



# INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

## **SECURE** SYNOPSIS

### MAINS **2019**

# GS-I

## APRIL **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) Indian ancient architecture is much more than what they are. What teachings can one draw from India's ancient inscriptions and temples in conserving water and fighting droughts today ? Examine. (250 words)**

The hindu

**Why this question:**

The article provides for deep insights on the use of ancient inscriptions in temples and their architecture in managing the droughts of today.

**Key demand of the question:**

The question expects you to highlight the significance of Ancient Indian architecture ; inscriptions, temples and associated water conservation technologies and techniques that can be put to use even today to effectively manage water crisis.

**Directive:**

**Examine** – When asked to 'Examine', we have to look into the topic (content words) in detail, inspect it, investigate it and establish the key facts and issues related to the topic in question. While doing so we should explain why these facts and issues are important and their implications

**Structure of the answer:**

**Introduction:**

Brief upon the wisdom present in the ancient Indian culture with respect to water conservation and drought management techniques.

**Body:**

- Such answers are best explained with examples, discuss the significance of ancient Indian culture – temple architecture , inscriptions that throw light upon conserving water as a useful resource.
- Explain the example of Tamil Nadu – Inscriptions connected to irrigation in Tamil Nadu concern two broad zones, the Cauvery delta and the Tamirabarani delta. The Cauvery delta was more fertile and larger — with more tributaries — but the number of drought-related inscriptions here are more in number than the Tamirabarani delta. Temple inscriptions were always documents connected with the sale, transfer and maintenance of irrigated lands.
- In the Pandya empire, water conservation was a completely local affair. The entire community, through the elected temple mahasabha, managed it. This meant that there was constant supervision, ownership and responsibility. All systems and processes were sustained through an emotional connection with the resource.
- Explain how such methods can be imitated even today.

**Conclusion:**

Conclude with significance of learnings that can be taken from our past in managing water as a crucial resource for life.

**Introduction:**

- Ancient Indians understood the art of water governance. Most of India's traditional water management has been at the community level; relying upon diverse, imaginative and effective methods for harvesting, storing, and managing rainfall, runoff and stream flow.
- Inscriptions on Tamil Nadu's temples record administrative and social decisions from a time when they were a seat of authority for the local community.





## Body:

### Water scarcity in India:

- Many Indian cities, including Delhi and Bangalore, face water crisis, especially that of freshwater.
- A **World Bank study** puts the plight of the country in perspective:
  - 163 million Indians lack access to safe drinking water.
  - About 210 million Indians lack access to improved sanitation.
  - 21% of communicable diseases are linked to unsafe water.

### Ancient Indian Culture and Water Conservation:

#### Reverence for the resource:

- Inscriptions from 700-1,000 years ago, connected to water conservation in temples at places like **Mannarkovil, Cheranmahadevi, Tirukurugudi, Kovilpatti, and Pudukkottai** attest to a few aspects.
- Temple inscriptions were always documents connected with the sale, transfer and maintenance of irrigated lands.
- In the **Pandya empire**, water conservation was a completely local affair. The entire community, through the **elected temple mahasabha**, managed it. This meant that there was constant supervision, ownership and responsibility. All systems and processes were sustained through an emotional connection with the resource.
- Water from the Tamirabarani and the Vaigai rivers was taken through channels into formations like **eris (small lakes) and per-eris (bigger lakes)**.
- Channels created square parcels of lands called **sadirams** and they were subdivided into smaller padagams of land, all of which had numbers. There were as many as 20-24 **padagams** in a sadiram.
- They were taxed differently based on how fertile they were — a system far more complex and farmer-friendly than today.

#### Care for the local terrain:

- Every tank had multiple weirs, always built in consonance with the local terrain, to drain out excess water. Using these, farmers irrigated the fields.
- There were complex calculations on **allocation by turns (murai) and hours of supply (nir naligai)**.
- The interests of the boatmen in the lower estuaries and ports were also taken care of so that there was enough water there to permit them to bring boats up the river.
- The upper reaches had a higher number of large tanks which fed water into the smaller ones, tanks and ponds before it finally drained into the sea.
- As a result, **during floods, the limits were rarely breached, and during droughts, each tank had water.**

#### Public Participation:

- **Maintenance of the tanks through desilting and enlargement and building and maintaining of new canals** was a continuous process. More than a hundred inscriptions across the region deal exclusively with this.
- **Fishing rights for the lakes** helped defray maintenance costs. Revenues were high enough for the excess profits to be deployed in building larger halls in temples that could be used for public functions.
- Maintenance was a local responsibility and not that of the king. Many capital-intensive projects were funded by the dancing women of temples.

#### Conclusion:

- **Ecologically safe engineering marvels** of water conservation have existed in India for nearly 1,500 years, including traditional systems of water harvesting, such as the **bawari, jhalara, nadi, tanka, and khadin**.
- They continue to **remain viable and cost-effective alternatives for replenishing depleted groundwater aquifers**. With government support, they could be **revived, upgraded and productively combined with modern rainwater-saving techniques** such as **anicut, percolation tanks, injection wells and subsurface barriers**. This may be a far more sustainable approach to alleviating the water scarcity crisis across India.



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**Q) Notre Dame Cathedral is one of the finest examples of French Gothic cathedral architecture. Explain the salient features of this architecture, what makes it unique world heritage site ? (250 words)**

[Indianexpress](https://www.indianexpress.com)

**Why this question:**

Recently a catastrophic fire has engulfed the famous Notre Dame Cathedral in Paris, France. The cathedral, whose name means Our Lady, is the seat of the archbishop of Paris.

**Key demand of the question:**

The answer must explain in detail French Gothic cathedral architecture. And Notre Dame Cathedral as one of its finest examples.

**Directive word:**

**Explain** – Clarify the topic by giving a detailed account as to how and why it occurred, or what is the particular context. You must be defining key terms where ever appropriate, and substantiate with relevant associated facts.

**Structure of the answer:**

**Introduction:**

Begin with what you understand by Gothic architecture.

**Body:**

- French Gothic architecture is a style which emerged in France in 1140, and was dominant until the mid-16th century. The most notable examples are the great Gothic cathedrals of France, including Notre Dame Cathedral, Chartres Cathedral, and Amiens Cathedral.
- Its main characteristics were the search for verticality, or height, and the innovative use of flying buttresses and other architectural innovations to distribute the weight of the stone structures to supports on the outside, allowing unprecedented height and volume, The new techniques also permitted the addition of larger windows, including enormous stained glass windows, which filled the cathedrals with light.
- The French style was widely copied in other parts of northern Europe, particularly Germany and England. It was gradually supplanted as the dominant French style in the mid-16th century.
- Discuss the specific characteristics of the architecture.
- Explain – Notre Dame Cathedral, its importance as world heritage site.

**Conclusion:**

Conclude by stating need for reconstructing such a marvel.

**Introduction:**

- French Gothic architecture is a style which emerged in France in 1140, and was dominant until the mid-16th century.
- The most notable examples are the great Gothic cathedrals of France, including Notre Dame Cathedral, Chartres Cathedral, and Amiens Cathedral. Paris was struck in its very heart as flames devastated the **roof of Notre-Dame**, a historic 850-year-old medieval cathedral made famous by Victor Hugo.

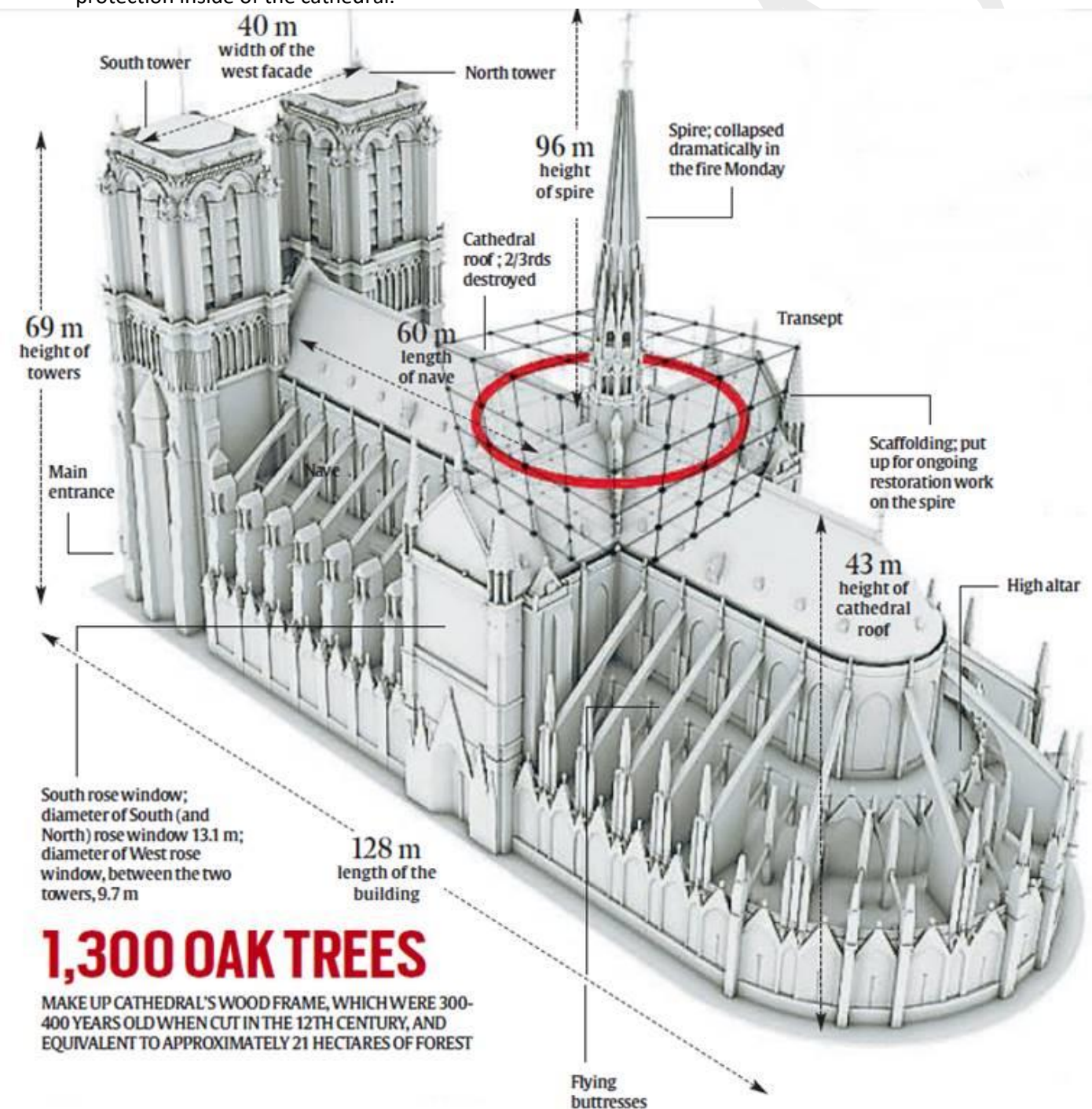
**Body:**

**Salient features of the French Gothic architecture:**

- Gothic art **evolved out of Romanesque art** and lasted from the mid-12th century up to the late 16th century in some areas of Germany.
- Architecture was the main art form of the Gothic, and the main structural characteristics of Gothic architectural design stemmed from the efforts of medieval masons to solve the problems associated with supporting heavy masonry ceiling vaults (arched roofs) over wide spans.
- Gothic architecture brought many innovations in terms of construction systems and design. One of its defining characteristics was the sense of **verticality**, which was sought after in every building. The idea was that the more vertical the building would feel, the closer the faithful visitors would feel to God.
- The **layout in French Gothic cathedrals was often of a Latin cross**. The main axis is the most important and defines the order of the composition. The secondary axis is evident in some examples but very subtle in some others.
- Gothic walls became lighter due to their **composition of stone columns and large windows or stained glass**. These elements allowed for open, illuminated spaces in the interior.



- The **pointed arch** was widely used in most of the French Gothic cathedrals. It was used as a structural and decorative element in doorways, windows, arcades, and galleries. Pointed arches were effective in channelling weight to the columns in a steep angle, thus allowing for ceilings to be much higher and to increase the perception of the verticality.
- Vault ceilings were used, in the form of **cross-ribbed vaults**. This type of vault consists of two or more intersecting vaults, reinforced with ribs on the joints. This opened up the interior space of the cathedrals to accommodate more visitors. Vaults became increasingly complex as the Gothic style evolved.
- The **flying buttress** is another defining constructive element of Gothic architecture in France. The buttress transfers part of the weight from the tall walls and helps keep the structure stable. They were created as a constructive solution but also became an important decorative element of the facade. The designs for the buttresses became much elaborate, enhancing the sense of verticality and greatness of the building.
- Another functional element that evolved into a decorative item was the **gargoyles**. These little monsters were **spouts for rainwater to drain from the roofs**. However, they served a higher purpose; they were there to **create fear of evil among the superstitious population** of that time and encourage them to seek God's protection inside of the cathedral.





### Notre-Dame- A unique World heritage site:

- The cathedral is part of the 1991 World Heritage inscription, Paris, Banks of the Seine, which also includes bridges, quays and the banks of the Seine in the historic part of its course (between the Pont de Sully and the Pont d'Iéna) and the Ile de la Cité and the Ile St Louis.
- Its importance is expressed through the architectural quality of the building and its location in the urban fabric, veritable landmark in the centre of the urban landscape, as well as through its visual and symbolic relation to the nearby belfry.
- The iconic cathedral has been deeply enmeshed in Paris's history since construction began at the end of the 12th century; historians generally ascribe the date 1163 and lasted more than two centuries to 1345.
- For French Catholics it has particular resonance, as the resting place of the crown of thorns believed to have been placed on Jesus' head before his crucifixion.
- For centuries France's kings and queens were married and buried there.
- Its massive tenor bell announced the liberation of the city from Nazi control on August 24, 1944, ending the dark years under German rule in World War II.
- Napoleon was crowned emperor in Notre-Dame in 1804, and the joyous thanksgiving ceremony after the Liberation of Paris in 1944 took place there, led by Charles de Gaulle.

### French Gothic Architecture influence in India:

- **Philomena's Cathedral, Mysore:** Built in 1936 using a Neo Gothic style of architecture, the St. Philomena's Cathedral is one of the tallest and most spectacular churches of Asia.
- **Thomas Cathedral Basilica, Chennai:** Also known as San Thome Basilica, it was built in the 16th century by the Portuguese. It is one of the three churches in the world that was built over the tomb of one of the twelve apostles of Jesus, Saint Thomas. The other two churches are built in Vatican City and Spain.
- **Paul's Cathedral, Kolkata:** One of the finest examples of a church built in Gothic architecture is the St. Paul's Cathedral in Kolkata. While it was laid out in 1839, the construction was completed by 1847.

### Conclusion:

- The real significance of the Notre-Dame in France lies not in its size or architectural splendour, rather in it being a keen witness to eight centuries of tumultuous French history.

*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) “The historic date of 6 April 1930, that marked the end of famous Dandi March, also marked the beginning of one of the first women’s movements in the history of modern India”. Comment. (250 words)**

[Livemint](#)

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

The question is in the light of the famous Dandi March that ended on this day 6th April in history in 1930. The question evaluates how this day also marked the beginning of Women movements in India.

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

The answer must discuss in detail the significance of this day, Dandi march and most importantly analyse in what way it led to fostering women movements in India.

#### **Directive word:**

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

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

##### **Introduction:**

write a few introductory lines bringing out significance of this day in the history.

##### **Body:**

Answers must discuss in detail importance of women movements in India.

Discuss how Dandi march happened to be a game changer in the history of India for women Movements. Take cues from the article, discuss significant contributions of Sarojini Naidu, Kamaladevi Chattopadhyay etc.



Discussion should classify the movements in terms of different classes of women , how they differed what were the consequences of such difference etc.

### **Conclusion –**

Conclude with a reassertion of their contribution and its significance.

### **Introduction:**

- Mahatma Gandhi was authorized by the Congress Working Committee to determine the time, place and issue on which the Civil Disobedience was to be launched.
- He took the decision to break the salt law first, on which the British had imposed a duty, affecting the poorest of the poor. Salt Satyagraha began with the Dandi March on March 12, 1930 and was the part of the first phase of the Civil Disobedience Movement.

### **Body:**

#### **Women's movement in the Civil Disobedience Movement:**

#### **Dandi March:**

- Initially Gandhi was reluctant to involve women directly with the main scene of action and it was not worthy that the group of followers who accompanied him to Dandi was an all-made
- Not a single woman was part of the hand-picked retinue of 71 that accompanied Gandhi on the 240-mile march over 24 days from the Sabarmati Ashram to Dandi, from 12 March-6 April 1930.
- On 6 April 1930, as the Dandi March ended, Indian women joined Gandhi's salt satyagraha. They were led by figures like Sarojini Naidu and Matangini Hazra.

#### **Post – Dandi March:**

- Immediately on 6 April 1930, Mahatma Gandhi was arrested, at that time he nominated Sarojini Naidu to head of the Movement.
- Mithuben Petit, stood behind Gandhiji when he violated the Salt Law again at Bhimrad on 9 April.
- The attitude of women, many Indian ladies of good family, high intellectual, middle and upper class women were mobilized into action in their own humble ways was remarkable.
- They assured truly sub continental dimensions and witnessed deeply moving and unprecedented scenes in every nook and corner of the country.
- On 15 May 1930, Sarojini Naidu led the raid on the Dharsana Salt works.
- Though she and her comrades were arrested, they were released on the same day; enabling Sarojini Naidu to lead another batch of 25,000 raiders on the same salt works on 21 May.
- This was the occasion for one of the most remarkable demonstrations of the spirit of non-violence gathered by Gandhiji Movement, as the volunteers remained absolutely peaceful despite to serve provocation and appalling atrocities inflicted on them by the police.

