.
- **Efficient Organisation:** Efficient and enterprising organisation and management is essential for running modern industry successfully. Bad management sometimes squanders away the capital and puts the industry in financial trouble leading to industrial ruin.
- **Banking Facilities:** Establishment of industries involves daily exchange of crores of rupees which is possible through banking facilities only. So the areas with better banking facilities are better suited to the establishment of industries.
- **Insurance:** There is a constant fear of damage to machine and man in industries for which insurance facilities are badly needed.

The inputs for the iron and steel industry include raw materials such as iron ore, coal and limestone, along with labour, capital, site and other infrastructure. The process of converting iron ore into steel involves many stages. **The broad features of movement of Iron and Steel industry involved**

- Before 1800 A.D. iron and steel industry was located where raw materials, power supply and running water were easily
- Later the ideal location for the industry was near coal fields and close to canals and
- After 1950, iron and steel industry began to be located on large areas of flat land near sea. This is because by this time steel works had become very large and iron ore had to be imported from overseas

In India, iron and steel industry has developed taking advantage of raw materials, cheap labour, transport and market. All the important steel producing centres such as Bhilai, Durgapur, Burnpur, Jamshedpur, Rourkela, Bokaro are situated in a region that spreads over four states — West Bengal, Jharkhand, Odisha and Chhattisgarh. Bhadravati and Vijay Nagar in Karnataka, Vishakhapatnam in Andhra Pradesh, and Salem in Tamil Nadu are other important steel centres utilising local resources.

#### **Conclusion:**

Thus, the location of industries is dependent on a combination of geographical and non-geographical factors.

**Q) Discuss the recent trends in international migration movement. Also discuss how international migration can be made more safe, orderly and regulated. (250 words)**

Reference

Reference

Reference

#### **Directive word**

*Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.*



### ***Key demand of the question.***

The question wants us to write in detail about the current scenario of international migration and the prominent trends that can be witnessed in it. It also wants us to write in detail as to how it can be ensured that international migration is safe, orderly and regulated.

### ***Structure of the answer***

**Introduction**— write a few introductory lines about the history of International migration. E.g mention the migration of Homo Erectus out of Africa etc.

### ***Body-***

Discuss the recent trends in International Migration and the factors influencing it. E.g

- 258 million INTERNATIONAL MIGRANTS were counted globally in 2017 – people residing in a country other than their country of birth. This represented 3.4% of the world's total population.
- Highest category of Migrants- Labour followed by Displaced persons followed by students and then by Migrant Smuggling.
- Women migrants- around 48%
- Two-thirds immigrate to Europe or Asia
- In 2012, ILO estimated that 19 per cent of labour exploitation and 74 percent of sexual exploitation involves cross-border movement.
- In recent years, the number of children migrating unaccompanied has increased. In 2015–2016, there were five times as many children estimated to be migrating alone than in 2010–2011 (UNICEF, 2017b) etc.

Discuss how international migration can be made more safe, orderly and regulated. E.g

- Collect and utilize accurate and disaggregated data as a basis for evidence based policies.
- Minimize the adverse drivers and structural factors that compel people to leave their country of origin
- Ensure that all migrants have proof of legal identity and adequate documentation
- Enhance availability and flexibility of pathways for regular migration etc.

**Conclusion**- based on your discussion, form a fair and a balanced conclusion on the given issue.

### **Introduction:**

International migration is a global phenomenon that is growing in scope, complexity and impact. Migration is both a cause and effect of broader development processes and an intrinsic feature of our ever globalizing world. Migration has been historically positive. Migrants bring new ideas and high motivation.

### **Body:**

The Global Migration Indicators 2018 report was released by Global Migration Data Analysis Centre (GMDAC) in association with International Organization for Migration (IOM). The recent trends in International Migration are:

- 258 Million INTERNATIONAL MIGRANTS were counted globally in 2017 – people residing in a country other than their country of birth. This represented 3.4% of the world's total population.
- They contribute about 10% of the global gross domestic product (GDP). **Migrants' remittance (\$466 bn)** is huge contributor to their home countries' development.
- Highest category of Migrants- Labour (150.3 million) followed by Displaced persons (68.5 million) followed by students (4.8 million) and then by Migrant Smuggling or Irregular migrants (2.5 million).



- Women migrants around 48% and children around 14% formed the global migrant stock.
- Two-thirds immigrate to Europe or Asia.
- Based on changes in migrant stock data over time, researchers estimate globally that 35-40 million people migrate every 5 years.
- According to the ILO, there were an estimated 3 million migrant workers globally in 2013, meaning about two-thirds of all international migrants globally that year were migrant workers.
- In recent years, the number of children migrating unaccompanied has increased. In 2015–2016, there were five times as many children estimated to be migrating alone than in 2010–2011.
- 102,800 REFUGEES were admitted for resettlement worldwide in 2017.

### Factors influencing migration:

People migrate for a number of reasons. These reasons may fall under these four areas: **Environmental, Economic, Cultural and Socio-political**. Within that, the reasons may also be 'push' or 'pull' factors.

- **Push Factors:** Push factors are those that force the individual to move voluntarily, and in many cases, they are forced because the individual risk something if they stay. Push factors may include conflict, drought, famine, or extreme religious activity.
  - Poor economic activity and lack of job opportunities are also strong push factors for migration. Other strong push factors include race and discriminating cultures, political intolerance and persecution of people who question the status quo.
- **Pull Factors:** Pull factors are those factors in the destination country that attract the individual or group to leave their home. Those factors are known as place utility, which is the desirability of a place that attracts people. Better economic opportunities, more jobs, and the promise of a better life often pull people into new locations.

The huge numbers of migration has an impact on the socio-economic milieu of both the immigrated and emigrated places. Thus, it is imperative to make international migration more safe, orderly and regulated.

### Global Compact on Migration:

- The global compact on migration was adopted recently at an intergovernmental conference in Marrakech, Morocco by 164 UN Member States. Alongside, the UN also launched the Migration Network to support the compact's implementation at country level.
- It aims at cooperation between states and promotes measures to strengthen regular migration pathways, to tackle irregular migration, and to protect human rights of migrants among other objectives.
- The Global Compact establishes a United Nations mechanism allowing Governments and companies to contribute technical, financial and human resources for implementing it.
- The signatories must ensure that the migrants are taken care of and their human dignity is upheld.
- **Address the drivers of involuntary migration and create more legal avenues of migration.** Example: war-torn countries like Syria, Rohingyas of Myanmar.
- **Go back to the basics, to the historically positive nature of migration.**
- **Dispel the stereotypes:** Countries that are not traditional destinations for migrants are going to have to learn to manage an extremely growing economic, social, religious and ethnic diversity.
- Collect and utilize accurate and disaggregated data as a basis for **evidence based policies**.
- Ensure that all migrants have **proof of legal identity and adequate documentation**. Regular processing which ensures the credibility of migrants.
- Enhance **availability and flexibility of pathways for regular migration**. Lack of opportunities of migration leads to illegal migration.

### Conclusion:

While no substitute for development, **migration can be a positive force for development when supported by the right set of policies**. The rise in global mobility, the growing complexity of migratory patterns and its impact on countries, migrants, families and communities have all contributed to international migration becoming a priority for the international community. The **target 10.7 of the 2030 Agenda for Sustainable Development** in which member States committed to cooperate internationally to facilitate safe, orderly and regular migration.



**Q) Discuss the economic importance of Indian ocean region for India. (250 words)**

Reference

**Directive word**

*Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.*

**Key demand of the question.**

*The question wants us to write in detail about the economic significance of the Indian ocean for India. We have to give a complete picture of the importance of the region.*

**Structure of the answer**

**Introduction-** write a few introductory lines about the Indian Ocean Region (IOR). E.g The Indian Ocean basin is of particular importance for India, as the region's most populous country and geopolitical keystone.

**Body-**

*Discuss in points the economic significance of the IOR for India. E.g*

- *First, it enjoys a privileged location at the crossroads of global trade, connecting the major engines of the international economy in the Northern Atlantic and Asia-Pacific. This is particularly important in an era in which global shipping has burgeoned.*
- *Some 36 million barrels per day—equivalent to about 40 per cent of the world's oil supply and 64 per cent of oil trade—travel through the entryways into and out of the Indian Ocean, including the Straits of Malacca and Hormuz and the Bab-el-Mandeb*
- *The Ocean's vast drainage basin is important in its own right, home to some two billion people. This creates opportunities, especially given the high rates of economic growth around the Indian Ocean rim.*
- *The Indian Ocean is rich in natural resources. Forty per cent of the world's offshore oil production takes place in the Indian Ocean basin.*
- *Fishing in the Indian Ocean now accounts for almost 15 percent of the world's total.*
- *Aquaculture in the region has also grown 12-fold since 1980.*
- *Although global fishing is reaching its natural limitations, the Indian Ocean may be able to sustain increases in production.*
- *Mineral resources are equally important, with nodules containing nickel, cobalt, and iron, and massive sulphide deposits of manganese, copper, iron, zinc, silver, and gold present in sizeable quantities on the sea bed.*
- *Indian Ocean coastal sediments are also important sources of titanium, zirconium, tin, zinc, and copper. Additionally, various rare earth elements are present, even if their extraction is not always commercially feasible etc.*

**Conclusion-** based on your discussion, form a fair and a balanced conclusion on the given issue.

**Introduction:**

The Indian Ocean matters today, arguably more than ever. It is a major conduit for international trade, especially energy. Its littoral is vast, densely populated, and comprised of some of the world's fastest growing regions. The Ocean is also a valuable source of fishing and mineral resources. The Indian Ocean basin is of particular importance for India, as the region's most populous country and geopolitical keystone.