#### **Impacts of Women's participation:**

- Perception of women in society underwent a sea – change during the Salt Satyagraha Movement.
- Mahatma Gandhi made an appeal to Indian women to come out from their household seclusion and advised them to participate in the political movement to end the British rule in
- Prior to 1930, only a few women mostly from the families of leaders took part in political But during the Salt Satyagraha women increasingly enrolled themselves as volunteers.
- A lot of women participated in this movement from different places and provinces.
- Hurshedbehn, Mirdula Sanuthai, Hansa Metha, Avabtuigavau Gokhale, Shantabai Vengsantan, Durgabai, Lilavathi Munshi, Captain Sish Perinbehn, Goshibehn, Avantikabai Gokhale, Jamkidevi, Lukanji, Anajuyabai Kale, were the prominent women leaders who led the Satyagraha in their own provinces.
- The women of South India also took part in the movement. The people of all the regions such as Tamil Nadu, Karnataka, the Coastal belt of Andhra Pradesh and Kerala, which constituted the Madras Presidency fully responded to the call of Gandhiji.
- Rukmini Lakshmipathi, Vice President of Tamil Nadu Provincial Congress Committee, accompanied Rajagopalachariar in his march to Vedaranyam to break the Salt Laws in 1930, She was the first lady in Madras to be arrested in connection with Salt Satyagraha and was awarded 1 year imprisonment.





- Hundreds of unlettered rural women also converged on these villages from the surrounding countryside.
- They participated in picketing, selling salt on street corners, leading satyagrahas, and participating in processions
- Women started organizing prabhat pheris, or morning processions, on the streets of Bombay and Ahmedabad, where they sang songs about the bounty of the motherland.
- They helped put together vanar senas, or monkey brigades, consisting of children who supported activists in offering resistance to the British.
- There can be no denying that Gandhi and other Congress leaders, along with many of the women leaders, were invoking the traditional patriarchal notion of women's role and femininity even as they urged more and more women to step over the threshold of their homes.
- This powerful, symbolic march by Gandhi through the heart of India thus became the catalyst for women to claim public space in such numbers for the first time in Indian history

#### Constraints:

- The **patriarchal nature of Indian Society** was evident throughout the Civil Disobedience Movement.
- Middle-class women pouring out on to the streets were at pains to distinguish themselves from "women of the streets"
- Sex workers from Kanpur were not allowed to join the movement even though they wanted to.
- The Devadasi community in Bombay at the time where they contributed financially to the movement but were not allowed to join publicly.
- The Hindu nationalist women's organization Desh Sevika Sangha in Bombay stressed the importance of recruiting women from the "upper class only" and hesitated to march with even ordinary middle-class or poorer women.
- Married women had to return sooner than unmarried ones, and they could only join processions once their young ones had been fed, or some family member had been recruited to look after them, with the permission of their guardians.

#### Conclusion:

- Women's participation move was a strategic management coup by Gandhi and other leaders was that the act of stepping out into the streets was legitimized for middle-class women by extending the concept of the nation as "family".
- The movements showed that public activities could be perceived as natural extensions of household roles, thus enabling women to step out of their homes.

**Q) The tragedy of Jallianwala Bagh is a shameful scar on British Indian history. Comment. (250 words)**

[Timesofindia](https://www.timesofindia.com)

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

The question is in context of 100th anniversary of the tragic incident of Jallianwala Bagh. Recently British Prime minister Theresa May described the Jallianwala Bagh massacre in Amritsar as a "shameful scar" on British Indian history.

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

The answer must discuss the tragedy of Jallianwala Bagh of 1919 and its significance in the history of modern India and in what way it's a blot on the British Indian history.

#### **Directive:**

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

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

##### **Introduction:**

Briefly narrate the incident of the tragedy of Jallianwala Bagh of 1919.

##### **Body:**

The discussion should have the following points :

- The massacre – It took place in Jallianwala Bagh in Amritsar over Baisakhi in April 1919 when troops of the British Indian Army under the command of Colonel Dyer fired machine guns at a





crowd of people holding a pro-independence demonstration. It claimed thousands of lives and injured thousands others.

- Explain the Britain's position since the mid-1990s of expressing 'deep regret' for the April 13, 1919, massacre in Jallianwala Bagh and not issuing a formal apology.
- India – UK relationship as of today and impact of this historical past.

#### **Conclusion:**

Conclude with significance of the massacre and the turning point it brought in British history.

#### **Introduction:**

The tragedy of Jallianwala Bagh, also known as the **Amritsar Massacre** (dated April 13, 1919) took place at Jallianwala Bagh, Amritsar, Punjab. The massacre occurred when people had congregated to celebrate **Baisakhi festival** (the new year in Punjab). The troops of the British Indian Army under the command of **Colonel Reginald Dyer** opened fire at a crowd of people holding a pro-independence demonstration, leaving several dead and scores injured.

#### **Body:**

##### **Response of the Indians:**

- This tragedy came as a rude shock to Indians and totally destroyed their faith in the British system of justice.
- National leaders condemned the act and Dyer unequivocally.
- **Nobel laureate Rabindranath Tagore** in his letter of protest **renounced the knighthood** conferred on him, condemning the brutal act of Britishers.
- In protest against the massacre and the British failure to give due justice to the victims, **Gandhiji** relinquished his title '**Kaiser-e-hind**' bestowed on him by the British for his services during the Boer War in South Africa.
- In **December 1919**, the **congress session was held at Amritsar**. It was attended by a large number of people, including peasants.

##### **British and Government of India Response:**

- Gen Dyer was appreciated by many in Britain and the British in India although some people in the British government were quick to criticise it.
- The massacre had been a calculated act and Dyer declared with pride that he had done it to produce 'moral effect' on the people and that he had made up his mind that he would shoot down all men if they were going to continue the meeting.
- The government set up the **Hunter Commission** to inquire into the massacre. Although the commission condemned the act by Dyer, it did not impose any disciplinary action against him.
- He was relieved of his duties in the army in 1920.
- A British newspaper called it as one of the **bloody massacres of modern history**.

##### **Britain's position since the mid-1990s:**

- UK MPs had suggested that an apology was owed to the victims and their families as part of efforts to strengthen relations with India.
- "India will never forget," Conservative MP Bob Blackman, who introduced the debate told to the MPs.
- Over 80 MPs from across political parties signed a letter, initiated by Labour MP Pat McFadden, calling for an "official apology."
- Others argued that there was a need for the U.K. to raise awareness of the atrocity and the darker aspects of Britain's colonial legacy in schools, which would help children understand where they came from and where the country was today.
- British Prime Minister Theresa May expressed "regret" in Parliament for the Jallianwala Bagh massacre, ahead of the 100th anniversary of the killings on April 13.
- Opening the Prime Minister's Questions with a reference to the massacre, Ms. May quoted Queen Elizabeth's remarks, calling the incident a "distressing example" of Britain's past history with India.

##### **Current state of Bilateral relations between India and UK**

- Relations between the U.K. and India today are friendly and constructive. Yet, that does not mean that an apology would not do good.
- We cannot turn back or erase the past, but we can take steps to recognise what happened and to respond in a way that befits a modern relationship between two countries which today enjoy normal and positive diplomatic relations.



- The need for the world community to come together to promote everlasting peace in all the corners of the globe and ensure that sustainable development of the planet becomes the watchword at all times and at all levels from schools to summits of global leaders.

#### Conclusion:

- Jallianwala Bagh was a reminder to each one of us as to how hard won & precious our freedom is. It was an occasion to shed a silent tear for each of the innocent Indians who lost their lives that Baisakhi day in 1919 and a poignant moment of reflection on colonial cruelty & irrational anger.
- It is hoped that Jallianwala Bagh massacre day would inspire us to strive to create a world without oppression & persecution, a world of friendship, peace & progress, a world where all nations stand united to defeat inhuman forces of terror & violence.

*Topic– History of the world will include events from 18th century such as industrial revolution, world wars.; Events from 18th century such as industrial revolution, world wars, redrawing of national boundaries, colonization, decolonization,*

**Q) Discuss the causes and consequences of Battle of Kangla Tongbi during the battle of World War-II. What is its significance as of today ? (250 words)**

pib

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

Recently the Platinum Jubilee of the Battle of Kangla Tongbi War was commemorated on 07 Apr 2019 by Army Ordnance Corps at Kangla Tongbi War Memorial near Imphal honoring the valiant brave hearts of Ordnance Personnel of 221 Advance Ordnance Depot who made their supreme sacrifice in the line of duty during the battle of World War-II on the night of 6/ 7 April 1944.

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

The answer must discuss in detail the importance of Battle of Kangla Tongbi, cause and consequences it had during world war II.

#### **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:**

write a few introductory lines about Battle of Kangla Tongbi.

##### **Body:**

Answers must discuss in detail the following points :

- The background of the Battle – It is considered one of the fiercest battles of World War II. It was fought by Ordnance personnel of 221 Advance Ordnance Depot (AOD) on the night of 6/7 April 1944 against Japanese forces. Japanese forces had planned a three pronged offensive to capture Imphal and the surrounding areas.
- In their attempt to extend their line of communication to Imphal, the 33rd Japanese Division cut in behind the 17th Indian Division at Tiddim (Myanmar) and establishing themselves firmly on the main Kohima – Manipur highway, started advancing towards Kangla Tongbi. However, combatant role of AOD personnel shook the enemy and forced the Japanese to withdraw.
- Significance of the memorial – The Kangla Tongbi War Memorial is a mute testimony to this battle and the unflinching devotion to duty of the Ordnance personnel of 221 AOD, 19 of whom made the supreme sacrifice. It conveys to the world at large that Ordnance personnel, apart from being professional logisticians, are second to none in combat, being equally proficient soldiers, should the occasion demand.

##### **Conclusion –**

Conclude with significance even in today's context.



### Introduction:

- **The Battle of Kangla Tongbi** is also known as **Battle of Lion Box**. It is considered one of the fiercest battles of World War II. It was fought by **Ordnance personnel** of 221 Advance Ordnance Depot (Allied) force on the night of 6/7 April 1944 against the Japanese (Axis) forces.
- The **Platinum Jubilee (75 years)** of the Battle of Kangla Tongbi War was commemorated on 07 Apr 2019 by **Army Ordnance Corps at Kangla Tongbi War Memorial near Imphal, Manipur**.

### Body:

#### Causes of the war:

- Japanese forces had planned a three pronged offensive to capture Imphal and the surrounding areas.
- In their attempt to extend their line of communication to Imphal, the 33rd Japanese Division cut in behind the 17th Indian Division at Tiddim (Myanmar) and establishing themselves firmly on the main Kohima – Manipur highway, started advancing towards Kangla Tongbi.
- The position of 221 AOD was not at all sound from a tactical point of view.
- It was exposed to the enemy from all sides and had to rely on its own combatant manpower for its defence.
- Major Boyd, the Deputy Chief of Ordnance Officer (DCOO) was made in charge of the operations for defence of the Depot.
- A Suicide squad comprising of Major Boyd, Havildar/ Clerk Store Basant Singh, Conductor Panken and other personnel from the Depot was created.
- On 06 Apr 1944, orders were received to evacuate 4,000 tons of ammunition, armaments and other warlike stores.
- On the night of 6/7 Apr 1944, the Japanese mounted a heavy attack on the Depot, rushing downhill into a deep nallah which was used as a covered approach to the Depot.
- However, combatant role of AOD personnel shook the enemy and forced the Japanese to withdraw.

#### Consequences of the war:

- A very well camouflaged bunker had been sighted by the Depot on this approach. The Bren Gun Section in this bunker having spotted an enemy section within range, opened fire.
- This shook the enemy and forced the Japanese to withdraw leaving many dead. The Bren Gun was manned by none other than Hav/ Clerk Store Basant Singh.
- For this act of gallantry, Major Boyd was awarded the Military Cross (MC), Conductor Panken, the Military Medal (MM) and Hav/ Clerk Store Basant Singh, the Indian Distinguished Service Medal (IDSM).
- This battle is one of those fought during the **Battle of Imphal** that shook imperialist motives of Japan and made them reconsider.
- Japanese armies attempted to destroy the Allied forces at Imphal and invade India, but were driven back into Burma with heavy losses.
- The defeat was the largest defeat to that date in Japanese history with many of the Japanese deaths resulting from starvation, disease and exhaustion suffered during their retreat.

#### Significance as of today:

- The Kangla Tongbi War Memorial is a mute testimony to this battle and the unflinching devotion to duty of the Ordnance personnel of 221 AOD, 19 of whom made the supreme sacrifice.
- It conveys to the world at large that **Ordnance personnel**, apart from being professional logisticians, are second to none in combat, being equally proficient soldiers, should the occasion demand.
- The spirit of Kangla Tongbi lives eternally in the hearts of all Army Ordnance Corps personnel of the Indian Army and continues to be source of inspiration for all ranks.

#### Conclusion:

- The heroic deeds of the ordnance personnel watered down the imperial spirit of Japanese forces. However, this also put an end to Subash Chandra Bose's INA which was fighting alongside Japanese to win back India from the grip of Britishers.

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

**Q) What do you understand by Populism? Do you think populist nationalism can be divisive and damage the economic growth of the country ? critically analyse. (250 words)**

[Indianexpress](https://www.indianexpress.com)

**Why this question:**



The article discusses in detail the rise of wave of populism recently being witnessed across the world.

**Key demand of the question:**

The answer must discuss the ideology of populism and the affect it has on Indian economy, one has to provide for a critical analysis as to how the populist policies can prove to be damaging to the economy of the country.

**Directive:**

**Critically 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. When ‘critically’ is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

**Structure of the answer:**

**Introduction:**

Briefly discuss the ideology of populism.

**Body:**

The discussion should have the following points :

- How are economic problems/inequality/joblessness leading to rise of populist regimes/policies?
- What are other fundamental problems/reasons?- cultural backlash and insecurities; post war economic arrangement and neoliberal policies; global power shift etc.
- How populism has been different for developed and developing economies?
- History and reasons for populism in India?

**Conclusion:**

Conclude with way forward and assert the significance of democracy and its tools that keep such effects and ideologies under check.

**Introduction:**

- **Populism** is a political philosophy supporting the rights and power of the people in their struggle against privileged elite. Populism is the label political elites attach to policies supported by ordinary citizens that they don't like.
- When important concerns of the people are not addressed by the elites, the populist movements tend to form to challenge the establishment. Their ideas can rejuvenate democracy, bring new people into the political process, and adjust the political system to societal change.

**Body:**

Populist nationalists, or pop-nats as they are called, share some common characteristics.

- They are **pro-national sovereignty** in a very literal way—**emphasizing walls, statues and other physical structures**.
- They are **against the idea of immigration** and for the idea of national “purity” derived from an arbitrary but specifically chosen point in national history.
- Most of them **appear to have an illiberal, authoritarian streak**. They have a “**win at all costs**”
- They believe **that national institutions have become encrusted with bureaucratic cholesterol** and they have been chosen by the people to break up their power.
- They generally prefer to go directly to the people through the medium of their choice.
- Their communication through Twitter or radio is generally unidirectional where they control the narrative.
- They **do not brook dissent**.

**Populist Nationalism is divisive and affects Economic growth of the country:**

- In India, populism as a term has generally been used for fiscal handouts for the less privileged — loan waivers, poverty alleviation schemes, etc.
- If a religious, ethnic or racial majority constitutes “the people”, we get populism that aligns with the right. The latter is hostile to ethnic, religious and racial minorities, and inhospitable to those new migrants, who are different from the majority community.
- Populism of the right, thus, tends to acquire the form of majoritarian nationalism, unconstrained by minority rights.



- Populists **repudiate pluralism**, for the people can only be one and they are the people. This explains their tendency to disqualify their rivals, and even reject the multiparty system of democracy.
- Populists generally rise to power in the wake of a social or moral crisis connected with an economic crisis and/or corruption scandals.
- It took over power in several European countries in the inter-war period. It is back in a different form today. Anti-semitism has been replaced by a pervasive hostility to migrants and even, sometimes, by Islamophobia.
- The populists exploit antagonism in order to polarise their society: Paradoxically, those who claim that they are the incarnation of the people divide this people along religious, racial or linguistic lines to win elections through majoritarian tactics.
- The societies affected by populism suffer from one more pathology, **socio-economic frustrations** due to joblessness or rising inequalities and unmet expectations.
- The issue helps almost systematically the populists who can make promises to the frustrated aspiring sections, use idle vigilantes at the time of canvassing and designate scapegoats that the same young men are (trigger) happy to lynch on the altar of their anger.

#### Populism has its own positives:

- Populism is not a full-blown ideology like liberalism, conservatism or socialism.
- It is a “thin-centered” discourse rooted in the idea of popular will and is comfortable aligning itself to any ideology that could be broadly appealing to a majority.
- Populism is also rampantly anti-elitist. It views the masses as pure and virtuous and the elites as immoral and self-serving who should be overthrown. Hence the argument that populism has a Manichean ethic.
- It equates democracy with elections and referenda, for they represent popular will. It believes that the non-elected institutions of oversight — the judiciary, press, intelligence agencies, civil society, central banks — which normally constrain democratic governments between elections, must follow electoral verdicts, not their institutionally assigned roles. Being unelected, their autonomy should be curbed, even crushed.
- If the poor or the underprivileged are said to be “the people”, populism hitches on to the left, and income redistribution and welfare-oriented policies follow.
- Finally, populism hinges upon charismatic leaders having direct, unmediated access to the masses. Political parties or the press, while necessary, are expected to be subservient to the leader.

#### Conclusion:

- The answer lies in **fearlessly and courageously standing** in the headwinds of crisis times in which some pied pipers would try to use right wing populism to attract people for quick fixes, which would never be possible.
- **Only rational thinking** rather than impulsive feelings and anger can solve the problems of our times. Fishing in the troubled waters may be politically expedient, **but regressive political and economic policies would entail a bigger cost**. In post truth politics, **self righteousness is writ very large** and this complicates problems making our stands irreconcilable.

#### Topic- Salient features of Indian Society

**Q) With wide-ranging support intended for gender equality, a substantial portion of urban India ruminates that women are responsible for domestic chores including child-rearing. Examine. (250 words)**

Livemint

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

The article provides for deep insights on data that shows despite broad support for gender equality, a significant portion of Urban India still believes that women are responsible for child-rearing.

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

The answer must appreciate the fact that though urban India is moving forward with the thoughts of gender equity the conservative mindset of believing women to be responsible for domestic chores is still prevalent. You must discuss the causes of such mindset and consequences.

##### **Directive:**

**Examine** – When asked to ‘Examine’, we have to look into the topic (content words) in detail, inspect it, investigate it and establish the key facts and issues related to the topic in question. While doing so we should explain why these facts and issues are important and their implications





### Structure of the answer:

#### Introduction:

Brief upon the scenario of gender equity present in the urban India, use cues from the article quote some data/facts.

#### Body:

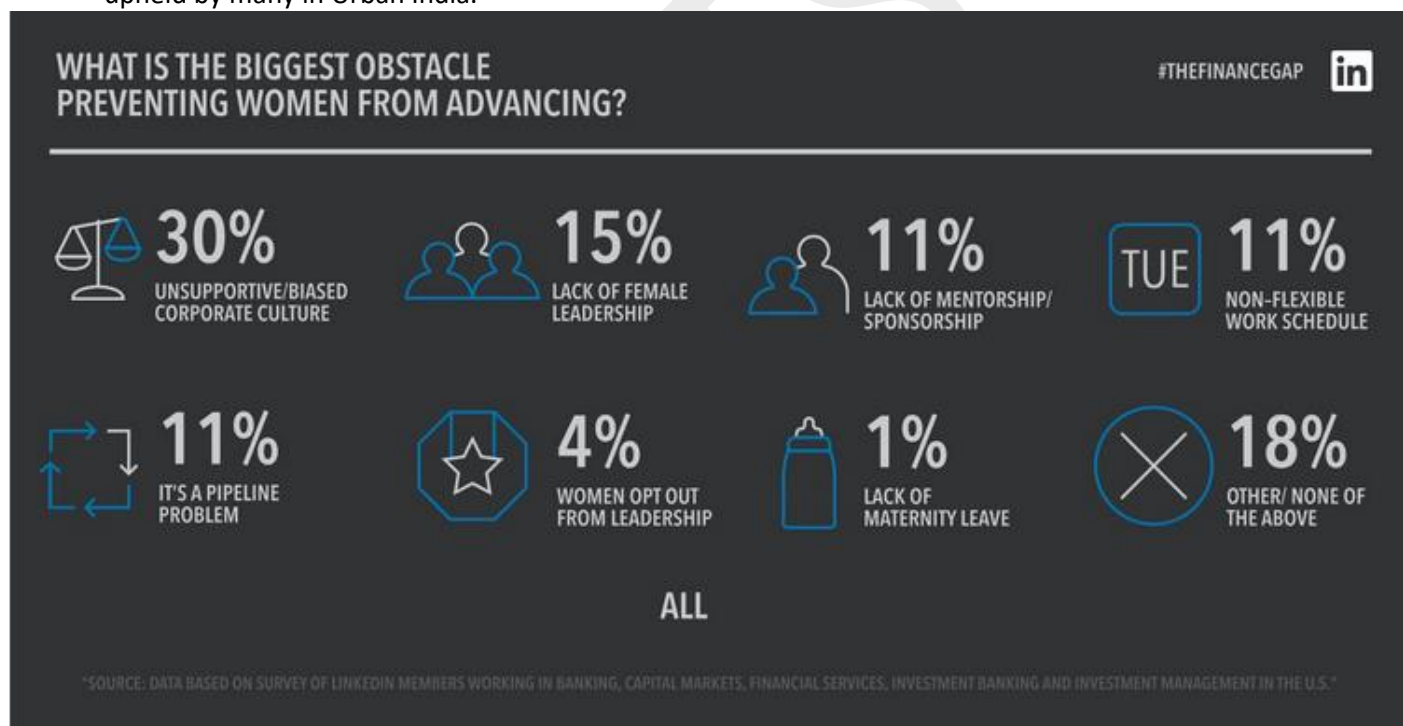
- Body of the answer should discuss multiple factors – first discuss the concept of gender equity applied to Urban India, how is it different from the rural India. Discuss with factors such as – men and women are supportive of women working outside home, Pay parity desirable to both urban men and women, Higher educated respondents are more supportive towards women working etc.
- Then move on to discuss the challenges – Women are occupied with domestic responsibilities such as child-rearing, parental burden across the gender divide, conservative views etc.
- Suggest what should be done ? – example – work from home policy envisaged by the government, creches at workplaces, awareness, empowerment etc.

#### Conclusion:

Conclude with significance of gender equality.

#### Introduction:

- Indian society is characterized by Patriarchy from ages. Although India has come miles ahead in terms of technology, lifestyle and even with broad support for gender equality, a significant portion of Urban India believes that women are responsible for child-rearing.
- The archaic belief of conservative views about women's role in households, workplaces and society is still upheld by many in Urban India.



#### Body:

The factors responsible for such beliefs:

- A significant minority of men who believe that it is unacceptable for women to work.
- One in five men surveyed disagreed with women working outside their homes. There is also little difference in this belief between generations: both men fewer than 30 and above 30 felt equally strongly about women working.
- A significant portion of urban residents believe that a women's family wealth should determine their decision to work. Around one in four respondents (25%) agreed that women from affluent families need not work.
- In terms of income groups, acceptance of women workers is the highest among respondents in the middle income groups. Lower income earners (less than ₹20,000 household income per month) and higher income earners (more than ₹2 lakh) are relatively less supportive of women working.



- A significant number of respondents (39%) with less schooling (nine years or less) believed that women should not work outside homes.
- A major constraint in female labour force participation in India is that they're occupied with domestic responsibilities such as child-rearing. About 68% women left their jobs after pregnancy reason being dual responsibility burden.
- A significant portion believes that child-rearing is the woman's responsibility. There seems to be far less willingness to share parental burden across the gender divide.
- Even among young urban Indians online, a cohort seen as more progressive, there is a significant minority that holds conservative views about women's role in households, workplaces and society.

#### Measures needed:

- Women's labour force participation and access to decent work are important and necessary elements of an inclusive and sustainable development process.
- Policy makers in India and throughout the region should take a comprehensive approach to improving labour market outcomes for women.
- Improving access to and relevance of education and training programs, skills development, and access to child care, maternity protection, and provision of safe and accessible transport.
- Policy-makers should be more concerned about whether women are able to access better jobs or start up a business, and take advantage of new labour market opportunities as a country grows.
- A policy framework **encouraging and enabling women's participation** should be constructed with active awareness of the "gender-specific" constraints that face most women.
- **Gender responsive policies** need to be contextually developed.
- Increasing labour market flexibility allowing more women, many of whom are working in the informal sector, to be employed in the formal sector.
- Supply-side reforms to improve infrastructure and address other constraints to job creation could also enable more women to enter the labour force.
- Higher social spending, including investment in education, can also lead to higher female labour force participation by boosting female stocks of human capital.

#### Conclusion:

- **Gender Equality** is central to inclusive economic growth and is critical for the achievement of the Sustainable Development Goals (SDGs).
- Attitudinal shift is essential for women to be considered as equal within their homes and in broader society. Educating Indian children from an early age about the importance of gender equality is imperative.

### Q) Voting in elections have turned into another fight against societal stigma for the Transgender sections of our Indian society. Discuss. (250 words)

The hindu

#### Why this question:

The article paints a bleak picture of the poor participation quotient of the transgender community owing to societal stigma associated with the community.

#### Key demands of the question:

The answer must discuss the factor of societal ostracization faced by the transgender community and that leading to low voter turnout in the elections. Answer must evaluate the factors responsible and what should be the way forward for it.

#### 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

Introduce by highlighting the importance of inclusiveness in the election system of the country.

##### Body

The body of the answer should address the following dimensions:



- Discuss the historical factors responsible for such ostracized status of the transgender community.
- Explain – The fear, particularly of being judged and mocked, how the community is stigmatized when one stands in a polling queue with others.
- Suggest what needs to be done to streamline and mainstream the community – A mechanism to instill confidence in the community to vote needs to be formulated, strong activism.

### Conclusion

Conclude with steps to overcome such societal stigmas.

### Introduction:

- The Constitution of India grants socio-economic and political justice to all the citizens of India irrespective of their sex, place of birth, religion, race or caste.
- **National Legal Services Authority v. Union of India is a landmark decision by the Supreme Court of India**, which declared **transgender people to be a 'third gender'**, affirmed that the fundamental rights granted under the Constitution of India will be equally applicable to transgender people, and gave them the right to self-identification of their gender as male, female or third-gender. However, for most transgenders, getting the ability to vote is a difficult climb over the mountain of bureaucracy that awaits them. Voting, it seems, is another fight against societal stigma.

### Body:

#### Transgenders and Voting:

- The number of third genders, who have enrolled themselves in the electoral list, has **increased by nearly 127 per cent**, from 918 in 2014 to 2,086 in 2019, according to the latest Election Commission (EC) data.
- The increased number shows a willingness of the community members to identify themselves as transgenders.
- Karnataka has a transgender population of more than 70,000, but only about 4,700 people from this community have enrolled for voting.
- Discrimination has relatively reduced in urban areas due to activism, however in the rural areas, it's still very evident.
- The presence of queer issues, particularly transgender issues, in several party manifestos is a mark of progress from the 2014 Lok Sabha elections

#### Challenges faced by Transgender voters in India:

- The insensitivity with which officials handle these cases only makes matters worse. It can double or triple the pain of transgender people if not heighten their anxiety, social humiliation and dysphoria. Thus many prefer not to undergo this ordeal.
- There is fear, particularly of being judged and mocked. The community is stigmatised when one stands in a polling queue with others.
- Before 2014, transgenders used to register as male or female until the Supreme Court judgment identified them as a different gender. Those who made voter cards before 2014 have not changed their id.
- Some people have voter ID cards, but those cards pertain to the period before they became transgenders.
- Only a few thousand have voter IDs because most of them don't have any documents to say they are residents of their localities.
- Many of them, surviving through begging and sex work, barely have any documents in their name. Those who do have a few documents, such as their birth and school-leaving certificates, struggle to get them updated with their Trans identity.
- Medical certificates of a gender transition is sought despite the 2014 NALSA verdict that states that self-identifying as transgender is not necessarily tied to a case of medical transition
- Transgenders are not given houses on rent by landlords because of their identity. They normally stay with their seniors, and documents are in their seniors' names.
- The gap is a result of not just social stigma but painful bureaucratic processes that renders the community helpless and exasperated.

#### Measures needed:

- The EC and State government have to be more proactive if they want voter turnouts to increase.
- To "uphold the rights of all transgender persons and remove the lacunae present in the current Transgender Persons Bill, 2018.
- There has to be a mechanism that instills confidence in the community to vote.



- Awareness programme where our officials go out and urge transgenders to vote.
- Transgender activists, NGOs and CSO can play an imperative role in registration of the transgender voters.
- Social media can be used to effectively reach out to the Trans communities and increase their participation and grant their constitutional rights.
- Recently, Shreegauri Sawant was appointed as one of the goodwill ambassadors of the Election Commission in Maharashtra. Such innovative measures will help build confidence among other transgenders as well as sensitize people.

**Conclusion:**

- Despite the small steps taken in the political landscape, stigma and patriarchy remain the biggest impediment.
- Therefore, the only way for these transgender women to overcome the challenges is by sticking their neck out in mainstream politics by breaking the glass-ceiling.

*Topic: Role of women; Social empowerment of Women; Women organisations.*

**Q) The Reproductive rights of women have major repercussions not only on women health but also on aspects of education, income and safety in India. Critically analyse. (250 words)**

Indianexpress

**Why this question:**

The article captures the State of the World Population 2019, the flagship report of the United Nations Population Fund (UNFPA) that highlights for the first time, data on women's ability to make decisions over three key areas –According to the analysis, the absence of reproductive and sexual rights has a major and negative repercussions on women.

**Key demand of the question:**

The answer must cover a detailed discussion on the essence of reproductive rights of women in shaping our society.

**Directive word:**

**Critically 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. When 'critically' is suffixed or prefixed to a directive, one needs to look at the good and bad of the topic and give a fair judgement.

**Structure of the answer:**

**Introduction:**

Highlight the situation, explain the background in brief – relevance of State of the World Population 2019, the flagship report of the United Nations Population Fund (UNFPA).

**Body:**

Discussion should have the following aspects :

- Reproductive rights were established as a subset of the human rights. women have a basic human right to determine freely and responsibly the number and the spacing of their children. Issues regarding the reproductive rights are vigorously contested, regardless of the population's socioeconomic level, religion or culture.
- One has to discuss reproductive rights with respect to Indian context focusing on socioeconomic and cultural aspects.
- Factors that have led to lack of such rights.
- What are the consequences on life of women ? – education, income, societal status, quality of life etc.
- Also discuss sensitization of government and judicial agencies in protecting the reproductive rights with special focus on the protecting the reproductive rights of women.
- What needs to be done?

**Conclusion:**

Conclude with road ahead what needs to be done to empower women.

**Introduction:**

- India accounts for over one-sixth of the world's population in 2019 (1.37 billion out of 7.71 billion) and has grown at an rate (1.2% per year between 2010 and 2019) that is just over the world growth rate (1.2%),



according to State of the World Population 2019, the flagship report of the United Nations Population Fund (UNFPA).

### Body:

#### Reproductive rights of Women:

- Reproductive rights are **legal rights** and freedoms relating to reproduction and reproductive health that vary amongst countries around the world.
- Women's reproductive rights may include some or all of the following: the right to legal and safe abortion; the right to birth control; freedom from coerced sterilization and contraception; the right to access good-quality reproductive healthcare; and the right to education and access in order to make free and informed reproductive choices.
- Reproductive rights may also include the right to receive education about sexually transmitted infections and other aspects of sexuality, and protection from practices such as female genital mutilation (FGM).
- Reproductive rights began to develop as a subset of human rights at the United Nation's 1968 International Conference on Human Rights.
- The issue of reproductive right is very essential because there is lack of concern on the part of the government and lack of awareness in the society to recognize and protect this
- Freedom and rights of women is impossible to achieve without assuring them reproductive rights.

#### Situation in India:

- India legalized abortion in 1971 when it passed the Medical Termination of Pregnancy (MTP) Act, but an abortion can't be performed solely on the woman's request.
- The procedure is allowed if her physical or mental health is under threat or if the child that would be born would have "such physical or mental abnormalities as to be seriously handicapped."
- The provision includes women under 18, as long as they have their guardian's consent, and women made pregnant by rape. A woman doesn't need the consent of her husband, and can legally terminate at up to 20 weeks' gestation.
- One clause, however, is specifically reserved for married women: abortion because of contraceptive failure
- Millions face structural, institutional, and cultural barriers to using accredited abortion services—things like stigma, not knowing the law, expense, fears about confidentiality, and lack of access to healthcare institutions.
- Such barriers disproportionately affect poorer women, who often live in remote, rural areas.
- Another major barrier is a **woman's lack of agency**. The absence of reproductive and sexual rights has major and negative repercussions on women's education, income and safety, leaving them "unable to shape their own futures".

#### Reproductive rights and women health:

- Between 2006 and 2107, 86% of births in India were attended by skilled health personnel, as compared to 79% across the world.
- India's maternal mortality ratio in 2015 was 174 deaths per lakh live births (down from 448 in 1994) while the global MMR in 2015 was 216.
- And while 28 of every 1,000 Indian adolescent women (age 15-19) gave birth between 2006 and 2017, the global adolescent birth rate was over one-and-a-half times that of India, at 44 per 1,000.
- India's fertility rate in 2019 is 2.3 births per woman, compared to 2.5 worldwide
- While India's life expectancy at birth is lower than the world's (69 years to 72), it scores higher than the global average in terms of access to healthcare during childbirth, and also has a much lower adolescent birth rate.

#### Reproductive rights and education, income and safety in India:

- Early marriage, pressure for early childbearing, lack of decision-making power within the family, physical violence, and coercion in sexual and family relations lead to lower education and in turn poor incomes for females.
- Continuous child-bearing due to lack of agency on her reproductive rights have made her mostly a house-wife, thereby making her dependent on spouse for finances.
- Patriarchal mindsets and childbearing until requisite number of sons are born without proper spacing between children makes her physically weak and threatens her life.
- The fear that educated women cannot be controlled by husband and his family further curbs her education rights.

#### Way forward:

- A focus on the health needs of women, their nutritional status, the risk of early marriage and child bearing is sensitive issue of concern and require urgent attention if condition of women has to be improved.