**Body:**



The Economic importance of IOR for India includes:

- **Trade and Commerce:**
  - It enjoys a privileged location at the crossroads of global trade, connecting the major engines of the international economy in the Northern Atlantic and Asia-Pacific. This is particularly important in an era in which global shipping has burgeoned.
  - Today, **almost 90,000 vessels in the world's commercial fleet transport 9.84 billion tonnes per year.** This represents an almost four-fold increase in the volume of commercial shipping since 1970.
  - The Indian Ocean has vital sea lanes of communication crisscrossing it and which feeds Asia's largest economies. Around **80 per cent of the world's seaborne oil trade** passes through the choke points of this ocean and therefore it literally connects the east to the west with 40 percent passing through the Strait of Hormuz, 35 percent through the Strait of Malacca and 8 percent through the Bab el-Mandab Strait.
  - The Ocean's vast drainage basin is important in its own right, home to some two billion people. This creates opportunities, especially given the high rates of economic growth around the Indian Ocean rim, including in India, Bangladesh, Southeast Asia, and Eastern and Southern Africa.
  - **95 per cent of India's trade by volume and 68 per cent of trade by value** come via the Indian Ocean.
  - Presence of 13 major ports and over 200 minor ports provide avenues for exports of Indian goods to world.
- **Blue Economy:** The Indian Ocean is rich in natural resources.
  - **Oil and Natural Gas:**
    - Forty per cent of the world's offshore oil production takes place in the Indian Ocean basin.
    - Energy security and resources are absolutely critical. The Indian Ocean Region is immensely rich in that.
    - 28 million barrels per day—or nearly **80 per cent of India's crude oil requirement**—is imported by sea via the Indian Ocean. Taking into account India's offshore oil production and petroleum exports, India's sea dependence for oil is about 93 per cent, according to the Indian Navy.



- India is also the **fourth-largest importer of liquefied natural gas (LNG)**, with about 45 per cent coming by sea.
- India has her own oil rigs in the Indian ocean region. Example: **Bombay high**
- **Minerals:**
- Mineral resources with nodules containing nickel, cobalt, and iron, and massive sulphide deposits of manganese, copper, iron, zinc, silver, and gold present in sizeable quantities on the sea bed.
- Indian Ocean coastal sediments are also important sources of titanium, zirconium, tin, zinc, and copper.
- Additionally, various rare earth elements are present, even if their extraction is not always commercially feasible.
- In **2014**, the **International Seabed Authority** issued licenses for the Indian Ocean ridge, opening up new opportunities for **deep seabed mining**. This region is estimated to have massive reserves of manganese, as well as cobalt, nickel, and copper, all of which are scarce on Indian soil.
- **Placer Deposits** – Vitally important, thorium resources in placer sands of Malabar coast are a promise to Nuclear Energy security. Similarly Placers of Thailand, Indo-China and Australia are source of precious heavy metals critically important for Electronics and semi conductors industry.
- **Fishing and Aquaculture:**
- Fishing in the Indian Ocean now accounts for almost 15 per cent of the world's total.
- Aquaculture in the region has also grown 12-fold since 1980. Although global fishing is reaching its natural limitations, the Indian Ocean may be able to sustain increases in production.
- The largely unregulated overexploitation of its fishery resources. The consequences of over fishing, which is actually largely a result of activity by countries outside the region, could eventually have serious consequences for littoral states that depend heavily on maritime resources to feed their populations and also provide valuable export revenues.
- India captured 4.1 million tonnes of fish in 2008, placing it sixth in the world and its fishing and aquaculture industries employ some 14 million people.
- Fisheries and aquaculture industries are also a **major source of exports**. India's maritime exports grew **55 times** in volume between 1962 and 2012 and fisheries exports now account for Rs. 16,600 crore or about \$2.5 billion.
- **Tourism:**
- Coral atolls in Lakshadweep, Andaman & Nicobar Islands attract many tourists from India as well as abroad. This helps the livelihood of many islanders.

#### **Conclusion:**

Indian Ocean is an “**ocean of economic opportunities**” for India. The security threats posed by State and non-state actors are impeding the progress. The Government initiatives like SAGAR, IORA, Sagarmala etc. should ensure that the fruits of Blue Economy is well reaped.

#### **Q) Indian Diaspora is India's asset in disguise. Elaborate with suitable examples. (250 words)**

##### ***Key demand of the question***

*The question expects us to highlight the strength of the indian diaspora and how they prove to be an asset for the country.*

##### ***Structure of the answer***

*Introduction – Highlight that Indian diaspora is getting influential across the world so much so that there are 285 people of Indian origin in various positions of leadership such as Heads of state and governments, senators, state leaders and members of parliaments.*



### **Body**

*Discuss the length and breadth of Indian diaspora*

- *The fact that Indian diaspora is spread across the length and breadth of the world*
- *And they are contributing in significant ways in corporates, to countries etc*
- *Discuss the ways in which they are an asset for India*
- *A diaspora estimated at over 30 million people fills mainstream roles and responsibilities in their adopted countries, helping shape the destiny of these countries. The President of Singapore, Governor-General of New Zealand and prime ministers of Mauritius and Trinidad and Tobago were all of Indian descent.*
- *Between 1995 and 2005, over a quarter of immigrant-founded engineering and IT companies in the United States were started by Indians, according to a study by Duke University and the University of California. And Indian expats owned an estimated 35 per cent of the country's hotels.*
- *According to the 2000 U.S. census, Indians had median annual earnings of \$51,000, compared to \$32,000 for Americans overall. About 64 per cent of Indian-Americans have a bachelor's degree or more, compared to 28 per cent of Americans overall, and 44 per cent for all Asian-American groups*
- *The Diaspora population bring technical and domain expertise to domestic startups and often act as angel investors. Diaspora Indian faculty abroad volunteer time and resources to help faculty on Indian campuses improve the quality of education — as in the case of member institutions of the Indo Universal Collaboration of Engineering Education.*

**Conclusion – Give your view and discuss way forward.**

### **Introduction:**

The Indian diaspora has grown and become more influential in the past 2 decades. India now has the world's largest diaspora, a new study on **international migration by the United Nations** has reported. More than **30 million persons of Indian origin** live abroad, a number greater than the combined populations of Zimbabwe and Kuwait. 285 people of Indian origin in various positions of leadership such as Heads of state and governments, senators, state leaders and members of parliaments.

### **Body:**

The swiftly growing diaspora is an asset to India. The common perception of NRIs and Diaspora is that they are a product of brain-drain, migrants due to better life conditions in developed countries etc. However, in reality they are a boon to India. Their presence length and breadth varies across the countries of the world.

- **High Achievers:**
  - From Google CEO Sundar Pichai to Nobel laureate scientist Har Gobind Khorana and Microsoft CEO Satya Nadella to world's one among the leading music conductors Zubin Mehta, the list of NRIs and their contribution to the world goes endlessly.
- **Influential Positions:**
  - A diaspora estimated at **over 30 million people** fills **mainstream roles and responsibilities** in their adopted countries, helping shape the destiny of these countries.
  - The President of Singapore, Governor-General of New Zealand and prime ministers of Mauritius and Trinidad and Tobago were all of Indian descent.
- **Pressure groups:**
  - When people of Indian origin are held in **high esteem, respect for and understanding of the country go up.**
  - The **influential Indian diaspora** affects not just the popular attitude, but also government policies in countries where they live, to the benefit of India.
  - India benefits tremendously through these people in luring large multinational companies as well as entrepreneurial ventures.



- Example: lobbying for the US-India Civilian Nuclear Agreement Bill in 2008
- **Entrepreneurs across globe:**
  - Between 1995 and 2005, over a quarter of immigrant-founded engineering and IT companies in the United States were started by Indians, according to a study by Duke University and the University of California.
  - And Indian expats owned an estimated 35 per cent of the country's hotels. About 800 companies are owned by Indians in the UK.
  - These help in providing jobs and livelihoods to many people across world.
- **Remittances:**
  - A World Bank report released last year said, India was the largest remittance-receiving country in the world, with an estimated \$69 billion in 2015.
- **Soft Power:**
  - The spread of Yoga, Ayurveda, Indian spiritualism, Bollywood, Indian cuisine across the world has made India famous.
  - It has even led to revival of many lost relationships with many countries.
  - Example: Central Asian countries like Kazakhstan and Middle Eastern countries.
- **Humanitarian Assistance:**
  - There are many instances where diaspora has stood up for their Indian kins in times of disaster.
  - Example: during the recent Kerala floods, immense help in the form of men, material and money from diaspora was given. *Indian diaspora residing in China's Shanghai has contributed Rs. 32.13 lakh to the Chief Minister's distress relief fund for Kerala floods.*

#### **Asset in Disguise:**

- The Diaspora population bring technical and domain expertise to domestic start-ups and often act as angel investors.
- Diaspora Indian faculty abroad volunteer time and resources to help faculty on Indian campuses improve the quality of education — as in the case of member institutions of the Indo Universal Collaboration of Engineering Education.
- This was reflected in advancing projects whether through government arrangements or private commercial deals related to Make in India, Skill India, Digital India, Start Up India as well as those aimed at improving our infrastructure and transportation links and fostering all round sustainable development in urban or energy sectors.
- The diaspora can step up and act as Indian 'ambassadors', as it is insufficient and ineffective for a country or its missions abroad to rely only on press releases to change public opinion.
- The diaspora can provide the requisite strategic impulse, which makes it all the more important to unlock their potential.

#### **Conclusion:**

In recent times, the government has laid a strong foundation by making diplomacy people-centric with government's constant interaction with the Indian diaspora. The Indian diaspora is the bridge between their nation and India where they can grow simultaneously for betterment of their citizens. The diaspora can provide the requisite strategic impulse, which makes it all the more important to unlock their potential.

**Q) Having one of the largest diaspora in the world presents itself with its own opportunities and challenges. Discuss. (250 words)**

#### Reference

##### **Why this question**

*India has one of the largest diaspora in the world and it receives one of the largest amounts of remittances. Besides, the growing role of Indians as well as India across the world makes it essential for us to discuss the opportunities as well as challenges posed by Indian diaspora.*

##### **Directive word**

*Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.*



### ***Key demand of the question.***

*The question wants us to write in detail about the opportunity presented by Indian diaspora for India as well as the challenges posed by it.*

### ***Structure of the answer-***

***Introduction– write a few introductory lines about the Indian diaspora. E.g mention the number of Indian diaspora and countries where most of them are concentrated etc.***

### ***Body-***

***Discuss what opportunities does Indian diaspora bring for India. E.g***

- Huge corpus of remittances which further aid in socio-economic development and poverty reduction.
- Spending on healthcare has an important labour market implication as it increases labour productivity.
- Trans-national entrepreneurship and diffusion of technology, experience and exposure.
- Diaspora diplomacy etc.

***Discuss what are the challenges involved therein. E.g***

- support of the diaspora is neither automatic nor continuous, and their interests need not be India's priorities. For example, the Indian community in the US was not vocal enough in criticising President Donald Trump's proposal to restrict the H-1B visa programme that has benefited many Indians.
- Another challenge is that remittances may not always be used for beneficial purposes. For instance, India faced problems due to foreign funding for extremist 29 movements like the Khalistan movement.
- Moreover, the diaspora is unfair in expecting India to stand by them at all times of need etc.

***Conclusion– based on your discussion, form a fair and a balanced conclusion on the given issue.***

### **Introduction:**

The Indian diaspora around the world now stands at 31.2 million, of which PIOs were 17 million and NRIs were 13 million, spread across 146 countries in the world. The US, Saudi Arabia, the United Arab Emirates, Malaysia, Myanmar, the UK, Sri Lanka, South Africa and Canada host an Indian diasporic population of at least one million each.

### **Body:**

The opportunities that Indian diaspora brings for India are as follows.

- They serve as an important 'bridge' to access knowledge, expertise, resources and markets for the development of the country of origin with the rest of the world.
- Indian Diaspora is an important part of India's "soft diplomacy" or "diaspora diplomacy". For example, Indian Diaspora played a critical role in the fructification of Indo-US Nuclear deal.
- They have also contributed to the growth and development of the country of their residence. For example, Silicon Valley represents the success of Indians.
- The Indian Diaspora has played an important role in the field of Science & Technology.
- **Trans-national entrepreneurship:** They are a significant source of trade and investment in India.
- Source of large inflows of remittances, which has been helping balance the current account. It further aids in socio-economic development and poverty reduction. According to the World Bank, Indian Diaspora is the largest earner of remittances in the world currently.
- **Diffusion of experience and exposure:** They spread the Indian Culture and traditions abroad benefitting India in general. **Example:** Yoga, Ayurveda, Indian Cuisine etc.
- NRI's also finance educational institutions or businesses, which again adds to the economy's sectors. Reports suggest that these NRI's are a major source of Foreign Direct Investment, Market Development (Outsourcing) and technology transfer, that boost the assets of the fiscal system, every day.



However, there are many challenges posed by the diaspora:

- **West Asia**
  - Low oil prices owing to Shale gas boom and slower global growth is resulting in job cuts for Indians.
  - Rising instability due to Shia -Sunni conflicts and radical Islamism is a direct threat to security of Indians.
  - Fierce competition from skilled labour from Philippines and cheap labour from Nepal.
  - Regressive and medieval policies like employer seizing the travel documents upon arrival known as Kafala labour system is exploitative.
- **US, Canada & UK:**
  - Discriminative practices owing to a racist, colonial mindset still persists. This makes it difficult to secure jobs and work visas.
  - Support of the diaspora is neither automatic nor continuous, and their interests need not be India's priorities. **Example:** the Indian community in the US was not vocal enough in criticising President Donald Trump's proposal to restrict the H-1B visa programme that has benefited many Indians. Revision of visa norms in UK post Brexit might hit the Indian Diaspora hard, specially the IT professionals
  - Disparity in jobs and racial abuse of Sikh and Muslim community due to terrorist branding Cultural integration due to various eating preferences (beef eating), consumerism and nuclear society
- **Dual Citizenship and Voting Rights:**
  - Majority of Indian Diaspora want to retain their Indian citizenship along with the citizenship of the country of their residence.
  - Wealthier diaspora from the US, Canada and the UK want dual citizenship and voting rights.
- **Misutilization of Remittances:**
  - Another challenge is that remittances may not always be used for beneficial purposes. **Example:** India faced problems due to foreign funding for extremist movements like the Khalistan movement.
- **Brain-Drain:**
  - Indians prefer to do higher studies abroad and work as scientists and economists abroad causing India loss of talent in areas of research and development.
- **Evacuation Issues:**
  - With increasing political volatile situation in the West Asia and few African countries, there are imminent challenges involved in **rescuing the Diaspora in distress**.
  - The recent instances of **Operation Raahat in Yemen, Operation Sankat Mochan in South Sudan** show the high risks involved in such rescue operations.
  - The **rehabilitation of such rescued people** is also a challenge back in India.
- **Reducing trends:**
  - Reports suggest that the **e-Migrate system and the Minimum Referral Wages policy** have been detrimental to India as companies now find it easier to hire labour from countries like Bangladesh and Pakistan.
  - It was found that in 2016 the number of Indian workers who went to work fell by half in Saudi Arabia and by 33 percent in other Gulf countries, while the number of expats in the regional actually increased by 12.17 percent

### Conclusion:

The diasporic populations have become an increasingly important factor in international politics. The Indian diaspora, for their part, have many of the elements required for success — they are a “**model minority**”, they are **affluent**, and they are **growing in number**. Many of them are willing to exert their influence in electoral politics and are engaged in multinational businesses, and are thus highly visible. This makes for a ripe environment for India to **aggressively tap on their potential**.



**Topic- Distribution of key natural resources across the world (including South Asia and the Indian sub-continent); factors responsible for the location of primary, secondary, and tertiary sector industries in various parts of the world (including India)**

**Q) Afghanistan's resources could make it the richest mining region on earth. Discuss. (250 words)**

Reference  
wikipedia

### **Directive word**

**Discuss-** this is an all-encompassing directive which mandates us to write in detail about the key demand of the question. we also have to discuss about the related and important aspects of the question in order to bring out a complete picture of the issue in hand.

### **Key demand of the question.**

The question wants us to write in detail about the mineral resources of Afghanistan. We have to discuss about the potential mineral resources and the quantum anticipated to be economically viable in the near future.

### **Structure of the answer**

**Introduction-** write a few introductory lines about Afghanistan. E.g mention the insurgency and foreign involvement in Afghanistan including that of India.

### **Body-**

Discuss in detail about the mineral wealth of Afghanistan. E.g

Afghanistan, often dismissed in the West as an impoverished and failed state, is sitting on \$1 trillion of untapped minerals.

It is estimated that forty million years ago the tectonic plates of India-Europe, Asia and Africa collided in a massive upheaval. This upheaval created the region of towering mountains that now includes Afghanistan.

This diverse geological foundation has resulted in a significant mineral heritage.

The sheer size of the deposits – including copper, gold, iron and cobalt as well as vast amounts of lithium, a key component in electronics holds out the possibility that Afghanistan, ravaged by decades of conflict, might become one of the most important and lucrative centres of mining in the world.

Afghanistan could become the “Saudi Arabia of lithium”, with one location in Ghazni province showing the potential to compete with Bolivia, which, until now, held half the known world reserves.

Considerably more work needs to be carried out before it can be properly called an economic deposit that can be extracted at a profit.

Much more ground exploration, including drilling, needs to be carried out to prove that these are viable deposits which can be worked etc.