- At the same time, there is a need to provide health care information to the grass root level through awareness programme in the large scale.
- There is a need for the proper legal framework to address and recognize the promotion and protection of reproductive rights of women in India.
- There is a need to have access to appropriate, affordable and quality health care facilities and related services for women. Health programmes should focus more on women's health including reproductive health.
- There is a urge to have legislation as **Reproductive Rights (Protection) Act** in order to protect and promote reproductive rights of women and to look after all the issues of reproductive health of women whether it is as regard to providing medical facilities or creating awareness or having health policies and programmes concerning women.

#### Conclusion:

- About 35 million women, girls and young people will need life-saving sexual and reproductive health services this year, as well as services to address gender-based violence, in humanitarian settings.

**Q) Addressing the supply challenge as demand for electricity rapidly increases will be key not only for India's economic growth but also in empowering women in rural areas. Comment. (250 words)**

Livemint

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

The article is in the light of recently released World Bank study that has appreciated the fact that the with increase in demand for electricity ,addressing supply challenge will be key not only for India's economic growth but also in empowering women in rural areas.

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

Discussion should focus upon as to in what way access to electricity is associated with significant improvement in women's empowerment.

#### **Directive word:**

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

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

##### **Introduction:**

Introduce by stating the presence of a correlation in supply of electricity and women empowerment specially in Rural India.

##### **Body:**

In brief discuss –

- Quote the facts observed by the report.
- Explain how electricity in rural India decides factors such as – women's decision-making ability, mobility, financial autonomy, reproductive freedom and social participation of women in rural India.
- Access to electricity makes women more empowered as it is associated with greater job participation, education, health and exposure to electronic media, all of which are enabling factors for improved autonomy and social participation among women.
- You can as well provide for a comparison with Urban India.

##### **Conclusion:**

Conclude with significance and increasing necessity of rural electrification not just for economic growth but for rural empowerment too.

#### **Introduction:**

- Access to electricity makes women more empowered as it is associated with greater job participation, education, health and exposure to electronic media.
- According to a **new World Bank study**, Access to electricity is associated with significant improvement in women empowerment. It also says that Women's bargaining power increases by 7-10 percentage points because of electrification.

**Body:****Findings in the report:**

- In the study, Hussain Samad and Fan Zhang analyse data from the 2011-12 India Human Development Survey, covering more than 40,000 households and 200,000 individuals, and find that access to electricity is associated with significant improvement in women empowerment.
- They find that this index increases by as much as 11 percentage points with improved access to electricity.
- Women's bargaining power, primary involving her own well-being such as travelling alone, having a bank account and participating in social groups, increases by 7-10 percentage points because of electrification

**Electrification and women empowerment:**

- **Social empowerment:** Access to electricity makes women more empowered as it is associated with **greater job participation, education, health and exposure to electronic media**, all of which are enabling factors for improved autonomy and social participation among women.
- **Agriculture sector:** Mechanization, Agro-processing industries, Cold storage, Drip and sprinkler irrigation will all be possible. Women's labour force participation will increase leading to woman's intra-household bargaining power.
- **Industrialization:** More jobs, less migration to urban areas thereby improving rural economy as well as society. It will give boost to small scale industries and SMEs in rural areas and would also help in revival of power looms.
- **Financial inclusion:** Mobile banking, banking at CSCs can empower SHGs and inturn women can be empowered. Women empowerment bringing more women to mainstream rural economy.
- **Security:** With feminization of agriculture mechanization is the need of the hour and for it happen electrification is quintessential. Electrification and thus street light, less grey areas would result into more secure environment helping them to attend schools, colleges, work place etc.

**Challenges for electrification:**

- Electricity distribution companies (DISCOMS) are already highly indebted.
- The other major challenge is from distribution network capacity. Electrification in India has followed an approach of expansion, often driven by political considerations, without much emphasis on capacity augmentation and making the grid future ready.
- As a result, the distribution infrastructure is overburdened, as the demand has grown, causing a high level of technical losses and frequent breakdowns. The distribution network capacity in several States is inadequate to carry available electricity.
- Subsequently, DISCOMS have been resorting to load shedding while their contracted generation capacities are underutilised.
- Adding new load to the existing fragile distribution network will only compromise the quality and reliability of supply. It could result in continued blackouts for the rural poor during peak hours.
- Flawed definition of rural electrification: If 10 percent household of a village is having electricity connection the village is considered as electrified. First of all this limit is too low, secondly electricity connection is different than actual electricity delivery.
- Affordability is a concern for rural populations because of distance from distribution centres and low population density, both of which drive up the price of the service.

**Measures needed:**

- The federal government is to push the state-run distribution companies to carry out robust ground surveys and organize frequent camps to achieve the target so that not one household is left out from electrification.
- To achieve a consistent round-the-clock power supply, considerable improvement in the operational efficiency of distributors through extensive and intensive change management and capacity-building programmes as well as strengthening of the electricity sub-stations and sub-transmission network are required.
- At the same time, electricity must be priced rationally and the tariff structure is simplified.
- Decentralized renewable energy solutions such as mini-grids and rooftop solar, where the grid can't reach or reliably serve, and operating together is the most sustainable last-mile solution to reach consumers and achieve universal access to energy.

**Conclusion:**

- Electrification has been shown to accelerate opportunities for women by moving them into more productive activities.
- Access to electricity is associated with an improvement in all five indicators viz. decision-making ability, mobility, financial autonomy, reproductive freedom and social participation

**Q) Women's financial literacy can bring in turnaround in the fortunes of the country.**  
**Comment. (250 words)**

[pib](#)

**Why this question:**

The article discusses the Vice president's speech addressing the National Conclave on Women's Empowerment Through Financial Literacy, wherein he emphasized on need for women's financial literacy.

**Demand of the question:**

The answer must evaluate role of financial inclusion as one of the most effective accelerators of economic participation by women.

**Directive word:**

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

**Structure of the answer:**

**Introduction**

Start by explaining the financial inclusion, what does it imply.

**Body**

- What is role of financial inclusion in women empowerment?
- Financial literacy can empower women to develop a financial identity even with their household savings, and help them get access to formal credit for gainful occupation, giving them economic freedom and power.
- Discuss the reasons for low financial inclusion and literacy among women. A majority of the women in India, especially in rural areas, are homemakers, which is a full-time job with no payment.
  - A recent report by the United Nations titled, 'Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development', said that achievement of Sustainable Development Goals (SDGs) could be difficult without gender equality and women's empowerment. In fact, development in any sphere would be incomplete without equitable participation and contribution of women.
  - Discuss how India needs to sustain this momentum to transform into a completely financially inclusive economy. – embedding financial literacy in programmes where women have significant representation could be a good starting point. For instance, the Self Help Group-Bank Linkage Programme (SHG-BLP) programme, which is the largest microfinance programme in the world in terms of client base and outreach, provides SHGs access to institutional lending. More than 86 percent of the groups under this programme comprise exclusively of women.

**Conclusion**

Conclude with way forward.

**Introduction:**

- Financial literacy is the ability to use skills and knowledge to take effective and informed money-management decisions.
- It also involves the understanding, how money works in the world: how someone manages to earn or make it, how that person manages it, how he/she invests it (turn it into more) and how that person donates it to help others.

**Body:****Situation of financial literacy if women in India:**

- Not just rural women, but women in urban economically well-off situations display lower financial literacy levels than men.
- With only **20 percent of women being financially literate**, 77 percent women depend on their spouse or father for investment decisions.
- Rising income levels and stability in families are de-incentivising women from joining the labour force, as reported by the World Bank.
- Various factors that profoundly influenced financial literacy among Indian women include Lack of Independence, Patriarchal Culture, General Literacy, and Lack of confidence and Access to finance.
- It is observed that the male members of the family make all major financial investment decisions: mainly the husband or the father, but often the brother and uncles as well.
- Physical distance from the financial literacy contact centres and trainers and the socio-cultural contexts are major impediments in extending financial literacy to women.
- Women, even if employed, cannot make any choice to use their earned income.

**Importance of Financial literacy of women and development:**

- Financial literacy can empower women to develop a financial identity even with their small and micro household savings.
- It can help them to get access to formal credit for gainful occupation giving them economic freedom and power.
- Financial literacy can motivate women generating sustainable income through micro activities to wholeheartedly use financial systems and institutions and slowly create a ground for their graduation to higher income opportunities.
- Financially educating women generates a multiplier effect in having a substantial impact in disseminating financial literacy to the future generations.
- With India emerging as a top destination for investments and the country set to become a US \$ 10 Trillion economy in the next 10-15 years, women empowerment through financial literacy acquires greater importance and must be accorded highest priority.

**Measures needed:**

- Embedding financial literacy in programmes where women have significant representation could be a good starting point.
- For instance, the Self Help Group-Bank Linkage Programme (SHG-BLP) programme, which is the largest microfinance programme in the world in terms of client base and outreach, provides SHGs access to institutional lending. More than 86 percent of the groups under this programme comprise exclusively of women.
- We also need to **innovate and use technology** to deepen financial literacy amongst women.
- There is a need to use interfaces that allow women to access financial literacy easily, conveniently and without disturbing their contexts.
- India has witnessed **revolutionary penetration of mobile phones** even in the hinterlands. We need to ensure that every woman who owns a mobile phone or has access to one is able to use it for educating themselves and managing their own finances.
- **CSR activities of the banks, corporates** can be channelized for female financial literacy through NGOs. NGOs and self-help groups can use these to good effect at literacy camps, called the **Financial Literacy and Credit Counselling Centres (FLCCs)**.
- Programmes like **"Jaadu Ginni ka"** which engages self-help groups and other women associations across states for taking financial literacy to the base of the pyramid.
- Government initiatives like **Sukanya Samridhi Yojana, PM JanDhan Yojana and National Center for Financial Education** can put their best efforts to increase financial literacy of women.

**Conclusion:**

- Financial literacy is an invaluable life skill which should be ingrained in an individual right from the start. A conducive financial landscape with a blend of a favourable regulatory regime, innovative women-centric products/schemes, enhanced mobility, robust customer protection framework and reformed attitudes towards women will increasingly stimulate women to be well equipped with financial skills.



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**Q) Induction of Women as Jawans is a big step towards achieving full parity between men and women in the Indian forces. Discuss the significance of such steps. (250 words)**

[Indianexpress](https://www.indianexpress.com)

**Why this question:**

In a historic first, the Indian Army has begun the process to induct women in military police, nearly two years after Army Chief Gen. Bipin Rawat said women will be recruited as Jawans.

The Army started the online registration for recruitment for women in the Corps of Military Police and the last date for filing application has been fixed as June 8.

**Key demand of the question:**

The answer has to capture the significance of such step that would envisage the equality between Men and Women in the Indian society.

**Directive:**

**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:**

Begin with importance of Women's participation in Armed forces.

**Body:**

One must discuss the evolutionary changes in the role of Women and their participation in the forces from women only being allowed in select areas such as medical, legal, educational, signals and engineering wings of the Army to present status where women are being inducted as Jawans into Army.

Discuss how it will bring the factor of equality in the Indian society.

Explain the associated hurdles women face in forces- Physical issues, Physiological issues, Social and psychological issues, Conventional Barriers etc.

Discuss how women have overcome it over a period of time and that the step is welcome one.

**Conclusion:**

Conclude that the society has to be ready to accept that women too can play the crucial role of confronting the enemies.

**Introduction:**

- Opening up a new avenue for females, the Indian Army recently kicked off the process of inducting women as jawans by starting their online registration for recruitment in the corps of military police.
- This is being seen as a major breakthrough for women in armed forces as so far, they were being inducted only as officers and this is the first time they would be taken in as soldiers. Previously, after a long debate, women were inducted into Combat roles in Indian Air force.

**Body:**

**Current status:**

- As per government data, the Army has 3.80 per cent of its workforce as women, the Air Force has 13.09 per cent and the Navy six per cent.
- Currently, women are allowed in select areas such as medical, legal, educational, signals and engineering wings of the Army.

**Significance of the recruitment initiative:**

- Women In India reflected the struggling ethos and has been part of Indian freedom struggle in form of Rani Laxmi Bai of Jhansi, Rani Gadinlieu of Assam. So they hold prospects in future as well.
- In 2018, Army Chief had said the process to allow women in a combat role, currently, an exclusive domain of men was moving fast and initially, women will be recruited for positions in Military Police.
- Gradually women may be inducted in other branches, depending on the success of this induction.
- The women already serving non-combat position were found to be serving their duty with integrity as compared to men.
- It would be significant boost to women empowerment and has spill-over effect to general level of literacy, health, employment of women in defence sector as well as other sector.
- Increased number of women in the armed forces will reduce the incidents of sexual abuses and human right violation at the hands of army men while maintaining national security.



- More women in army will help in bringing more gender sensitivity among the armed forces.

#### Challenges:

- India is largely a patriarchal society with a traditional mindset. Thus, the men might not be very comfortable being commanded by women in the field.
- It is a biological fact that on average women are weaker than men. In combat units, which are necessarily intensely physical, any perceived weakness would lead to loss of respect of the subordinates. Which would make the task of women officers that much harder.
- The risk of getting captured as Prisoners of War (PoW's) is highest for combat units. A women PoW could be a psychological blow.
- Due to biological differences, women need long mid-career breaks as maternity leave. Not only does this disrupt training, but also puts restrictions on the type of physical work that they can do before and after the leave.

#### Conclusion:

- Indian women have never obtained their rights without a struggle. As they battle inequality and prejudice, they should also fight for their right to fight for their country.
- The move would help bring in Gender Parity in the armed forces to an extent.

### Q) Discuss the contributions of Dakshayani Velayudhan with special emphasis with respect to formation of the Pulaya Mahana Sabha. (250 words)

Indianexpress

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

The article brings out the contributions made by Dakshayani Velayudhan, a leader of the Depressed Classes, belonging to the Pulaya community.

It also highlights the formation of Pulaya Mahana Sabha and its contributions to the freedom movement.

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

The answer has to discuss particularly the contributions of Dakshayani Velayudhan and the evolution and significance of Pulaya Mahana Sabha.

#### **Directive:**

**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:**

Begin with importance of Dakshayani Velayudhan in the upliftment of the depressed classes.

##### **Body:**

- Discuss – Dakshayani Velayudhan was an Indian parliamentarian and leader of the Depressed Classes. Belonging to the Pulaya community, she was among the first generation of people to be educated from the community.
- She holds several distinctions including becoming the first woman from her community to wear an upper cloth, the first Scheduled Caste woman graduate in India, a science graduate, a member of the Cochin Legislative Council and of being one of nine female members of the Constituent Assembly of India.
- Her contributions – Although a staunch Gandhian, Dakshayani sided with B R Ambedkar on many issues relating to the Scheduled Castes during the Constituent Assembly debates. She agreed with Ambedkar giving up the demand for separate electorates arguing instead for 'moral safeguards' and the immediate removal of their social disabilities. discussions on draft Article 11 in the constituent assembly.
- Then move to discuss Pulaya Maha Sabha, contributions of it in Kerala and its spread to other parts of the country.

##### **Conclusion:**

Conclude by reasserting significance of such leaders.

**Introduction:**

- **Dakshayani Velayudhan** was an Indian parliamentarian and leader of the Depressed Classes. Belonging to the **Pulaya community**, she was among the first generation of people to be educated from the community.
- She holds several distinctions including becoming the first woman from her community to wear an upper cloth, the first Scheduled Caste woman graduate in India, a science graduate, a member of the Cochin Legislative Council and of being one of nine female members of the Constituent Assembly of India.

**Body:****Contributions:**

- Dakshayani forged her own path and stood up for the rights of women and people from oppressed castes.
- Dakshayani strongly opposed reservation or separate electorates and worked towards a vision of India free of caste or community barriers.
- Her two main objectives in constituent assembly was to make the assembly go beyond framing a constitution and offer people “a new framework of life”, and two, to use the opportunity to make untouchability illegal, unlawful, and ensure a “moral safeguard that gives real protection to the underdogs”.
- She held that the assembly should offer the people a “new framework of life”.
- Although a Gandhian, she agreed with Babasaheb Ambedkar on many issues. She also argued against appointment of governors anticipating friction between a state government and a governor appointed by another party at the Centre.
- She spoke against excessive centralisation of power in the Constitution and argued for greater decentralisation.
- She also suggested that the final draft of the Constitution be adopted following a ratification through a general election.
- She again intervened during a discussion on draft Article 11 (Art 17 of the Constitution) which aimed at abolishing discrimination based on caste and making it punishable by law.
- An unwavering supporter of a strong, common national identity for all residents of an independent India, she did not support separate electorates or reservations. Her main goal was creating an India free of caste or community barriers.
- Her idea of moral safeguards rested on the idea that only an independent socialist republic could uplift, remove social disabilities.

**Pulaya Mahajana Sabha:**

- Some of her own awareness was drawn from her household and family which played a role in founding the Pulaya Mahajana Sabha (1913).
- It was formed to offer resistance to the day to day life of a Dalit, and which later became a platform of bringing Dalit life to the public.
- The organisation found an ingenious way to defy the king’s order that proclaimed that no Dalit group could have a meeting in his land — they held their meeting on a row of catamarans anchored to an iron pole in the middle of the Vembanad lake.
- By conducting the meeting on water, the group sent out a message of protest without actually disobeying the royal proclamation.
- It was this historic Kayal Sammelanam (Meeting on the Backwaters) that later formed the basis for the name of Dakshayani’s memoirs, “The Sea Has No Caste”.
- The idea of PMS spread to other states too over a period of time.