**Conclusion-** based on your discussion, form a fair and a balanced conclusion on the given issue.

### **Introduction:**

Afghanistan, a land-locked country, is a north-western neighbour of India. More than two decades of almost constant war left a terrible legacy. Insurgency by the Taliban and counter-action by US Army, lack of stable State and involvement of many other players for their commercial and strategic interests has undermined the bountiful resources of Afghanistan.

### **Body:**

Afghanistan is blessed with huge mineral wealth which remains unexplored to a large extent. It is dismissed in the West as an impoverished and failed state.



## Geomorphology of Afghanistan:

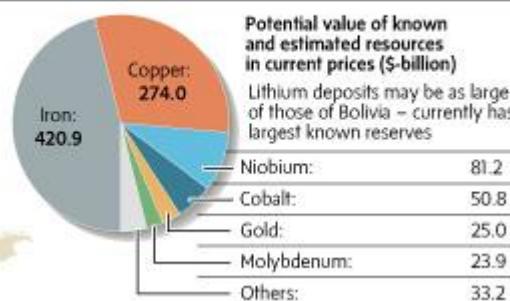
- It is estimated that forty million years ago the tectonic plates of India-Europe, Asia and Africa collided in a massive upheaval. This upheaval created the region of towering mountains that now includes Afghanistan.
- This diverse geological foundation has resulted in a significant mineral heritage.

### Huge mineral wealth discovered in Afghanistan

U.S. geologists have reportedly discovered nearly \$1 trillion worth of untapped mineral deposits in Afghanistan. The deposits, which include huge veins of iron, copper, gold, cobalt and lithium, are enough to turn the impoverished nation into one of the world's leading mineral centres.

■ Priority areas for mineral development

0 160 KM



**Aynak copper mine:**  
Two Chinese firms investing \$4-billion to start mining in one of world's biggest untapped copper deposits, estimated to be worth up to \$88-billion.

**Hajigak iron deposit:**  
Contract to mine estimated 1.8 billion tons of high-quality iron ore expected to open for international bidding this year



GRAPHIC NEWS/ THE GLOBE AND MAIL  
SOURCES: NEW YORK TIMES, U.S. GEOLOGICAL SURVEY,  
AFGHANISTAN GEOLOGICAL SURVEY

## Mineral Wealth of Afghanistan:

- According to new calculations from surveys conducted jointly by the Pentagon and the US Geological Survey, there is \$1 trillion worth of untapped minerals.
- The mineral deposits include copper, gold, iron and cobalt as well as vast amounts of lithium.
- The lithium reserves are so high that Afghanistan could become the “**Saudi Arabia of lithium**”, with one location in Ghazni province showing the potential to compete with Bolivia, which, until now, held half the known world reserves.
- Afghanistan has over 1400 mineral fields containing barite, chromite, coal, copper, gold, iron ore, lead, natural gas, petroleum, precious and semi-precious stones, salt, sulfur, talc, and zinc, among many other minerals.
- Gemstones include high-quality emerald, lapis lazuli, red garnet and ruby.
- Afghanistan’s significance from an energy standpoint stems from its geographical position as a potential transit route for oil and natural gas exports from Central Asia to the Arabian Sea. This potential includes the construction of the Trans-Afghanistan Pipeline gas pipeline.
- The first Afghan oil production began in October 2012

However, Afghanistan has not been able to capitalize on the mineral wealth due to

- Developing a mining industry would, of course, be a long-haul process.
- Lack of Investors and private parties due to the fledgling socio-political environment.
- Ground exploration, including drilling, needs to be carried out to prove that these are viable deposits which can be worked
- Political instability and weak or nascent democratic institutions are another set of problems.
- Poor infrastructure to transport the mined minerals.

**Importance for India:** Indian companies have obtained licenses to mine iron-ore from **Hajigak mines (world's second-largest reserves of the mineral)**. India has also invested in building infrastructure namely the Zaranj-Delaram highway which links Afghanistan to Chahbahar port and part of the International North-South corridor.



### Way Forward:

- Strong political environment which can make policies and ensure the safety of private investors.
- Work on the infrastructure like regional railway network and energy trans-mega regional energy and gas pipelines are the other areas of priority.
- Regional groupings such as 'Heart of Asia', SAARC etc. should be strengthened.

### Conclusion:

The political stability in Afghanistan is imperative to India's security. The economic development in the region will in-turn reduce the political instability. Hence, it is vital to sustainably mine the huge mineral reserves of Afghanistan.

**Q) With growing scarcity of fossil fuels, the atomic energy is gaining more and more significance in India. Discuss the availability of raw material required for "the generation of atomic energy in India and in the world" (250 words)**

#### *Key demand of the question*

*The question expects us to explain the raw material needed for generation of atomic energy and explain about the distribution of the resource.*

#### *Structure of the answer*

**Introduction – Explain that countries like India see nuclear energy as a crucial part of their energy matrix.**

#### *Body*

*Explain about the Indian three stage nuclear programme – Indian Nuclear power program has three stage, first stage requires Uranium, second stage- creates plutonium from Uranium and third stage requires thorium. Therefore, among all the radioactive elements- uranium and Thorium are the most critical for generation of Nuclear Energy.*

*Discuss about the distribution of uranium and thorium*

**Conclusion – Explain that India has diversified its procurement agreements with a large number of countries**

### Introduction:

India imports almost 80% of her oil needs, generates 60% of her electricity from coal-based thermal power plants. However, these being fossil fuels, they are dwindling at quick rates. The geo-political scenario is volatile leading to energy insecurity of India. Many developing countries thus see nuclear energy as a potential for their energy security.

### Body:

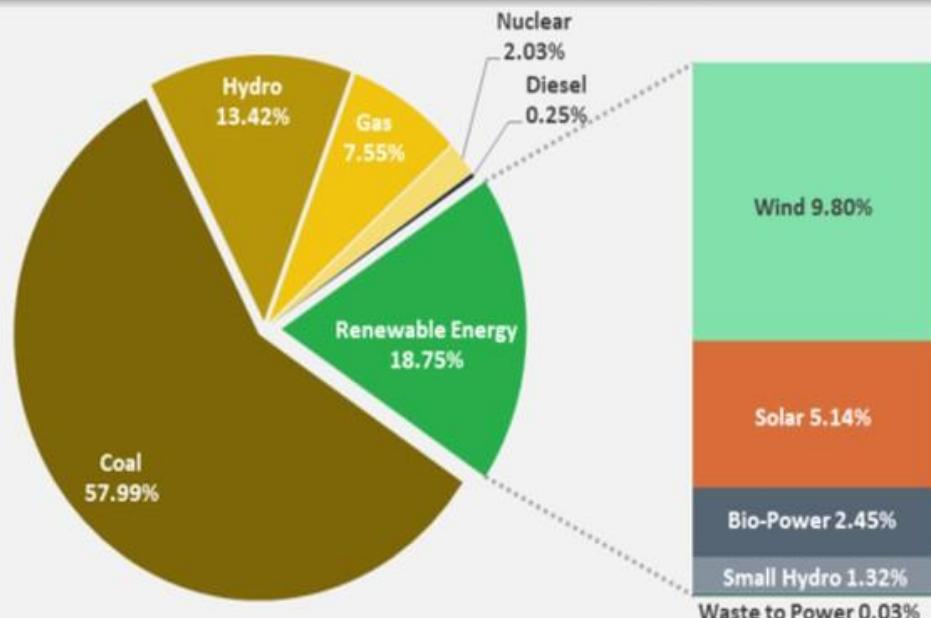
#### **Energy matrix of India:**

India's current generation of power is about 2.03% which is very less. This is despite having 21 operational nuclear power plants across the country. Post Independence, three-stage nuclear programme was chalked out by Homi Jehangir Bhabha to secure India's long-term energy independence. The ultimate focus of the programme is on enabling the thorium reserves of India to be utilized in meeting the country's energy requirements.



### India - Cumulative Installed Power Capacity Mix (%)

Renewables comprise almost 19% of India's total installed capacity, with solar accounting for over 5%. Among renewables, solar accounts for over 27% of the installed capacity

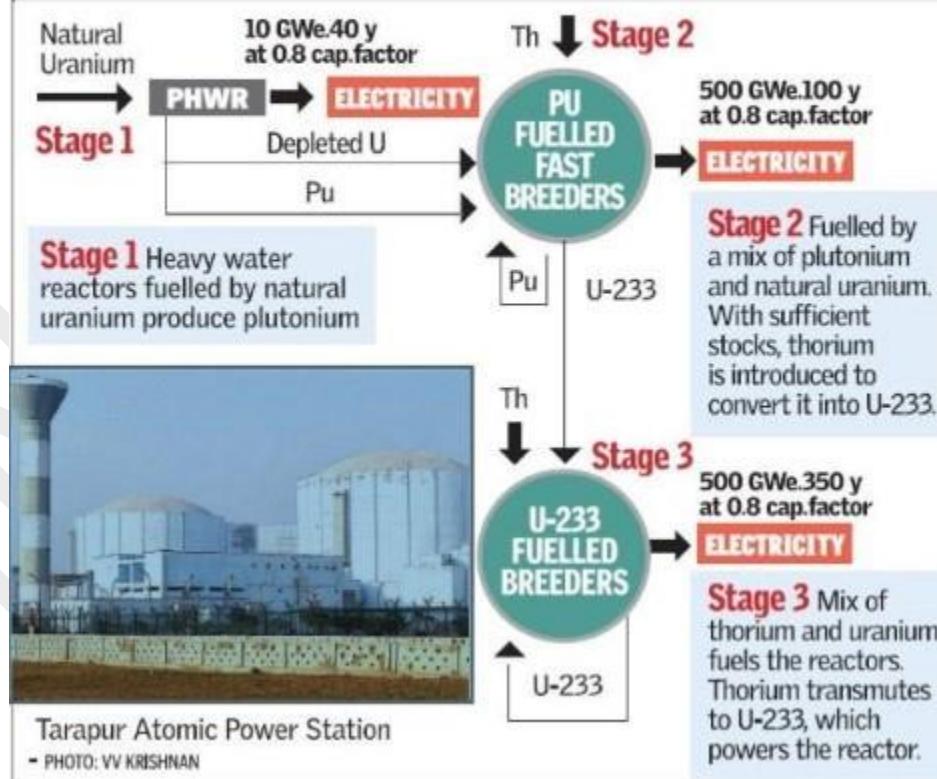


Data from CEA, MNRE (*Installed Capacity as on 30 Sep 2017*)

Source: Mercom India Research

### INDIA'S THREE-STAGE NUCLEAR PROGRAMME

Homi Bhabha envisioned India's nuclear power programme in three stages to suit the country's low uranium resource profile





# Three Stage Nuclear Power Programme



## Stage - I PHWRs

- 14 - Operating
- 4 - Under construction
- Several others planned
- Scaling to 700 MWe
- Gestation period has been reduced
- POWER POTENTIAL  $\approx$  10,000 MWe

## LWRs

- 2 BWRs Operating
- 2 VVERs under construction

## Stage - II Fast Breeder Reactors

- 40 MWth FBTR - Operating since 1985
- Technology Objectives realised
- 500 MWe PFBR - Under Construction
- POWER POTENTIAL  $\approx$  530,000 MWe

## Stage - III Thorium Based Reactors

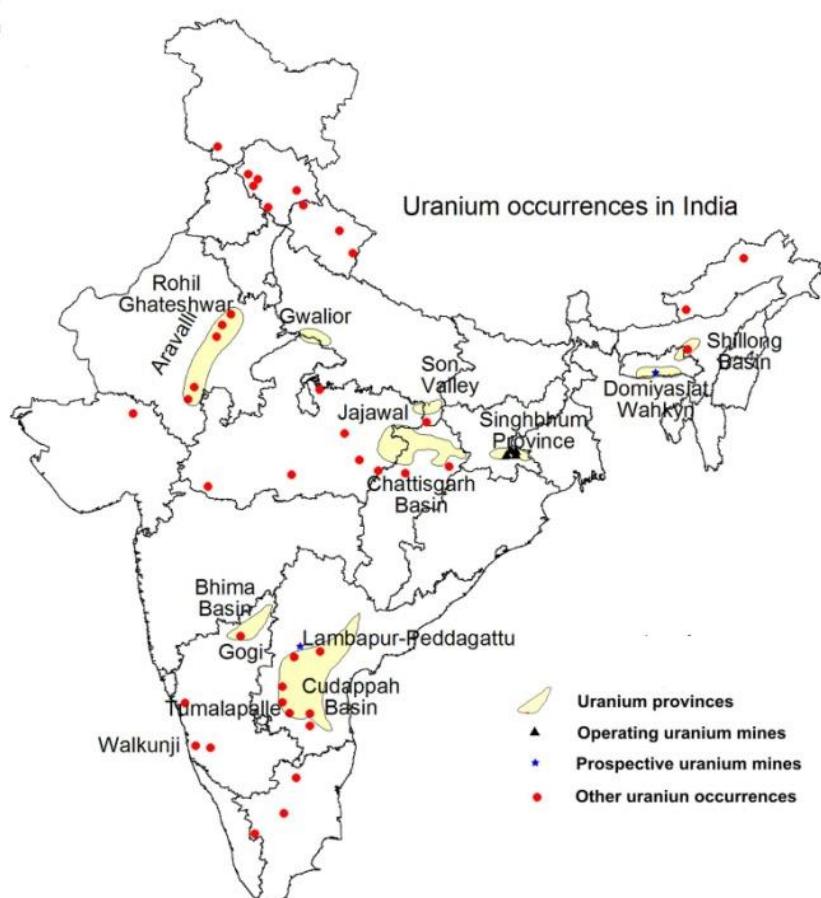
- 30 kWth KAMINI- Operating
- 300 MWe AHWR - Under Development

**POWER POTENTIAL IS VERY LARGE**

Availability of ADS can enable early introduction of Thorium on a large scale

3

Distribution of Uranium and Thorium in India:



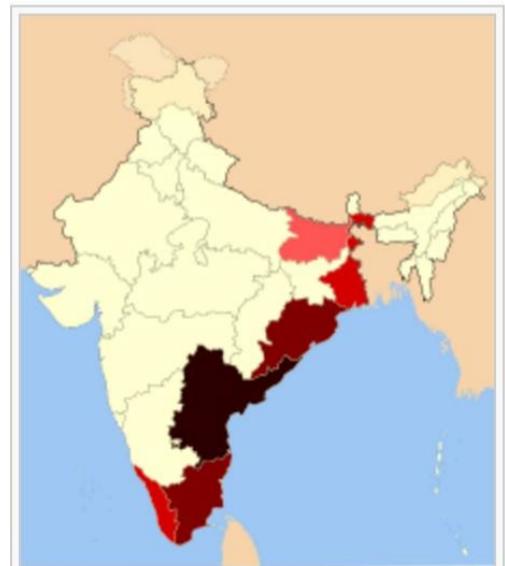


According to the Atomic Minerals Directorate for Exploration and Research (AMD), a constituent Unit of the Department of Atomic Energy (DAE), India has 10.70 million tonnes of Monazite which contains 9,63,000 tonnes of Thorium Oxide ( $\text{ThO}_2$ ).

India's thorium deposits, estimated at 360,000 tonnes, far outweigh its natural uranium deposits at 70,000 tonnes. The country's thorium reserves make up 25 per cent of the global reserves. It can easily be used as a fuel to cut down on the import of Uranium from different countries.

Despite presence of Uranium and Thorium reserves, our nuclear energy production is still at low levels. This is due to.

- Ever since India accessed to the global nuclear fuel market in 2008, the country has been one of the major nuclear fuel buyers. India imports most of the required Uranium from countries including Russia, Kazakhstan, and France and lately the deal with Canada and Australia have further enhanced India's avenues to get Uranium from overseas.
- Due to disturbed supply of Uranium from different countries, India's nuclear power plants haven't been able to deliver the projected amount of electricity. And the contribution of nuclear power plants was least as it failed to achieve even 50 per cent of the target in first four years of the 12th Five Year Plan.
- Uranium extracted from the ore is first stored as uranium oxide concentrate, better known as yellow cake, when is then enriched into Uranium-235 isotope, a fuel that can be put as pellets in the nuclear fuel assembly. As a result it can't be used in reactors directly. We are importing the yellow cakes.
- Much like uranium, thorium is also a fertile substance, but not a fissile substance by itself. It requires work to make a usable in a nuclear reactor. The process through which Thorium can be made usable in the reactor is a three stage process.



India's thorium is mostly found in a contiguous belt formed by its eastern coastal states.

2012 reserve estimates:<sup>[9]</sup>

<span style="background-color: black; width: 10px; height: 10px; display: inline-block;"></span>	35% (Andhra Pradesh, excluding Telangana)
<span style="background-color: darkred; width: 10px; height: 10px; display: inline-block;"></span>	15-20% (Tamil Nadu, Odisha)
<span style="background-color: red; width: 10px; height: 10px; display: inline-block;"></span>	10-15% (Kerala, West Bengal)
<span style="background-color: lightcoral; width: 10px; height: 10px; display: inline-block;"></span>	0-5% (Bihar)

### Way Forward:

- India's signing of nuclear deal with the USA in 2008 has given her opportunities to deal with other nuclear powers like France, Japan, Russia etc. India has diversified its procurement agreements with a large number of other countries too to step up the power generation from nuclear sources.