**Conclusion:**

- Dakshayani was part of movements that called for the democratization of public spaces, education, work security, equality and abolition of caste slavery. Her work was an inspiration for her first cousin, K.R. Narayanan, who would become India’s first Dalit president.

**Q) Discuss the need for protection for both victims and accused in sexual abuse cases that have been on rise, what are the associated concerns ? Suggest measures to handle such challenges. (250 words)**

[The hindu](#)

**Why this question:**

The question is amidst a recent petition that has been filed in the Supreme Court to frame guidelines to protect the reputation and dignity of persons accused of sexual offences.

**Key demand of the question:**

The answer must evaluate the present conditions of sexual abuse that are on rise and the urgent need to provide for a framework for protection for both victims and accused in sexual abuse cases. You must suggest measures to be taken to successfully conclude upon such cases.

**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:**

Begin with a brief narration on current scenario.

**Body:**

- Discuss what are the major concerns related to such incidences – urgent need for guidelines to protect the reputation and dignity of persons accused of sexual offences.
- A person was considered innocent unless proven guilty by a court of law. If a person was falsely accused, his reputation would be lost forever and exposed to public ridicule for no fault of his. This would be a violation of the fundamental right to life enshrined under Article 21 of the Constitution. It does not only destroy an individual's life but also creates a social stigma for the family members too.
- Disclosure of his identity, especially during trial, would lead to media trial. Besides, considering the wide reach of social media, the person's name and even that of his family, which might include minors, would be exposed on the Internet. This would be a violation of their fundamental right to privacy.
- What needs to be done? mechanism to uphold "right to reputation" which is an integral part of Articles 21 and 19(2) of the Constitution of India.
- Changes at policy level, societal level etc.

**Conclusion:**

Reassert the urgent need for proper framework to be in place.

**Introduction:**

- A petition has been filed in the Supreme Court to frame guidelines to protect the reputation and dignity of persons accused of sexual offences.
- The fundamental principle of Indian judicial system stands on the premise of 'Innocent until proven guilty'.

**Body:****Major concerns related to such incidences:**

- A person was considered innocent unless proven guilty by a court of law. If a person was falsely accused, his reputation would be lost forever and exposed to public ridicule for no fault of his.
- This would be a violation of the fundamental right to life enshrined under Article 21 of the Constitution. It does not only destroy an individual's life but also creates a social stigma for the family members too.
- Disclosure of his identity, especially during trial, would lead to **media trial**. Besides, considering the wide reach of social media, the person's name and even that of his family, which might include minors, would be exposed on the Internet. This would be a violation of their fundamental right to privacy.
- The current trend of media on reporting cases commonly known as **Trial by media** has witnessed the sensation of self-manifested stories, half-baked truth resulting in the violation of right of individuals, resulting media reporting transforming into media circus.
- In present times, where people are in a virtual world, the reputation and integrity of a person is always an easy target to destroy.
- It would be tragic that the person, even after being found innocent, would continue to be known as a suspected sex offender on social media because once his identity entered the public domain it would become searchable and permanent. The previous identification as a suspect will endure in the public sphere.



- The increasing incidents of mob justice by lynching also add to the threat of lives of the accused. There are multiple instances where the victims have committed suicides due to violation of privacy and insensitivity of the public at large.

**Measures needed:** some preventive measures must be taken so as to avoid and to deal with such situations in the interest of justice.

- Amend Section 228-A of the Indian penal Code that provides punishment for disclosing the identity of the victims but does not provide any safeguard for protection of the identity and integrity of the accused in case of false accusation.
- Court should frame the guidelines like it had earlier framed in Vishaka & Ors. v. State of Rajasthan to protect the integrity of victim and to safeguard the victim from facing the social stigma.
- Media should play a proactive role and should be prohibited from disclosing the personal identity of the victim categorically in line with the Juvenile Justice Act.
- Media should be prohibited from reporting the identity of the victim categorically in line with the Juvenile Justice Act.
- Setting up of fast-track courts to be done away with ordeal of the victims.
- In case of child victims, there should be measures of hearing through video calls, at places of comfort for the victim rather than the tedious and routine court procedure.
- Counselling of both accused and victims is a necessary step to keep the spirits of individuals normal.

**Conclusion:**

- Supreme Court had on many occasions reinforced that the “right to reputation” is an integral part of Articles 21 and 19(2) of the Constitution of India.
- Therefore, some preventive measures must be taken to avoid and deal with such situations in the interest of justice.

*Topic– Urbanization, their problems and their remedies.; population and associated issues, poverty and developmental issues*

**Q) India needs community led Solid waste management plans to be implemented alongside maintenance of drainage and sewerage networks. Discuss. (250 words)**

Indianexpress

**Why this question:**

The article provides for a detailed analysis of a case study of Solid waste management of the city of Vellore of Tamil Nadu.

**Key demand of the question:**

Analyse in detail the need for Solid waste management – In India, solid waste management needs to be planned and implemented alongside well-maintained drainage and sewerage networks and with the active participation of the communities.

**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:**

In a few introductory lines explain the present system and conditions of solid waste management in the cities and towns of India.

**Body:**

In brief discuss –

- Discuss the grave crisis of solid waste management – issues associated.
- Why we need community led efforts to tackle the problem?
- Need for sustainable solid waste management – would have provided 9.6 million tons of compost that could have resulted in a better agricultural yield, energy equivalent to 58 million barrels of oil from non-recyclable wastes, 6.7 million tons of secondary raw materials to industries in the form of recyclable materials and livelihood to the urban poor.





- Take hints from the article and present a case study on community led solid waste management efforts.
- Discuss the policies and initiatives of the government in this direction.

### Conclusion:

Conclude with what needs to be done, suggest way forward.

### Introduction:

- India alone generates **more than 1, 00,000 metric tonnes of solid waste every day**, which is higher than many countries' total daily waste generation taken together. Large metropolis such as Mumbai and Delhi generate around 9,000 metric tonnes and 8,300 metric tonnes of waste per day, respectively.
- India suffers from inefficient and insufficient waste infrastructure and also from increasing rates of solid waste generation per capita. Besides, the infrastructure and technologies, we must also concede that we have not addressed the issue from a systemic perspective.

### Body:

#### Current Situation of MSW in India:

- ULBs are responsible for segregated waste collection, transporting waste in covered vehicle, processing, recyclables, separating domestic hazardous waste and disposing inert material in sanitary landfills
- Various studies reveal that about 90% of MSW is disposed of unscientifically in open dumps and landfills, creating problems to public health and the environment.
- Over 377 million urban people live in 7,935 towns and cities and generate 62 million tonnes of municipal solid waste per annum.
- Only 43 million tonnes (MT) of the waste is collected, 11.9 MT is treated and 31 MT is dumped in landfill sites.
- Most cities have confined themselves to collection and transportation of solid waste. Processing and safe disposal are being attempted only in a few cases.
- The CPCB report also reveals that **only 68% of the MSW generated in the country is collected** of which, **28% is treated by the municipal authorities**. Thus, merely 19% of the total waste generated is currently treated.
- According to a **UN report, India's e-waste** from old computers alone will **jump 500 per cent by 2020**, compared to 2007.
- Disappearance of urban water bodies and wetlands in urban areas can be attributed to illegal dumping of Construction & Demolition waste.

#### Some of the major issues concerning solid waste management are:

- Absence of segregation of waste at source
- Lack of funds for waste management at ULBs.
- Unwillingness of ULBs to introduce proper collection, segregation, transportation and treatment/ disposal systems.
- Lack of technical expertise and appropriate institutional arrangement
- lack of infrastructure and technology
- lack of involvement from the private sector and non-governmental organisations
- Indifference of citizens towards waste management due to lack of awareness
- Lack of community participation towards waste management and hygienic conditions
- Lack of sewage management plan.
- About 70% of the plastic packaging products turn into plastic waste within a short period.
- Unorganized vendors and markets, existence of slum areas and Corruption are other issues plaguing MSWM.

#### Community Solid Waste Management technique:

- The key to efficient waste management is to ensure **proper segregation of waste at source**.
- **Doorstep collection of mixed waste** using primary collection vehicles and municipal workers to transport the waste to the MCCs. These can be run by **self-help groups** or **NGO's** who are provided with covered space for sorting, and are paid on daily basis.
- **Awareness campaigns** which involves the high officials leveraging social media by posting photos of themselves in their home kitchens with separate bins for wet and dry waste.
- **Religious leaders of different communities** can be approached and urged to convey to their followers the importance of keeping wet and dry wastes unmixed and to avoid the use of one-time-use plastics.
- Groups like the Lions and Rotary can be roped in to spread the good word. Schools, with the cooperation of teachers, can be required to get pledges signed by all students and their parents.
- Such campaigns to engage with the community are successful only when the doorstep collection teams cooperate and strictly refuse taking mixed waste.



- The pending grievances of waste collectors with respect to promotions, filling vacancies, provident fund issues and minor repairs of primary collection vehicles, etc. were resolved to ensure their buy-in for the campaign.
- Micro-planning of collection vehicle routes manned by municipal staff, and tracking their punctuality and performance, is also key to citizen cooperation.

#### Other steps needed:

- To ensure that the waste goes through different streams of recycling and resource recovery as stated in the Solid Waste Management Rules, 2016.
- State governments should **provide financial support to ULBs** to improve their waste management system under various schemes and programs.
- Initiatives like Smart Cities Mission, AMRUT should provide significant funding to improve civic services infrastructure.
- **Waste to energy** is a key component of SWM. Installation of **waste-to-compost and bio-methanation plants** would reduce the load of landfill sites
- There is a need to **encourage research and development** so as to reinvent waste management system in India.
- The focus should be on **recycling and recovering from waste** and not landfill. Further, it is important to encourage recycling of e-waste so that the problem of e-waste
- **Public- Private Partnership models** for waste management should be encouraged.
- Construction and demolition waste should be stored, separately disposed off, as per the **Construction and Demolition Waste Management Rules, 2016**.
- **Responsibilities of Generators** have been introduced to segregate waste in to three streams, Wet (Biodegradable), Dry (Plastic, Paper, metal, wood, etc.) and domestic hazardous wastes (diapers, napkins, empty containers of cleaning agents, mosquito repellents, etc.) and handover segregated wastes to authorized rag-pickers or waste collectors or local bodies.
- **Sensitization** of citizens as well as government authorities, community participation, involvement of NGOs. Littering should be prohibited.
- International Best practices should be emulated. South Korea is one of the few countries to separate and recycle food waste. It has also launched landfill recovery projects such as the **Nanjido recovery project** which have successfully transformed hazardous waste sites into sustainable ecological attractions.

#### Conclusion:

- Municipal solid waste management (MSWM) is one of the major environmental problems of Indian cities.
- A **Decentralized management of solid waste** can help mitigate the problem to a great extent. The need of the hour is **scientific, sustainable and environment friendly management of wastes**.

**Case Study:** *Vellore city in Tamil Nadu, with a population of five lakh, has been a trailblazer in **decentralised management of solid waste** and sending no waste to landfills. More recently, it has earned the remarkable distinction of getting all its residents to separate their wet waste from dry waste, which makes the task of solid waste management so much easier for the municipal corporation.*

*Vellore generates 160 tonnes of solid waste per day, excluding waste from bulk generators. It all began with a **PIL in the National Green Tribunal in 2015** seeking closure of the eight-acre dumpsite on a tank bund in Saduperi, a few kilometres away from Vellore. The site had been used for dumping mixed waste since 1991.*

***Vellore Municipal Corporation (VMC)** responded to the challenge by building 42 sheds for micro composting centres (MCCs) across its 60 wards. Each MCC (with a capacity ranging from 1.5 to 5 tonnes) was provided enclosed sheds containing numerous open-brickwork tanks (5 ft deep, 5-6 ft wide and 7-10 ft long) for composting wet waste: The tanks are filled in rotation, over a starter bed of dry leaves, with one-foot layers of hand-sorted wet waste plus a layer of cow dung-slurry as a compost starter, and allowed to mature for 30-60 days.*

**Q) Social and employment policies affect migration but can have different impacts according to location and circumstances. Analyse. (250 words)**

#### Reference

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

The article is in the light of recently released 2018 State of Food and Agriculture report by FAO that has asserted water availability, through its effect on crop production, influences migration. Thus it becomes necessary for us to examine the changing factors that are affecting migration trends.

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



Discussion should focus upon the changing factors affecting the trends in migration from conventional factors of Social and employment policies to location and circumstantial causes.

**Directive word:**

**Analyze** – When asked to analyse, 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:**

Introduce by stating few facts on migration trends across the world.

**Body:**

In brief discuss –

- Discuss the highlights of 2018 State of Food and Agriculture report.
- New factors affecting migration – Water availability of a region, crop patterns of a country or a region within a country, food insecurity due to severe drought conditions.
- Discuss the effect of Social and employment policies too and how they work in tandem with above mentioned factors.
- Suggest what needs to be done.

**Conclusion:**

Conclude with way forward – suggest policy measures to address .

**Introduction:**

- People have migrated either in search of better livelihood opportunities or out of extreme need. It is an important factor that drives economic and social development.
- The **2018 State of Food and Agriculture (SOFA) report published by the Food and Agriculture Organization (FAO)** says rural migration, which is often seen by farming households as a strategy to overcome food insecurity, can be tackled by investing in agricultural value chains.

**Body:**

**Traditional factors affecting migration:**

- **War, conflicts and persecutions:** Conflict is the most common factor for forced migration around the world and throughout history. The **conflicts in West Asia, Africa and South America**, and the extreme violence associated with them have forced people to leave their homes and seek a haven in foreign countries. Most recently, the world's focus has been on the Rohingya crisis in Myanmar, with over half a million of the country's Muslim population fleeing to neighbouring Bangladesh in the wake of violence and ethnic cleansing.
- **Climate Change Refugees:** climate change effects also contributed to the growing number of migrants and refugees. **Example:** Sudan, Libya. According to a report **published in 2017 by Cornell University**, climate change could account for up to **4 billion forced migrations by the year 2060**. By 2100, they estimate that number would surpass 2 billion.
- **Droughts:** A single drought can mean disaster for communities whose lives and livelihoods rely on regular, successful harvests. In a number of African countries where Concern works, including Somalia, Kenya, Malawi, and Ethiopia, droughts have become increasingly severe, leaving millions of citizens without the ability to grow the food that feeds them and their livestock.
- **Diseases:** Contagious disease and outbreaks often follow in the wake of issues brought up by drought, flooding, and earthquakes. When crops are threatened and water supplies are either limited or contaminated, the risk for infection increases.
- **Development induced displacement:** Development-induced displacement is a social problem affecting multiple levels of human organization, from tribal and village communities to well-developed urban areas. Development is widely viewed as an inevitable step towards modernization and economic growth in developing countries; however, for those who are displaced, the end result is most often loss of livelihood and impoverishment.

**New factors influencing migration as per SOFA report:**

- **Water availability:** It is not the only factor that decides crop patterns of a country or a region within a country. It is a very complex process, which involves various economic, social and political factors. Water availability should definitely be one aspect to look at while deciding on crops. Recent studies claim that water stresses such as drought, dry spells, precipitation variability and weather extremes influence migration.



- **Differentials in wages and employment opportunities:** Rural migration is primarily driven by differentials in wages and employment opportunities. As economic development occurs, more women are capable and better informed which increases the likelihood of rural outmigration. Gender differences in internal migration patterns tend to decrease as countries develop and level of urbanisation increases.
- **Adoption of mechanisation:** adoption of mechanisation as a tool to promote agricultural productivity, often frees up labour to move into other sectors.
- **Food insecurity:** Due to climate change vagaries, poverty, spoilage of crops due to lack of value addition and storage facilities. This makes the people migrate in search of livelihoods and to alleviate hunger.

#### Measures needed:

- Creation of attractive livelihood opportunities in villages can help stem rural migration.
- In Andhra Pradesh, the Zero Budget Natural Farming initiative, has helped reduce migration to a great extent.
- **Creating opportunities in non-farm employment** in rural areas is an important element of any rural development strategy.
- A **national policy for internal migration** for reducing distress-induced migration and addressing conditions of work, terms of employment and access to basic necessities.
- **Local bodies and NGOs** which bring about structural changes in local regions need to be provided more space.
- Local interventions by NGOs and private entrepreneurs need to consider cultural dimensions while targeting migrants.
- Interventions aimed at **enhanced skill development** would enable easier entry into the labour market.
- Addressing the needs of household migrants because household migration necessitates access to infrastructure such as housing, sanitation and health care more than individual migration does.

#### Conclusion:

- India must safeguard the rights of internal migrants. Continued dynamic interventions over long periods of time would yield better results compared to single-point static interventions.
- The need of the hour is for the government to consider the needs of this section of the economy and design special assistance for them.

### Q) Discuss the concept of Green spaces and their significance in Sustainable development of resources in urban areas. (250 words)

[pib](#)

#### Reference

##### *Why this question:*

The article discusses the necessity and need of creating green urban spaces to achieve sustainable development of resources in Urban areas.

##### *Demand of the question:*

The answer must evaluate in detail the concept of Green spaces applied to urban areas, what are the benefits and challenges in implementing them and their relevance in Indian context.

##### *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*

Start by explaining the concept of Green spaces.

##### *Body*

- Merits of Green spaces – Green spaces such as parks and sports fields as well as woods and natural meadows, wetlands or other ecosystems, represent a fundamental component of any urban ecosystem. Green urban areas facilitate physical activity and relaxation, and form a refuge from noise. Trees produce oxygen, and help filter out harmful air pollution, including airborne particulate matter. Water spots, from lakes to rivers and fountains, moderate temperatures.
- Urban parks and gardens play a critical role in cooling cities, and also provide safe routes for walking and cycling for transport purposes as well as sites for physical activity, social interaction and for recreation.
- Discuss the challenges in creating urban green spaces
- Why is the necessity?



- Conclude with what should be done?

### **Conclusion**

Conclude with way forward.

### **Introduction:**

- Green spaces are important components of the green infrastructure of cities and provide a range of ecosystem services, as well as cultural services such as recreation and restoration.
- It includes **parks and sports fields as well as woods and natural meadows, wetlands or other ecosystems**, represent a fundamental component of any urban ecosystem.

### **Body:**

### **Significance of Green Spaces:**

#### **Environmental Benefits:**

- Green spaces, from large parks to trees and grass, can reduce local temperatures by 1–6°C during the day, in both the sun and shade, through albedo change, reduced surface heat storage, and increased evapotranspiration.
- Trees, plants, and green spaces can also reduce local air pollution, improve human well-being in dense urban areas and increase property values.
- They assure regulation of the carbon cycle and attenuating climate change.
- They constitute infiltration zones for water (and thus help prevent flooding and soil erosion) and alimentation of groundwater and contribute to a better water quality.
- They are an essential support for biodiversity.

#### **Economic and Aesthetic Benefits:**

- **Energy savings:** using vegetation to reduce the energy costs of cooling buildings has been increasingly recognized as a cost-effective reason for increasing green space and tree planting. Plants improve air circulation and provide shade.
- This provides a cooling effect and help to lower air temperature.
- **Property value:** areas of the city with enough greenery are aesthetically pleasing and attractive to residents, visitors and investors.
- Urban green spaces can be one of the factors that attract significant foreign investments that assist in rapid economic growth.

#### **Social and Psychological Benefits:**

- Recreation and wellbeing: Green urban areas facilitate physical activity and relaxation, and form a refuge from noise. Trees produce oxygen, and help filter out harmful air pollution, including airborne particulate matter. Water spots, from lakes to rivers and fountains, moderate temperatures.
- Urban parks and gardens provide safe routes for walking and cycling for transport purposes as well as sites for physical activity, social interaction and for recreation.
- Recent estimates show that physical inactivity, linked to poor walkability and lack of access to recreational areas, accounts for 3.3% of global deaths.
- Green spaces also are important to mental health. Having access to green spaces can reduce health inequalities, improve well-being, and aid in treatment of mental illness.
- Some analysis suggests that physical activity in a natural environment can help remedy mild depression and reduce physiological stress indicators.

#### **Challenges in creating urban green spaces:**

- Increased migration has led to rampant urbanization and extreme pressures on the land leading to destruction of the forests, woods area around the cities.
- Cost of land has increased manifold and high rise buildings are coming up, people are getting hardly any area for the greenery.
- Steadily growing traffic and urban heat, especially in the developing countries is not only damaging the environment but also incur social and economic costs.
- Insufficient Operation of Urban Planning Regulations has led to poor urban planning and reduction in the green spaces.



**Way forward:**

- Urban green spaces, especially public parks and gardens provide resources for relaxation and recreation.
- Green spaces need to be **uniformly distributed throughout the city area**, and the total area occupied by green spaces in the city should be large enough to accommodate the city population needs.
- Cities are responsible for most of the consumption of the world's resources and are home to most of the world's citizens as well.
- Bringing green space to the urban landscape can promote and inspire a **better relationship with the environment** while supporting important services.
- The promotion and conservation of green space in cities is in the hands of **local and regional authorities**. Effective urban planning can make green spaces a reality.
- Innovative measures like **Vertical gardens, roof-top gardens can be incorporated into green building codes**.
- Plantation, greenery and other environment friendly applications should be planned around the buildings by way of dwarf trees, small shrubs, ground covers, hanging baskets, creepers, etc.
- Promoting **urban forest areas as seen in Chattisgarh** can be emulated across cities.

**Q) Evaluate the success of government's urban development programme of Smart cities mission. Do you think there is much change in the approach of carrying out of the programme ? Recommend what more needs to be done to transform India's urban scenario. (250 words)**

[Indianexpress](https://www.indianexpress.com)

**Why this question:**

The question is direct and straightforward evaluation of the government's flagship programme of smart cities mission.

**Key demand of the question:**

The answer must discuss the salient features of the smart cities mission, discuss its success and achievements along with lacunae, how is the approach different from past projects and what should be the way forward.

**Directive:**

**Evaluate** – When you are asked to evaluate, you have to pass a sound judgement about the truth of the given statement in the question or the topic based on evidences. You have to appraise the worth of the statement in question. There is scope for forming a personal opinion here.

**Structure of the answer****Introduction:**

Introduce briefly the features of the mission.

**Body:**

- Explain What is the aim of smart cities? – They always put people first. In the approach to the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.
- What are the features of Smart City? What's the progress of Smart Cities Mission? – strategic components of area-based development (ABD) in the Smart Cities Mission (SCM) were city improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development), along with a pan-city initiative in which smart solutions are applied covering larger parts of the city.
- What are the reforms required to accelerate the development of India's smart cities so as to shape the future of urban development and services.
- Discuss how the approach has changed from the previous projects.
- Suggest way forward.

**Conclusion –**

Conclude with significance of such missions and changed approach with growing demands of the country.



### Introduction:

- A smart city is a designation given to a city that incorporates **information and communication technologies (ICT)** to develop city infrastructure and **enhance the quality and performance of urban services** such as energy, transportation and utilities in order to **reduce resource consumption, wastage and overall costs**.
- The overarching aim of a smart city is to **enhance the quality of living** for its citizens through smart technology.

### Body:

#### Progress of Smart Cities mission:

- All 100 Smart Cities have established their **SPVs**, constituted their **City Level Advisory Forum (CLAF)** and all cities have appointed PMCs, indicating that all these Smart Cities are in Mission mode.
- The **Smart Cities Mission** aimed at promoting cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.
- **Citizens** are at the core of Smart City Mission and it has the largest level of citizen engagement
- There are a few cities that have taken the task seriously. Pune has begun by raising funds through the issuance of municipal 'smart city' bonds.
- Bhubaneswar has launched a railway multi-modal hub, a hi-tech transport signal system and an urban knowledge centre.
- The New Delhi Municipal Corporation has started implementation of mini-sewerage plants, Wi-Fi activated 'smart' street lights and city surveillance systems through a command and control centre.
- But, most cities are still struggling at a primary planning stage, and financial closure to projects is still a long way off.
- **Integrated Command and Control Centres (ICCCs)** becoming operational in 15 cities has resulted in enhanced efficiency in governance, management of traffic, law enforcement, improved citizen grievance redressal and reduced criminal incidents on city streets and public spaces.
- Smart Cities and AMRUT programmes have **opened up avenues for local industry and global players** to participate in the development of cities across such sectors as utilities, housing, mobility, telecommunications, information technology, healthcare, education and recreational facilities.
- More importantly private investment –has hardly been identified and defined.

#### Challenges:

- Smart cities function as special purpose vehicles diverged from regular urban governance structures. It can create islands of development rather than an inclusive all round development of the city.
- State and local governments lack fine-grained data or the capability to analyse them in order to understand the evolving needs of their communities.
- Although India's Smart Cities Mission has identified more than 20 priority areas, interventions by the respective agencies are weak.
- There is an inadequate emphasis on the functioning of urban local bodies.
- The Area Based Development approach –development of a sewage system somewhere or a web of roads in another city –will cover just about three per cent of the urban areas associated with these smart cities.
- Urban local bodies lack both technical and human capacity and professionalism.

#### Way forward:

- The solution lies in inclusive urbanization processes that prioritize quality of life for all, focusing especially on the needs of vulnerable urban groups for employment, housing, sanitation, healthcare and education.
- Planning must incorporate long-term resource sensitivity and community involvement at every step, while benchmarking smart and measurable outcomes for all stakeholders.
- Making cities 'Data Smart' is key in realizing the full potential of technology interventions and innovation ecosystems in cities.
- Other parameters for Smart Cities must have efficient use of resources; cooperative and competitive federalism; integration, innovation and sustainability; technology and inclusiveness.
- ICCCs have also reduced traffic violations, improved efficiency in solid/liquid waste management, water and wastewater management as well as air quality management. More such ICCCs should come up.
- Since the smart cities programme aims at affordable housing and modern transportation, government has to facilitate smoother land acquisition with appropriate rehabilitation and resettlement
- Citizen participation is important right from policy inputs, implementation and execution because citizens are the ultimate beneficiaries of smart cities.

**Conclusion:**

- Clearly, there are a lot of low-hanging fruits on the road to smartness, and a nimble policy approach can tap this quickly. The plan should recognise that the vibrant life of cities depends on variety and enabling environments, rather than a mere technology-led vision.
- Pollution-free commons, walkability and easy mobility, with a base of reliable civic services, is the smart way to go. With urbanization gaining prominence in the global policy discourse, it is important to focus on local governance.

*Topic– Salient features of world's physical geography.*

**Q) What do you understand by Great Pacific Garbage ? Discuss its environmental impact and necessary measures to tackle the issue. (250 words)**

Reference**Why this question:**

The question is based on the concept of Great Pacific Garbage that is alarming the world the ill effects of Plastic pollution.

**Key demands of the question:**

The answer must provide for a brief discussion on the concept of Great Pacific Garbage and discuss in detail the impact of such debris in oceans on the ecosystem of Earth. One must also suggest what measures should be taken to tackle the issue.

**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**

In a few introductory lines explain what you understand by Great Pacific Garbage patch.

**Body**

Discuss the following aspects in the answer:

- What is Great Pacific Garbage? – The Great Pacific Garbage Patch (GPGP), aka Pacific Trash Vortex, is an enormous collection of marine debris swirling in a gyre in the central North Pacific Ocean, well beyond recognized national boundaries. The patch extends over an imprecise area.
- Explain the causal factors of it – 100% human. The plastics and debris in this region (and others) are all from human use, disposal, littering, dumping, etc. primary sources are improper waste disposal, management of trash, and manufacturing products.
- Detail upon the impact of ecosystem – impact on the ocean ecosystem health and on marine animals, human health impacts, bioaccumulation etc.
- What are the challenges in resolving it? What needs to be done? – need for coordinated environmental governance, dispute resolution mechanisms, need for adequate economic instruments, and adequate provisions for liability.

**Conclusion**

Conclude with significance of controlling the spread of the patch and curbing the rising menace of plastic pollution.

**Introduction:**

- The Great Pacific Garbage Patch (GPGP) also described as the **Pacific trash vortex**, is a gyre of marine debris particles in the north central Pacific Ocean. It is located about halfway between Hawaii and California. It's the largest accumulation zone for ocean plastics on Earth.

**Body:****Great Pacific Garbage Patch:**

- Twice the size of Texas, the Great Pacific Garbage Patch stretches for hundreds of miles across the North Pacific Ocean and is one of the most frightening examples of just how much human activity is violating the planet.
- Marine debris and pollution consisting mostly of plastic trash is accumulating in oceans around the world.
- The patch is characterized by **exceptionally high relative pelagic concentrations of plastic, chemical sludge, and other debris that have been trapped by the currents of the North Pacific Gyre.**
- **Microplastics make up 94 percent** of an estimated 1.8 trillion pieces of plastic in the patch. But that only amounts to eight percent of the total tonnage.
- As it turns out, of the 79,000 metric tons of plastic in the patch, most of it is abandoned fishing gear—not plastic bottles or packaging drawing headlines today.

**The causal factors of GPGP are:**

- The cause of GPGP is **entirely due to human beings.**
- Merchant ships expel cargo, sewage, used medical equipment, and other types of waste that contain plastic into the ocean.
- The largest ocean-based source of plastic pollution is discarded fishing gear (including traps and nets).
- Continental plastic litter such as Food Wrappers & Containers, Bottles and container caps, Plastic bags, Straws and stirrers etc. enters the ocean largely through storm-water runoff.
- Micro plastics (particles of less than 5 mm) such as those used in scrubbers and cosmetics
- Unlike POPs (Persistent Organic Pollutants) or chlorofluorocarbons (CFCs), Plastic pollution has received little attention in terms of international agreements.

**Impact on marine and human life:-**

- **Affects movement of marine organisms:**
  - **Ghostnets**, a term coined to describe purposely discarded or accidentally lost netting, drift through the ocean, entangling whales, seals, and turtles.
  - An estimated 100,000 marine animals are strangled, suffocated, or injured by plastics every year.
- **Direct harm to species:**
  - Of the 1.5 million Laysan albatrosses that inhabit Midway, nearly all are likely to have plastic in their digestive system.
  - Approximately one-third of their chicks die, and many of those deaths are due to being fed plastic by their parents.
  - Fish and whales may also mistake the plastic as a food source.
- **Indirect harm to species via the food chain:**
  - Besides the particles danger to wildlife, on the microscopic level the floating debris can absorb organic pollutants from seawater, including PCBs, DDT, and PAHs.
  - These toxin-containing plastic pieces are also eaten by jellyfish, which are then eaten by fish. Many of these fish are then consumed by humans, resulting in their ingestion of toxic chemicals
- **Spreading invasive species:**
  - Marine plastics also facilitate the spread of invasive species that attach to floating plastic in one region and drift long distances to colonize other ecosystems. Research has shown that this plastic marine debris affects at least 267 species worldwide.
- **Affects Food-chain:**
  - Because the garbage blocks sunlight, algae is not growing as it should. With less algae, the entire food chain is experiencing a negative disruption.
  - In addition, the plastics floating in the ocean are leeching harmful chemicals into the water, which are likely entering the food chain.

**Measures to tackle plastic pollution:**

- **Local actions** are required for mitigating plastic pollution, using mechanisms such as bans on plastic bags, maximum daily limits for emissions into watersheds, and incentives for fishing gear retrieval.



- Countries should come together to establish measurable reduction targets for plastic waste. A meaningful international agreement—one with clearly defined waste reduction targets is the need of the hour.
- Effective policies must take into account all stages of the lifecycle of plastic—connecting producers to users and ultimately to waste managers.
- **Nonprofits like 5 Gyres** are now pushing an agenda toward public awareness, corporate responsibility and the idea of a circular economy — an economy that focuses on keeping waste to a minimum while maximizing materials' use.
- Fossil fuel subsidies incentivise the plastic market. Hence, Countries should end fossil fuel subsidies. Annually, 4–8% of oil is used to produce raw plastic.
- India has a major problem dealing with plastics, particularly single-use shopping bags that reach dumping sites, rivers and wetlands along with other waste.
- The most efficient way to deal with the pollution is to control the production and distribution of plastics.
- Banning single-use bags and making consumers pay a significant amount for the more durable ones is a feasible solution.
- Enforcing segregation of waste will retrieve materials and greatly reduce the burden on the environment.
- **Waste separation can be achieved in partnership with the community**, and presents a major employment opportunity.
- Eco-friendly substitutes (cloth/paper/jute bags, leaves/areca leaf plates, paper straws) should be developed. For this, scientific and financial support (soft loans and subsidies) is required.

#### Conclusion:

- ❖ Marine plastic pollution is a “planetary crisis,” and we should hope for a “Paris-style” global treaty aimed at tackling it. We cannot transform our world into a ‘plastic planet’.
- ❖ What is needed is collective public effort to stop plastic pollution and safeguard our ecosystem/biodiversity.

### Q) Volcanic eruptions in the tropics can trigger El Nino events and create a dramatic global impact on the climate . Comment. (250 words)

[Economictimes](#)

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

It is about analysing how volcanic eruptions can trigger El Nino events and thus impact global environment. The article captures the study focused on the Mount Pinatubo eruption – the largest and best-documented tropical one in the modern technology period which ejected about 20 million tonnes of sulphur dioxide.

Read more at:

#### **Demand of the question:**

This question seeks to examine the role of volcanic eruptions on the phenomena of El Nino and their significant impact in climate change.

#### **Directive word:**

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

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

##### **Introduction**

Start with brief introduction on the concept of El-Nino.

##### **Body**

Discuss the following points in detail:

- The concept of El Nino
- The link between volcanic eruption and El Nino.
- Its impact on global climate.
- Quote examples of recent El-Nino events that manifested volcanic eruption as the driving cause – Mount Pinatubo eruption.

##### **Conclusion**

Conclude with the fact that one cannot predict volcanic eruptions but one can be prepared with such pre known linkages.