**Q) Analyze the factors for the highly decentralized cotton textile industry in India ? (250 words)**

#### ***Key demand of the question***

*The question expects us to explain what do we mean by decentralised cotton textile industry in India. Next we need to explain the reasons why cotton textile industry in India is decentralised in India*  
*Directive word*

**Analyze – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary.**  
**Structure of the answer**

**Introduction – Mention that At present, cotton textile industry is largest organised modern industry of India. There has been a phenomenal growth of this industry during the last four decades. About 16 per cent of the industrial capital and over 20 per cent of the industrial labour of the country is engaged in this industry.**



**Body – Explain that initially textile industry developed in certain major centres such as Mumbai, Surat etc which had all the factors that are responsible for location of textile industries. Mention factors such as easy transportation, cheap labour, closer to market etc. Next, discuss the reasons for decentralization of cotton textile industry such as – Dispersal of industry from the old nuclei started after 1921 with railway lines penetrating into the peninsular region. New centres like Coimbatore, Madurai, Bangalore, Nagpur, Indore, Solapur and Vadodara were favourably located in respect to raw material, market and labour than places of original locations. This industry also reached some places with some additional advantages, such as nearness to coal (Nagpur), financial facilities (Kanpur) and wide market with port facilities (Kolkata); Dispersal of cotton textile industry was further boosted with the development of hydroelectricity. The growth of this industry in Coimbatore, Madurai and Tirunelveli is largely due to the availability of hydroelectricity from Pykara dam. The industry also tended to shift from areas of high labour cost to those with low labour cost. The labour cost factor played a crucial role in establishing this industry at Madurai, Tirunelveli, and Coimbatore etc.**

### Introduction:

Cotton plays an important role in the Indian economy as the country's textile industry is predominantly cotton based. India is one of the largest producers as well as exporters of cotton yarn. The textile industry is also expected to reach US\$ 223 billion by the year 2021. The states of Gujarat, Maharashtra, Telangana, Andhra Pradesh, Karnataka, Madhya Pradesh, Haryana, Rajasthan, and Punjab are the major cotton producers in India. There has been a phenomenal growth of this industry during the last four decades. About 16 per cent of the industrial capital and over 20 per cent of the industrial labour of the country is engaged in this industry.

### Body:

India has a glorious tradition of producing excellent quality cotton textiles. Before the British rule, Indian hand spun and hand woven cloth already had a wide market. The **Muslins of Dhaka, Chintzes of Masulipatnam, Calicos of Calicut and Gold-wrought cotton of Burhanpur, Surat and Vadodara** were known worldwide for their quality and design. But the production of hand woven cotton textile was expensive and time consuming. Hence, traditional cotton textile industry could not face the competition from the new textile mills of the West, which produced cheap and good quality fabrics through mechanized industrial units.

A host of factors such as low labour costs, government subsidies , irrigation, proximity to ports led to the spread of cotton textile industry.

### Pre-1920's:

- Traditionally, cotton industry in India was largely concentrated in cotton growing areas of peninsula, Like Gujarat (Surat), Maharashtra (Mumbai).
- These areas had advantages of **proximity of market, capital facility, cheap labour, proximity to port facility and favourable humid climate**.
- But cotton is **lightweight, non-perishable material**, humidity can be created artificially and there is **hardly any weightloss** during production.
- As a result, **proximity to raw material becomes non-critical factor** in location.
- Production can be carried out anywhere with **cheap labour, energy and water supply is available for dyeing**.

### Post-1920's:

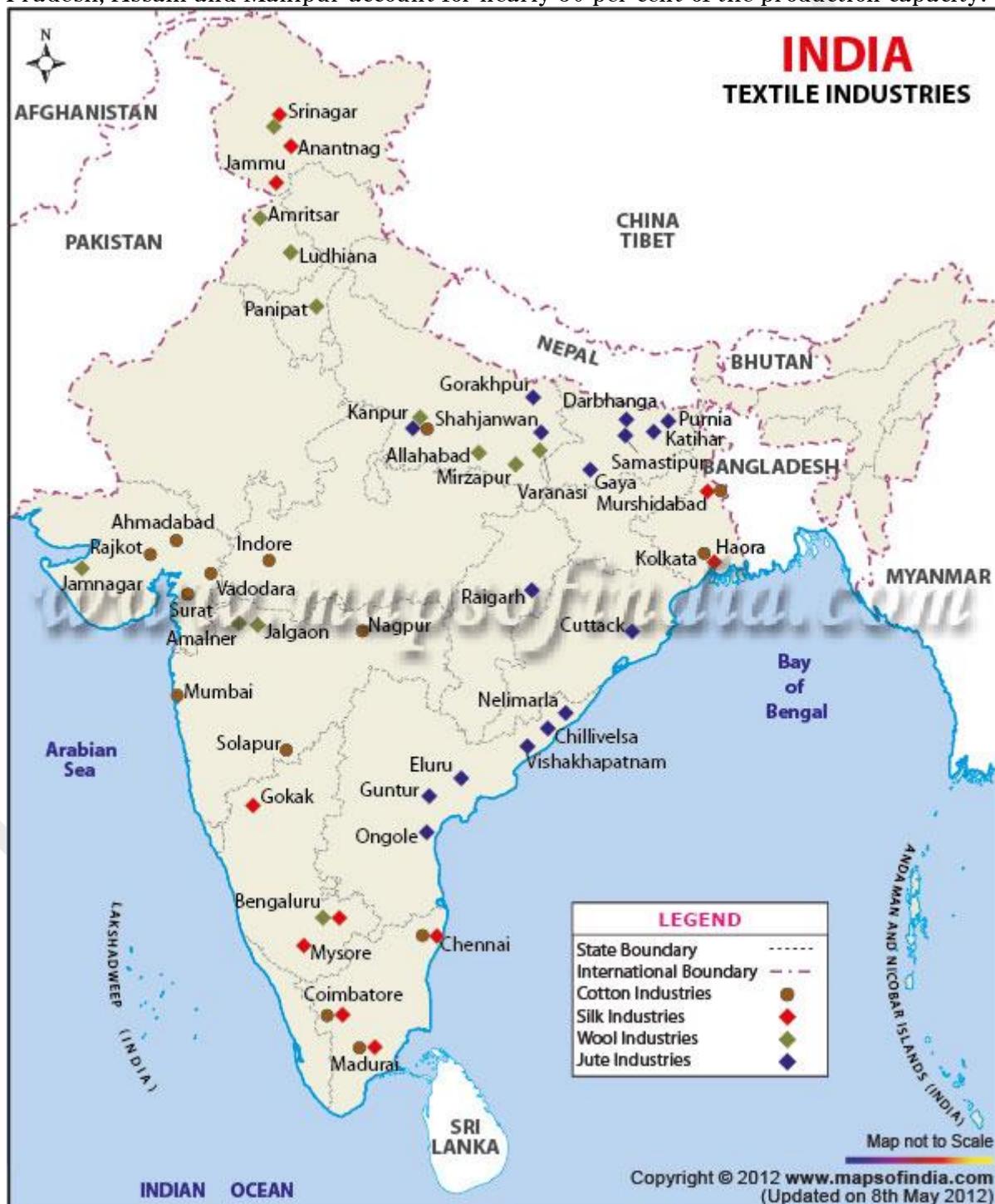
- Dispersal of industry from the old nuclei started after 1921 with railway lines penetrating into the peninsular region.
- Gradually industry shifted towards small towns and cities. Example: centres like Coimbatore, Madurai, Bangalore, Nagpur, Indore, Solapur ,Vadodara, Jaipur, Jodhpur, Indore, Amritsar.
- These were favourably located in respect to raw material, market and labour than places of original locations.
- This industry also reached some places with some additional advantages, such as nearness to coal (Nagpur), financial facilities (Kanpur) and wide market with port facilities (Kolkata).



- Dispersal of cotton textile industry was further boosted with the development of hydroelectricity. The growth of this industry in Coimbatore, Madurai and Tirunelveli is largely due to the availability of hydroelectricity from Pykara dam.

#### Post-Independence:

- The industry also tended to shift from areas of high labour cost to those with **low labour cost**. The labour cost factor played a crucial role in establishing this industry at Madurai, Tirunelveli, and Coimbatore.
- Government Incentives: Handloom industry considered **highly labour-intensive, beneficial to village economy and women empowerment**. Therefore government aids them with measures such as Integrated Village Handloom Development scheme and National Silk Yarn Scheme.
- Handloom sector employs **more than 65 lakh people** and contributes to **15 % of total textile productions**. They are widely distributed throughout the country, states of Tamil Nadu, Uttar Pradesh, Assam and Manipur account for nearly 50 per cent of the production capacity.





## Conclusion:

A huge population is dependent on growing of cotton as well as textile industry. The labour-intensiveness, low-capital and high export incentives, urbanization and demand changing fashion has led to setting up of many decentralised textile centers.

**Q) What are the major regions in India that produce oilseeds? Examine the reasons for India's dependence on imports of oilseeds and what measures should be taken in this regard ? (250 words)**

### **Key demand of the question**

*The question expects us to first shed light on the oilseed production of India and thereafter examine whether India is depended on imports of oilseeds and the reasons for it. We need to provide suggestions on how to improve the situation wrt imports.*

### **Directive word**

**Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .**

### **Structure of the answer**

**Introduction – Discuss the kind of region required for production of oilseeds and the major oilseed produced in India.**

### **Body**

*Explain that At present, India's largest oilseed producing state is Gujarat, thanks to its position as top groundnut producing state of India. Rajasthan is India's top Rapeseed & Mustard producing state, followed by Madhya Pradesh and Haryana. Almost half (48.12%) of Rapeseed and Mustard is produced by only Rajasthan. India's top Soyabean producing state is Madhya Pradesh with a share of 44% in India's total production of this protein rich crop. Among other oil crops, Karnataka is largest producer of Sunflower.*

- *Highlight that huge demand-supply gap exists and India is number one edible oil importer of the world. The 60-65% import dependency worsens during the unfavorable monsoon years*
- *Discuss the region for dependence on imports – domestic demand for vegetable oils and fats has been rising rapidly at the rate of 6% per year but domestic output has been increasing at just about 2 per cent per annum. In India, the average yields of most oilseeds are extremely low as compared to those other countries of the world. The cultivation of oilseeds in India is in high risk regions where there are uncertain returns on the investments.*

### **Suggest way forward**

- *Bringing additional oilseed areas under irrigation*
- *Promotion of modern crop technology and better dry farming etc*

### **Conclusion – Give your view and discuss way forward.**

## Introduction:

India holds a significant share in world oil seed production. The oilseed accounts for 13% of the Gross Cropped Area, 3% of the Gross National Product and 10% value of all agricultural commodities. The diverse agro-ecological conditions in the country are favourable for growing 9 annual oilseed crops, which include 7 edible oilseeds (groundnut, rapeseed & mustard, soybean, sunflower, sesame, safflower and niger) and two non-edible oilseeds (castor and linseed). Oilseeds cultivation is undertaken across the country in about 27 million hectares mainly on marginal lands, of which 72% is confined to rainfed farming.