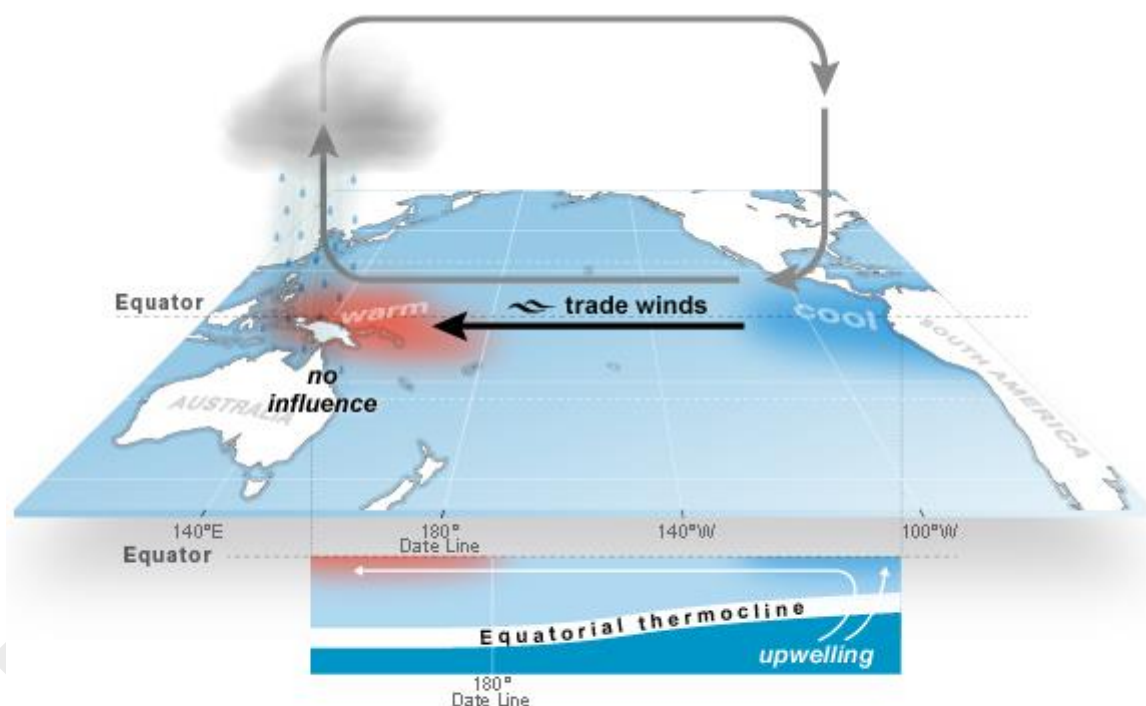
### Introduction:

- 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:

- El Niño, an oceanic phenomenon usually occurs with Southern Oscillation, an atmospheric phenomenon. Together they are called **El Niño Southern oscillation (ENSO)**.
- El Niño is a climatic cycle characterised by high air pressure in the Western Pacific and low air pressure in the eastern.
- In normal conditions, strong trade winds travel from east to west across the tropical Pacific, pushing the warm surface waters towards the western Pacific.
- The surface temperature could witness an increase of 8 degrees Celsius in Asian waters.
- At the same time, cooler waters rise up towards the surface in the eastern Pacific on the coasts of Ecuador, Peru, and Chile.
- This process called upwelling aids in the development of a rich ecosystem.



El Niño–Southern Oscillation (ENSO): **Neutral**

© Commonwealth of Australia 2013.

#### Link between volcanic eruption and El Nino:

- Large volcanic eruptions in the tropics can lead to El Nino event, notorious warming periods in the Pacific Ocean with dramatic global impact on the climate, says a new study.
- The study used climate model simulations to show **that El Niño tends to peak during the year after large volcanic eruptions**, such as the one at **Mount Pinatubo** in the Philippines in 1991. It ejected about 20 million tons of sulfur dioxide.
- Enormous eruptions trigger El Nino events by pumping millions of tonnes of sulfur dioxide into the stratosphere, which form a sulphuric acid cloud, reflecting solar radiation and reducing the average global surface temperature.
- According to the study, sea surface temperature data since 1882 document large El Niño-like patterns following four out of five big eruptions: Santa María (Guatemala) in October 1902, Mount Agung (Indonesia) in March 1963, El Chichón (Mexico) in April 1982 and Pinatubo in June 1991.



- Cooling in tropical Africa after volcanic eruptions weakens the West African monsoon, and drives westerly wind anomalies near the equator over the western Pacific, the study says.
- The anomalies are amplified by air-sea interactions in the Pacific, favouring an El Niño-like response.
- Climate model simulations show that **Pinatubo-like eruptions tend to shorten La Niñas, lengthen El Niños and lead to unusual warming during neutral periods**, the study says.

#### Concerns for India due to El-nino:

- **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.
- **Social Impacts:**
  - A WHO Paper said that El Niño 2015-2016 is affecting more than 60 million people.
  - Rising temperatures and more variable rainfall patterns can often reduce crop yields, compromising food security.

#### 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- Niño and La- Niña conditions.

### Q) Discuss the significance of geohydrology in understanding and managing problems of urban floods. (250 words)

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

It is about the concept of Hydrology and the aid it provides in understanding and managing the problems of Urban floods.

#### **Demand of the question:**

This question seeks to examine the problems posed by urban floods and how and in what way study of hydrology helps in understanding the situation of floods better and help in resolving the same. One is expected to establish How Urbanisation affect the hydrological cycle and thus study of hydrology helps in understanding the flood situations better.

#### **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**

Start with brief introduction of hydrological cycle, urban flood scenario.

##### **Body**

Discuss the following points in detail:

- Why is hydrology important? What you understand by urban hydrology?
- How does Urbanization affect the hydrological cycle? Leading to urban floods.
- Analyse the causes and consequences of urban floods.



- Explain the significance of study of hydrology , quote examples of recent Kerala floods, Chennai floods.

### Conclusion

Conclude that Hydrology has evolved as a science in response to the need to understand the complex water system of the earth and help solve water problems.

### Introduction:

- **Geohydrology** is the area of geology that deals with the distribution and movement of groundwater in the soil and rocks of the Earth's crust (commonly in aquifers). The terms groundwater hydrology, geohydrology, and hydrogeology are often used interchangeably
- **Groundwater engineering**, another name for hydrogeology, is a branch of engineering which is concerned with groundwater movement and design of wells, pumps, and drains. The main concerns in groundwater engineering include groundwater contamination, conservation of supplies, and water quality.

### Body:

- **Urban flooding** is the inundation of land or property in a built environment, particularly in more densely populated areas, caused by rainfall overwhelming the capacity of drainage systems, such as storm sewers.
- Due to **rapid, unscientific, unplanned urbanization** across the globe, **the carrying capacity of urban areas is often breached** leading to impending disasters.
- The cases of floods in Chennai in 2016, Bangalore, Gurgaon in 2017 are instances of urban flooding. **Floods and water-logging show that urban planners have paid scant respect to hydrology.**

### Unscientific urbanization affects Hydrology:

- **Concretization:**
  - Most cities had water bodies — lakes, ponds, streams, rivulets — which served three purposes: They replenished groundwater, catered to the city's water needs and channelised excess rainfall to larger water bodies. Most such aquifers have fallen prey to concrete.
  - In Delhi, for example, a stream used to feed the Yamuna at about the place where the busy ITO today stands. It's not without reason that the area is one of the most water-logged when it rains heavily in Delhi.
- **Wiping out of the wetlands:**
  - The encroaching of lakes in the cities by filling with mud and construction waste to recover the land leaves no place for water to get collected.g. Bengaluru had more than 250 lakes in the 1960s. There are scarcely 10 such water-bodies in a healthy state in the city today.
  - Chennai's flood sink on its southern outskirts — **the Pallikarnai marsh** — was around 5,000 hectares in the 1950s. After the horrific floods in November last year, it was found that it had shrunk to 600 hectares.
  - The rivers, Cooum and Adyar, and the Buckingham Canal in Chennai have become dumping grounds. So have Mumbai's wetlands near Sewri and other areas in New Mumbai. In fact, the city became alive to the river it has lost to real estate — the Mithi — after the terrible floods of 2005.
- **Lack of proper drainage system:**
  - With most cities lacking proper sewerage facilities, people dispose sewage in stormwater drains. The problem becomes worse when industries discharge their polluted water into such drains.
  - All this compromises the capacities of stormwater drains and also results in polluted water flowing into the larger water bodies.
- **Illegal constructions:**
  - Real estate activity blocks the path of water, the city roads get waterlogged.
  - Stormwater drains cannot take the burden of the water that once used to seep into the ground. Moreover, cities do not make the distinction between stormwater drains and sewage disposal outlets.

### Significance of Hydrology:

- It helps to channelise excess amount of water to larger bodies.
- Maintain the lakes, ponds in the urban areas which helps to absorb the surface water.
- For upgrading the existing drainage system if it is not adequate to meet the challenges
- To identify the effect of blocking natural drainage system and to manage the issues

**Measures needed:****Structural Measures:**

- Conservation of wetlands in urban areas like lakes, ponds, streams.
- Construction of differential slope along sidewalks, roads to drain excess water into reservoirs.
- Strengthening of Storm water drainage system.
- Pre-monsoon desilting of all major drains to be completed by March 31 each year.
- Every building in an urban area must have rainwater harvesting as an integral component of the building utility.
- Concept of Rain Gardens to be incorporated in planning for public parks and on-site storm water management for larger colonies and sites those are to be developed.
- Suitable interventions in the drainage system like traps, trash racks can be provided to reduce the amount of solid waste going into the storm sewers.

**Non structural Measures:**

- **National Hydro-meteorological Network** as per NDMA is needed for all urban cities in India.
- Flood hazard assessments should be done on the basis of projected future scenarios of intensities and duration of rainfall and land use changes.
- Better forecasting of rainfall events; timely dissemination of information to the mass- 'Nowcasting' alerts or real-time weather updates.
- Restrict encroachments in natural drainage areas; clearance of river beds, proper implementation of Coastal Regulation Zone rules.
- Provisions for flood-proofing of buildings
- Storm water pollution control, i.e. source is controlled by imposing quality standards for wastewater and solid waste disposals in urban environments

**Conclusion:**

- The understanding of the geohydrology goes a long way in preventing the urban floods. With climate change accelerating at unmitigated pace, it becomes all the more critical for planned urbanization.

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

**Q) All plate margins, including the mid oceanic ridge systems, are areas of considerable earthquake activity and volcanism. Explain with the examples. (250 words)**

**Why this question:**

The question is based on the concept of plate margins and associated link with that of Earthquake activity and volcanism.

**Key demands of the question:**

The answer must provide for a brief discussion on the concept of Plate margins, their type; possible relationship with Earthquake activity and volcanoes with suitable examples.

**Directive word**

**Explain** – Clarify the topic by giving a detailed account as to how and why it occurred, or what is the particular context. You must be defining key terms where ever appropriate, and substantiate with relevant associated facts.

**Structure of the answer:****Introduction**

In a few introductory lines explain significance of plate margins in geomorphic processes.

**Body**

Discuss the following aspects in the answer:

- What are plate margins? How they interact? What are the different types?
- Detail upon the impact of ecosystem – impact on the ocean ecosystem
- Mid oceanic ridge system – explain with examples, list the major ridges.
- Now move on to establish the link between plate tectonics and Earthquakes, volcanoes.
- Provide for a map of the world highlighting major Earthquake regions of the world, volcanoes and the underlying plate margins.

**Conclusion**

Conclude with significance of geomorphological processes in formation of landforms





### Introduction:

- Plate tectonics is the theory that Earth's outer shell i.e. the crust is divided into several plates that glide over the mantle, the rocky inner layer above the core. The plates act like a hard and rigid shell compared to Earth's mantle.
- The plate movements are caused due to various factors like movements in the mantle, expansion and contraction of some parts of the Earth. When **two tectonic plates move towards each other or away from each other or slide past each other**, it results in **earthquakes, volcanic activity, mountain building and oceanic trench formation**.

### Body:

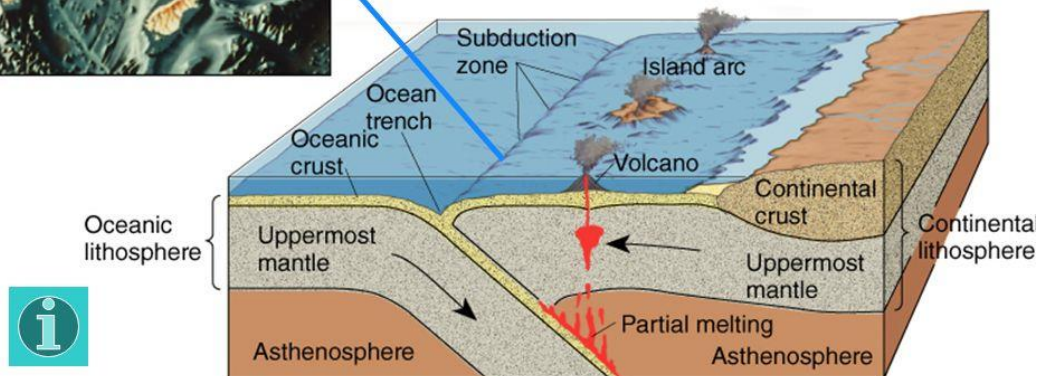
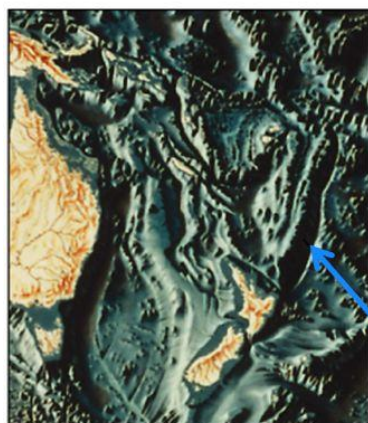
- Volcanic activity and earthquakes are widespread over the earth, but tends to be concentrated in specific locations. They are most likely to occur along the **margins of tectonic plates**.

### 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.
- **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.

## Oceanic-Oceanic Convergent Boundary

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



### Volcanoes at Divergent plate boundaries:

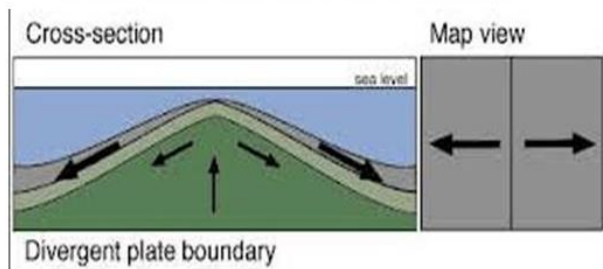
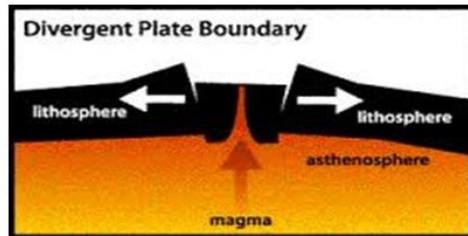
- Divergent boundaries within continents initially produce rifts which eventually become **rift valleys**. Example: In **Africa's East African Great Rift Valley**– Mt. Kilimanjaro, Mt. Kenya, Mt. Cameroon.
- Most active divergent plate boundaries occur between oceanic plates and exist as **mid-oceanic 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.