**Body:****Three Largest Oilseeds Producing States of India during 2015-16\***

Groundnut	Gujarat	2.36
	Rajasthan	1.06
	Tamil Nadu	0.88
	<b>All - India</b>	<b>6.77</b>
Rapeseed & Mustard	Rajasthan	3.27
	Haryana	0.81
	Madhya Pradesh	0.70
	<b>All - India</b>	<b>6.82</b>
Soyabean	Madhya Pradesh	4.91
	Maharashtra	2.10
	Rajasthan	1.00
	<b>All - India</b>	<b>8.59</b>
Sunflower	Karnataka	0.17
	Haryana	0.04
	Andhra Pradesh	0.02
	<b>All - India</b>	<b>0.33</b>
<b>Total Oilseeds</b>	Madhya Pradesh	6.24
	Rajasthan	5.71
	Gujarat	4.10
	<b>All - India</b>	<b>25.30</b>

**Production : Million Tonnes; Source: Agricultural Statistics at a glance 2016**

The major regions in India that produce Oilseeds are:

- India's largest oilseed producing state is **Gujarat**, thanks to its position as **top groundnut producing state** of India.
- Rajasthan is India's top Rapeseed & Mustard producing state, followed by Madhya Pradesh and Haryana. Almost half (48.12%) of Rapeseed and Mustard is produced by only Rajasthan.
- India's top Soyabean producing state is Madhya Pradesh with a share of 44% in India's total production of this protein rich crop.
- Among other oil crops, Karnataka is largest producer of Sunflower.

Despite such huge production of oilseeds, India's dependence on imports of oilseeds is increasing by the day. India's vegetable oil imports crossed 14.5 million tonnes in 2016, worth around Rs 66,000 crores or around US \$10 billion. About 60 per cent of the edible oil-related imports are of palmolein, with the remaining made up by soybean, sunflower and rapeseed. The reasons for the same are:

- **Demand-supply gap:** Huge demand-supply gap exists and India is number one edible oil importer of the world. The **60-65% import dependency** worsens during the unfavourable monsoon years.
- **Rising demand:** Domestic demand for vegetable oils and fats has been rising rapidly at the rate of 6% per year but domestic output has been increasing at just about 2 per cent per annum.
- **Unhealthy dietary habits:** The **WHO recommended** annual per capita oil consumption is **10.5 kgs**, **Indians consume 14.8 kgs**. Not enough effort is being put to curb unhealthy dietary habits,



or ensuring that those who consume lower than recommended levels, get their share of edible oil through the **Public Distribution System at subsidised prices**.

- **Poor Agricultural Planning:** Mustard experts point out that on at least 2 million hectares of paddy land in India, which remains fallow after the monsoon season of paddy cultivation, **relay cropping of mustard** can be taken up which will use residual moisture, and could yield an additional 3.5 to 4 million tonnes of rapeseed-mustard. There is proof of concept in place already in non-conventional mustard-growing areas.
- **Low yield:** In India, the average yields of most oilseeds are extremely low as compared to those other countries of the world.
- **Rain-fed cultivation:** Most of oilseed production is rain-fed and high risk regions where there are uncertain returns on the investments.
- **Failure of Oilseed missions after 2007-08:** The Oilseeds Mission in the 1980s and 1990s increased the area as well as yield of oilseeds impressively. As a result, up until 2007-08, **India's edible oil production exceeded its imports**. Post that, the mission has poor direction with low output.
- **Non-adoption of GM crops:** The lack of conclusive evidence from GEAC, fears of corporate monopoly and illiteracy of farmers are hindering the adoption of GM crops. The proven facts of higher yield are being missed.

The measures to increase our oilseed production and reduce import bills are:

- **Farm-level measures**
  - **Irrigation** increases the yield. **Example:** groundnut oil production swings up and down on a wide basis with just 20-25 per cent of the crop under irrigation. Soybean oil, production of which nearly doubled between 2003-04 and 2013-14, has been able to contribute what it did with just less than 1% of the crop under irrigation cover (in contrast, rapeseed-mustard crops have 70-75 per cent irrigation cover).
  - **Targeted focus** based on the agro-climatic conditions and incentivisation of farmers to cultivate the suitable crop of region. Example: oil palm cultivation where India imports the maximum from South-east Asian countries.
  - Large scale adoption of **agro-ecological methods like System of Crop Intensification, Relay Cropping is needed**. This will not only increase productivity but also reduce use of water resources, and reduce cost of cultivation for farmers.
- **Institution-level measures**
  - **Better extension systems** with downward accountability with the last mile extension gaps plugged as is happening with many agro-ecology centred programmes, productivity can be improved. The practising farmers become Community level Resource Persons (CRPs).
  - **Community level planning processes and institutional frameworks** have enabled better utilisation of scarce resources like **groundwater for emergency irrigation** for groundnut cultivation in states like Andhra Pradesh. These need to be replicated on a large scale.
- **Policy-level measures**
  - **Higher import duties** for imported oil, **Remunerative prices, Assured procurement, Domestic pricing** will enthuse farmers by increasing their net returns.
  - **Policies and missions like NMOOP, ISOPOM** to incentivise the very cultivation of oilseeds on a per hectare basis.
  - Provide incentives to private sector participation in processing and value addition in oilseed crops. Also, constraints for low capacity utilization should be addressed.
- **Research and Development**
  - There is a need to enlarge the scope of research, technology diffusion and institutional intervention to re-energize the oil sector.
  - This would include increase public research spending in oilseed crops for development of biotic and abiotic stress tolerant varieties.

### **Conclusion:**

With growing population and increasing disposable income, the demand for oil will increase. Public funds should be spent on lasting solutions for India's edible oil crisis.



## Q) Examine why Pharmaceutical Industry is largely located on the Western Coast of India ? (250 words)

*Key demand of the question*

*The question expects us to highlight the location of pharmaceutical industries in India and thereafter, examine the reasons why they are mostly situated on the West coast of India.*

*Directive word*

*Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .*

*Structure of the answer*

*Introduction – Explain that Pharmaceutical industry is a footloose industry (i.e it does not require specific local resources ) and hence it can occur wherever the industrial feasibility criteria are met.*

*Body*

*Explain the reasons why Pharma industry is largely situated on the west coast of India*

*Proximity to ports (Kandla, Bhavnagar etc.) which facilitates easy export to Africa, Europe etc. Africa for long has been an important market for India's Generic Drug Industry. India exports cheap life saving drugs to African nations. The ports also help to import raw materials required for the manufacturing of drugs.*

*favorable State policy like ease of doing business, stable policies of state government (Gujarat, Maharashtra)*

*Proximity to petrochemical hubs near Gujarat Coast and Mumbai.*

*Easy availability of Capital ( The western part of India has traditionally been the hub of trade and Capital)*

*Historical factors include the spirit of entrepreneurship*

*Highlight that the above factors explain the emergence of Pharmaceutical industries in western region, many of the factors may be found at other places across the country (Bangalore, NCR region etc.). So the Pharma industry is not just located at west but scattered across the country wherever economic considerations allow.*

*Conclusion – conclude by summarising the points made above.*

### **Introduction:**

The pharmaceutical industry in India is among the most highly organized sectors. This industry plays an important role in promoting and sustaining development in the field of global medicine. It ranks 3rd in the world terms of volume and 14th in terms of value.

Pharmaceutical Industry being a **footloose industry**, can be placed and located at any location without effect from factors of production such as Resources, Land, Labour, Capital and Enterprise. There is processing of products that are neither weight-gaining, nor weight-losing, and face significant transportation costs.

### **Body:**

The preponderance of this industry in Western region may be explained due to a number of factors like

- **Government policies:** opening up of the FDI upto 100% in pharma has attracted a lot of investments from foreign countries. The Indian Patents Act, 1970 and its strong protection of IP rights have helped the industries sustain by the loyalties. The **Supreme Court verdicts on Evergreening (Sec 3(d)) (Novartis v. Union of India.) and Compulsory licensing (Sec 84) (Bayer Pharma vs UoI)** has strengthened the confidence of Indian Pharma industries against the foreign conglomerates. The focus on Biotechnology in the last 25 years has grown leaps and bounds.
- **State Industrial Policies:** Favourable State policy like stable policies of state government, provision of infrastructure, easy land availability, SEZs, power etc. help in ease of doing business.



- **Raw Materials:** Proximity to petrochemical hubs which form the raw materials. Example: Jamnagar, Gujarat; Bombay high, Maharashtra.
- **Capital Availability:** The western part of India has traditionally been the hub of trade and Capital.
- **Proximity to ports:** It facilitates easy export to other nations in Africa, Europe etc. **Example:** Kandla, J NPT, Navasheva. The ports also help to import raw materials required for the manufacturing of drugs. Government initiatives like **SagarMala** is giving a fillip to port-led development of coastal areas.
- **Proximity to markets:** The **Indian domestic market is a huge market.** Initiatives to promote generic medicines in India has further strengthened. In global markets, Africa for long has been an important market for India's Generic Drug Industry. The setting up of Pharma industries on west coast reduces the cost of transportation to African and European nations.
- **Historical factors** include the spirit of entrepreneurship, cheap labour, pre-existent infrastructure.

However, there are some concerns lingering

- **Overdependence:** Indian pharma industries import about **80% of Active Pharmaceutical Ingredients(API) from China.** The API forms the base of drugs. With trade-wars at global levels and wavering bilateral relations, there is a looming threat which can stall the Indian pharma industries.
- **Compliance issues and good manufacturing practices:** **Diversifying** the global market has been a problem with countries China and USA imposing Sanitary and Phyto-Sanitary(SPS) barriers of WTO against generic drugs. The selective targeting by US Food and Drug Administration and Chinese Drug regulators are a problem still.
- **Drug Price Control Order:** The companies sight that the reforms of the Government for the essential medicines has caused them to lower the price of drugs. This has been done by the Government for the betterment of the public.
- **Stronger IP regulations:** IP regulation has always been a thorn in the skin for the companies, especially the foreign companies. The companies strongly feel that the rules have to be amended and the so-called victim of the lax regulations have been the foreign entrants.

#### **Way Forward:**

- Developing our R&D sector to reduce dependency on foreign countries for raw materials
- Using multilateral organisation like WTO against the illegal trade practices.
- Funding for the pharma companies might be a way to move forward.
- IPR Think Tank formed by the Government to draft stronger national IP policies.

#### **Conclusion:**

Though the above factors explain the emergence of Pharmaceutical industries in western region, many of the factors may be found at other places across the country (Bangalore, NCR region etc.). So the Pharma industry is not just located at west but scattered across the country wherever economic considerations allow.

#### **Q) Despite being rich in natural resources, Africa continent has widespread poverty and under-development. Examine. (250 words)**

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##### ***Key demand of the question***

*The question expects us to first shed light on how resource rich Africa is, the status quo of Africa in terms of industrial development and socio-economic development. Thereafter, we need to bring out the causes behind such poverty in Africa and discuss how to rectify the situation.*

##### ***Directive word***

*Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .*

##### ***Structure of the answer***



**Introduction** – Explain that Africa is a land of paradox because of its vast amount of natural resources ranging from agricultural land to minerals and despite that fact the country remains struck by poverty and hunger

### **Body**

Highlight in brief the nature of natural resources found in Africa and also highlight the status quo regarding socio economic conditions.

Next explain the reasons for above such as

*Inefficient investment.*

*Lack of transparent rules.*

*Corruption.*

*Governance issue.*

*Nature-based conflicts, including violent conflict, civil wars and secessionist movements, have been commonplace in Africa.*

*Discuss the impact of these factors on distribution of industries in Africa. Suggest measures through which the situation can be improved.*

**Conclusion** – Therefore, to make the ‘Lost Continent’ a true ‘Land of opportunities’, there is the necessity of political stability, education and true leadership to take the front seat and drive the growth of Africa.

### **Introduction:**

Africa is blessed with a rich bounty of natural resources. The continent holds around 30% of the world's known mineral reserves. These include cobalt, uranium, diamonds and gold, as well as significant oil and gas reserves. Yet it has not managed to capitalize on its wealth: its infrastructure is underdeveloped, its economies are small and unsophisticated, and its people languish in poverty.

The continent, consisting of 54 countries, is the least developed continent of the Third World. Africa has almost 50% of the population living on less than \$1.25 per day.

### **Body:**

The reasons for African continent to be in such a dismal state and its impacts is:

- **Civil Wars and Terrorism:** Wars disorient people and leave them destitute. They also disconnect businesses from their clients. Moreover, roads and communication networks are destroyed or barred which further cripples these businesses. Industries collapse, people lose jobs and investors lose confidence in the affected country thus pushing the affected region down the economic slopes.
  - According to the **2015 Global Terrorism Index**, the cost of terrorism to the world was \$52.9 billion in 2014. This is the highest number since 2011. 32,000 people died due to terrorism acts in the same year.
  - In Nigeria, the **Boko Haram insurgency** has led to over 100,000 deaths since it started its brutal operation six years ago.
  - Civil wars broke out in many countries like Nigeria, Rwanda etc. For instance in Congo/Zaire there were 150 different tribes .Holding them together even with administrative experience was a great task.
- **Unending Corruption:** Dubbed ‘Kitu kidogo’ or ‘chai’ (loosely translated as ‘something small’ or ‘tea’) in Kenya, corruption has taken root in most African countries. A survey by the **Transparency International (TI)** indicated that most African governments are not able to meet their citizen’s expectations due to rampant corruption. The police were identified as the most corrupt group across the region.
- **Education and the knowledge gap:** Even up to today, some African households cannot afford basic education for their children. Although some governments in the region have taken up the matter of basic education provision as a government project, many areas lack schools and even where



schools are, they are sparsely located posing a challenge to the young children who would rather help at home than make the long walk to school.

- **Inadequate skills and knowledge cripples the economy** as there is no skilled labour to drive the nation.
- **Health and poverty:** Health and poverty are interconnected. When a continent is not able to create quality health infrastructure and system for its own people, it risks falling into a trap where the economy remains stagnated. Poverty is both a cause and a consequence of poor health. Poor living conditions increases the chances of poor health. In turn, poor health entraps communities in undying poverty.
  - **WHO reports that approximately 1.2 billion people in the world live in extreme poverty-surviving on less than one dollar per day.** HIV/AIDS, cancer among other diseases have also contributed to increased poverty levels in Africa
- **Geographically Disadvantaged:** Being placed in a geographically disadvantaged location only calls for innovative ideas to utilize the available resources to advance lives.
  - A significant number of African countries suffer because they are landlocked-geographically unlucky.
  - On the other hand, most landlocked countries in Africa are surrounded by unstable and conflict-filled countries. Uganda, a landlocked country bordered by South Sudan and Democratic Republic of Congo stands as a good example.
- **International Aid:** In the recent past African leaders have been heard arguing that International Aid has curtailed Africa's growth efforts. Donor support should not be relied on forever but instead be used to build institutions and the economy.
  - The Kibera slum in Kenya is one good example. Kibera, the largest slum in Nairobi and second largest urban slum in Africa is located just 5 kilometers (3.1miles) from the capital, Nairobi. The slum is filled with a sea of NGO's which have not done so much for residents who continue to scavenge for a living in these tough economic times.
  - Conditional support at times are holding back the countries.
- **Unfair Trade Policies:** Introducing fair trade policies for African countries to trade with nations abroad will grow Africa's economy much faster than aid would. Unfair trade strategies have rubbed Africa's growth exertions.
  - The US, the European Union are protecting key industries that Africa could compete with like agriculture, thus it has become more difficult to trade in this sector.
  - Neo-Colonialism attitude of developed countries and the MNCs are hindering the development of African countries.
  - China's "**Vulture Capitalism**" has lead to many untoward incidents as in Zambia.
- **Political issues:** Some countries suffered direct military intervention from countries which did not like their government.
  - For instance Angola was invaded by South Africa and Zaire because these countries disapproved of Angola's Marxist-style government.
  - There was also a distinct lack of trained and experienced civil leadership.
  - Military coups as seen in Nigeria led to despotism which curbed the development.
- **Disasters:** In 1980's Africa reeled under severe drought which caused crop failures, famine, deaths of live stock and starvation.

#### **Measures:**

- Promotion of Democracy to uphold the people's will and sovereignty.
- Governments, regional communities and private sector should develop effective strategies based on regional needs and partner with like-minded corporations local or foreign to drive Africa's Development wheel forward.
- International bilateral relations like Asia-Africa Growth Corridor should be promoted for mutual development.
- Reduce disease-burden, provide education and skill development to reap the demographic dividend. (**Example:** Solar Mamas of Tanzania)

#### **Conclusion:**

- Although Africa is rising, poverty is curtailing the continent's growth efforts. As a region, Africa needs to address the negligence of sound economic policies. Corruption, selfish personal interests,



- thirsts for power, religious and ethnic differences are clogging the pipeline within which development would have flowed.
- Therefore, to make the 'Lost Continent' a true 'Land of opportunities', there is the necessity of political stability, education and true leadership to take the front seat and drive the growth of Africa.

INSIGHTSIAS