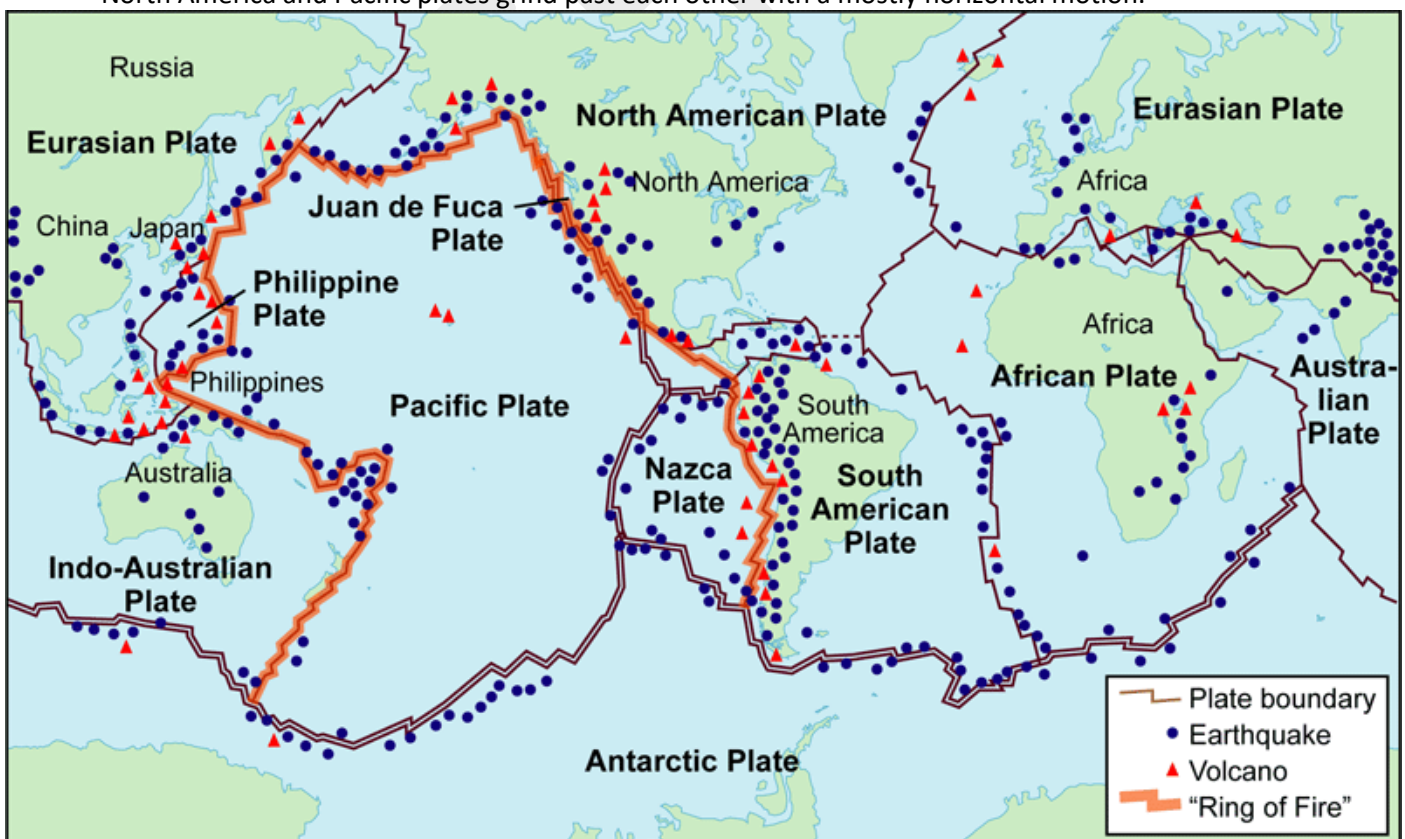
# Divergent Boundaries

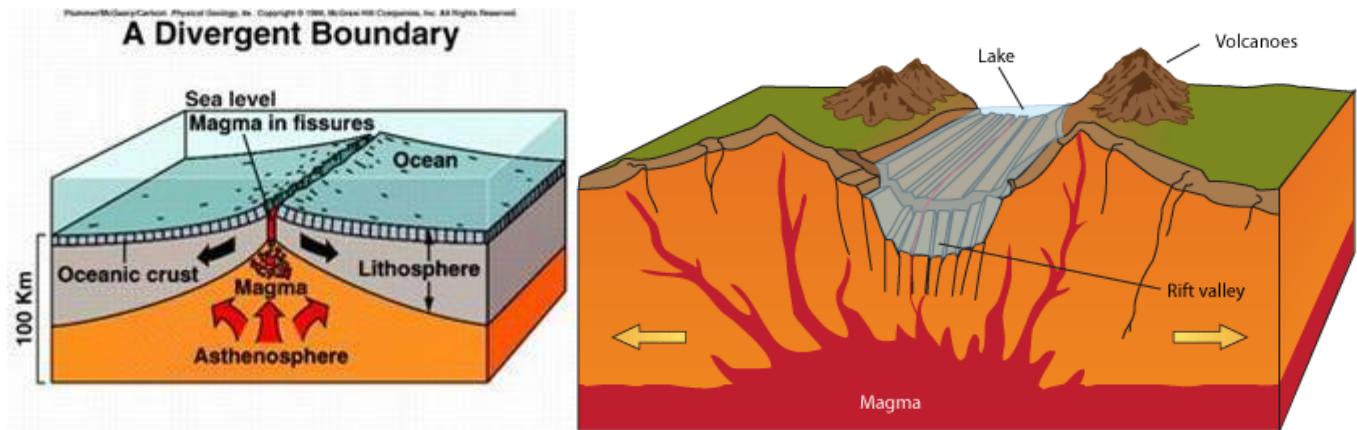
- Where plates are moving away from one another.



- **Characteristics:**
  - Lengthening
  - Thinning of Lithosphere
  - Shallow Earthquakes
  - Fissure Volcanoes
  - Rift Valleys
- **Locations:**
  - Oceanic Ridges
  - **Mid-Atlantic Ridge**
  - East-African Rift
  - Formation of Basalt
- **Results in:**
  - Sea floor spreading

- Divergent boundaries also form volcanic islands which occur when the plates move apart to produce gaps which molten lava rises to fill.
- **Transform boundaries:** where plates slide past each other. The relative motion of the plates is horizontal. They can occur underwater or on land, and crust is neither destroyed nor created. Because of friction, the plates cannot simply glide past each other. Rather, stress builds up in both plates and when it exceeds the threshold of the rocks, the energy is released – causing earthquakes. California's San Andreas Fault, where the North America and Pacific plates grind past each other with a mostly horizontal motion.





### Conclusion:

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

**Q) Explain the concept of geomagnetism. List out the causes that make earth to behave as a magnet. Discuss the implications of the change in earth's magnetic field in recent geological past. (250 words)**

### Reference

#### Why this question:

The question is straightforward – explain the concept of Geomagnetism and discuss the recent shift in geological past and explain its significance.

#### Demand of the question:

The concept of Geomagnetism needs to be explained in detail along with effects it has, explain the recent change in the earth's magnetic field in geological past.

#### 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

Start with brief discussion on what you understand by Geomagnetism. And discuss the recent changes and the affects it has on Earth's magnetic field.

##### Body

Explain in detail what you understand by Geomagnetism. And discuss the recent changes and the affects it has on Earth's magnetic field. The question is conceptual and requires not much deliberation.

Ensure to add the latest developments from news.

##### Conclusion

Conclude with consequences of such changes.

### Introduction:

- Geomagnetism refers Earth's magnetic field that extends from the Earth's interior out into space, where it interacts with the solar wind, a stream of charged particles emanating from the Sun. The **magnitude** of the Earth's magnetic field at its surface ranges from **25 to 65 microteslas (0.25 to 0.65 gauss)**.
- As an approximation, it is represented by a field of a magnetic dipole currently tilted at an angle of **about 11 degrees with respect to Earth's rotational axis**, as if there were a bar magnet placed at that angle at the center of the Earth. The North geomagnetic pole, currently located near Greenland in the northern hemisphere, is actually the south pole of the Earth's magnetic field, and conversely.

**Body:****Causes for geo-magnetism:**

- The origin of Earth's magnetism lies in its outer core which is a more than 2,000-km layer that surrounds the central core or the innermost part.
- The outer core is comprised of liquid iron and some other metals like nickel.
- This liquid iron is in constant motion due to Earth's rotation and various other reasons, and this motion produces a magnetic field.

The implications of the change in earth's magnetic field in recent geological past:

- Constant shift is a problem for compasses in smartphones and some consumer electronics.
- The military depends on where magnetic north is for navigation and parachute drops, while NASA, the Federal Aviation Administration and U.S. Forest Service also use it.
- The entire transportation sector, especially aviation and shipping, depends on correctly knowing the position of magnetic north
- Airport runway names are based on their direction toward magnetic north and their names change when the poles moved.
- Similarly, it is crucial for militaries, for firing their missiles or for other purposes, and other civilian applications as well.
- **Birds and animals:** Shifting would bother some birds that use magnetic fields to navigate.
- Very highly charged particles can have a deleterious effect on the satellites and astronauts.
- The Earth's climate could also change. A recent Danish study has found that the earth's weather has been significantly affected by the planet's magnetic field.
- The magnetic field shields Earth from some dangerous radiation.
- Electric grid collapse from severe solar storms is a major risk. As the magnetic field continues to weaken, scientists are highlighting the importance off-the grid energy systems using renewable energy sources to protect the Earth against a black out.
- The alteration in the magnetic field during a reversal will weaken its shielding effect, allowing heightened levels of radiation on and above the Earth's surface.
- Other adverse impacts are decreasing accuracy and frequent update of instruments, increased cost and inconvenience.

**Conclusion:**

- Earth's north magnetic pole has been drifting so fast in the last few decades that scientists say that past estimates are no longer accurate enough for precise navigation. The magnetic north pole is wandering about 55 kilometers a year.
- Earth's magnetic field is getting weaker, leading scientists to say that it will eventually flip, where north and south pole changes polarity, like a bar magnet flipping over. It has happened numerous times in Earth's past, but not in the last 780,000 years.

**Q) Examine the constructive and destructive effects of volcanic eruptions with suitable examples. (250 words)**

Reference**Why this question:**

The question is straightforward –

**Demand of the question:**

Discuss – Constructive effects of volcanic eruptions – Formation of Fertile Soils- Volcanic soils, Creation of new land, Provides useful materials, Geothermal energy, Volcano Tourism etc. Destructive effects of the volcanoes include – mudflow or debris flow that contains magma, Nuée ardentes, Environmental damage etc.

**Directive word:**

**Examine** – When asked to 'Examine', we have to look into the topic (content words) in detail, inspect it, investigate it and establish the key facts and issues related to the topic in question. While doing so we should explain why these facts and issues are important and their implications.

**Structure of the answer:****Introduction**

The question is straightforward and conceptual, thus there is not much to discuss, one can start by defining what are volcanoes.

**Body**

Explain in detail what you understand by volcanism. And discuss the both constructive and destructive effects of volcanic eruptions with suitable examples like volcanic soils – In India, such soil type is referred as Laterite soil, which is mainly concentrated in the eastern and western ghats, new island formed in the South Pacific due to Hunga Tonga volcano eruptions etc.

**Conclusion**

Conclude with consequences of such changes in earth building activities.

**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:****Constructive effects of volcanic eruptions:**

- **Global Cooling:**
  - Volcanoes help cool off the earth removing heat from its interior.
  - They play a vital role in periodically cooling off the planet.
  - When volcanic ash and compounds like sulfur dioxide are released into the atmosphere, it can reflect some of the Sun's rays back into space, thereby reducing the amount of heat energy absorbed by the atmosphere.
  - This process, known as "global dimming", therefore has a cooling effect on the planet.
- **Formation of new landforms:**
  - 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'.
  - Volcanoes make islands and add to the continents. It can create new land for human habitation. For example, new island formed in the South Pacific due to Hunga Tonga volcano eruptions.
- **Geothermal energy:**
  - The heat trapped in the heart of the volcanoes can be utilised as geothermal energy to produce electricity.
- **Hot Springs:**
  - Hot springs are now being used for supplying hot water in various buildings in New Zealand and Iceland. They are also used for the generation of electricity. Water from hot springs is used for treating skin ailments.
- **Outgassing and Atmosphere formation:**
  - Volcanoes are a very important source of life. Volcanic emissions have produced the atmosphere and the water of the oceans. This has been happening for 4.5 billion years
- **Formation of Fertile Soils:**
  - Volcanic soils are fertile, rich in minerals and very good for agriculture. In India, such soil type is referred as Black soil, which is mainly concentrated in the Deccan plateau for cotton cultivation.
- **Source of Precious stones and Minerals:**
  - Volcanic eruptions sometimes result in the formation of precious stones like the diamond mines Kimberley in South Africa. Many minerals are also found in the volcanic region like copper deposits in Butte in USA.
  - Most of the metallic minerals mined in the world, such as copper, gold, silver, lead, and zinc, are associated with magmas found deep within the roots of extinct volcanoes.
- **Provides useful materials:**
  - Volcanic eruptions provide useful igneous rocks such as granite and basalt. Both granite and basalt are highly used in construction projects.





- **Abrasives:**
  - Pumice and volcanic ash are used as abrasives, mostly in hand soaps and household cleaners. The finest grades are used to finish silverware, polish metal parts before electroplating, and for woodworking.
- **Volcano Tourism:**
  - Fireworks from active volcanoes draw several tourists from different parts of the world and make the volcanic island a popular tourism spot.

#### **Destructive effects of the volcanoes:**

- **Natural disasters:**
  - Volcanic eruptions can cause earthquakes, fast floods, mud slides, and rock falls.
- **Lahars:**
  - It is a type of mudflow or debris flow that contains magma, minerals and water.
  - During volcanic eruption such mud flows in the surrounding region and has devastating impacts on villages, towns and environment.
- **Nuée ardentes:**
  - These are dense clouds of hot ash and poisonous gases that are ejected from a volcano. Such volcanic clouds travel at very high speed and to long distances. These cause serious atmospheric disturbances to aircrafts movement.
- **Environmental damage:**
  - Ash discharged very high into the stratosphere can have negative consequences on the ozone layer.
  - Volcanic eruption releases poisonous atmospheric gases such as carbon monoxide and sulphur dioxide.
  - Lava can travel very far and burn, bury, or damage anything in its path, including people, houses, and trees.

#### **Conclusion:**

- A volcano eruption is one of the most impressive events in the planet and the effects of volcanoes and their eruptions could be felt as far away as a different continent. The type of effects of volcanoes depends on the size of the eruption.

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

**Q) "Rising Climate change guarantees coral reef extinction in coming 100 years".**

**Discuss. (250 words)**

#### Reference

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

The question is in the context of critical impact of climate change on Coral ecosystem of the world.

##### **Key demands of the question:**

The answer must provide for a detailed discussion on the causative factors especially related to climate change that are severely affecting the coral ecosystems of the world.

##### **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**

In a few introductory lines explain the significance of coral reef ecosystem and importance of efforts to conserve them.

##### **Body**

Discuss the following aspects in the answer:

- Coral reefs harbor the highest biodiversity of any ecosystem globally and directly support over 500 million people worldwide, mostly in poor countries.
- Discuss what are the issues associated – Anthropogenic greenhouse gas emissions, rise in temperature leading to unprecedented mass coral bleaching events etc.





- Why are they important ? – They are among the most threatened ecosystems on Earth, largely due to unprecedented global warming and climate changes, combined with growing local pressures.
- Over the last three years, reefs around the world have suffered from mass coral bleaching events as a result of the increase in global surface temperature caused by anthropogenic greenhouse gas emissions.
- According to UNESCO, the coral reefs in all 29 reef-containing World Heritage sites would cease to exist by the end of this century if we continue to emit greenhouse gases under a business-as-usual scenario.
- Limiting global average temperature to well below 2°C above pre-industrial levels in line with the Paris Agreement provides the only chance for the survival of coral reefs globally.
- What can be done?

### Conclusion

Conclude with significance of the ecosystem and criticality of the situation and necessity to save them from extinction.

### Introduction:

- Coral reefs harbour the highest biodiversity of any ecosystem globally and directly support over 500 million people worldwide, mostly in poor countries. They are among the most threatened ecosystems on Earth, largely due to unprecedented global warming and climate changes, combined with growing local pressures.
- According to UNESCO, the coral reefs in all 29 reef-containing World Heritage sites would cease to exist by the end of this century if we continue to emit greenhouse gases under a business-as-usual scenario. Limiting global average temperature to well below 2°C above pre-industrial levels in line with the Paris Agreement provides the only chance for the survival of coral reefs globally.

### Body:

#### Coral bleaching and its causes:

- Over the last three years, reefs around the world have suffered from mass coral bleaching events as a result of the increase in global surface temperature caused by anthropogenic greenhouse gas emissions.
- Anthropogenic greenhouse gas emissions have caused an increase in global surface temperature of approximately 1°C since pre-industrial times.
- This has led to unprecedented mass coral bleaching events which – combined with growing local pressures – have made coral reefs one of the most threatened ecosystems on Earth.
- When conditions such as the temperature change, corals expel the symbiotic algae living in their tissues, responsible for their colour.
- A spike of 1–2°C in ocean temperatures sustained over several weeks can lead to bleaching, turning corals white. If corals are bleached for prolonged periods, they eventually die. Coral bleaching events often lead to the death of large amounts of corals.
- Reefs around the world have suffered from mass bleaching events for three consecutive years.
- Iconic reefs such as the Great Barrier Reef in Australia and the Northwestern Hawaiian Islands in the United States have all experienced their worst bleaching on record with devastating effects.
- The bleaching of the Great Barrier Reef in 2016 and 2017, for instance, killed around 50% of its corals.

#### Importance of Coral Reefs:

- Coral reefs **harbour the highest biodiversity of any ecosystem globally.**
- Despite covering less than 0.1% of the ocean floor, reefs host more than one quarter of all marine fish species, in addition to many other marine animals.
- Additionally, reefs provide a wide variety of ecosystem services such as subsistence food, protection from flooding and sustaining the fishing and tourism industries. Their disappearance will therefore have **economic, social and health consequences.**
- A 2014 assessment published in the journal Global Environmental Change estimated the social, cultural and economic value of coral reefs at US\$1 trillion.
- A 2015 study by WWF projects that the climate-related loss of reef ecosystem services will cost US\$500 billion per year or more by 2100.
- Coral reefs are also **key indicators of global ecosystem health.** They serve as an early warning sign of what may happen to other less sensitive systems, such as river deltas, if climate change is not urgently addressed.
- Once the tipping point for the survival of coral reefs is passed, the deterioration of other systems may cascade more quickly and irreversibly.



### Measures to reduce the Coral reef extinction:

- Limiting global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C, in line with the Paris Agreement on climate change, provides the only chance for the survival of coral reefs globally.
- Other measures alone, such as addressing local pollution and destructive fishing practices, cannot save coral reefs without stabilised greenhouse gas emissions.
- Reinforcing commitments to the Paris Agreement must be mirrored in all other global agreements such as the Sustainable Development Goals. I.
- Economic systems need to rapidly move to the low greenhouse gas emission scenario to enable global temperature decrease.
- A move away from current economic thinking should include the benefits provided by coral reefs, which are currently not taken into account in mainstream business and finance.
- Therefore, sustaining and restoring coral reefs should be treated as an asset, and long-term investments should be made for their preservation.
- Investments should also include support for research at the frontiers of biology, such as genetic selection of heat-resistant corals that can withstand rising global temperatures.

### Conclusion:

- There also needs to be a transformation of mainstream economic systems and a move towards circular economic practices.
- These are highlighted in **SDG 8 (inclusive and sustainable economic growth)** and **SDG 12 (sustainable consumption and production patterns)**.

### Q) Discuss the relative contribution of tectonic and thermal influences in the sea level rise. (250 words)

#### Why this question:

The question is from the static portions of GS paper I and is conceptual and straightforward.

#### Key demands of the question:

The answer must provide for a detailed discussion on the relative contribution of tectonic and thermal influences in the sea level rise.

#### Directive :

**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

In a few introductory lines explain the current context of sea level rise, provide for an overview.

##### Body

Discuss the following aspects in the answer:

- Assert with facts that sea level is rising at an increasing rate.
- What factor currently makes the greatest contribution to sea level rise? – The two major causes of global sea level rise are thermal expansion caused by warming of the ocean (since water expands as it warms) and increased melting of land-based ice, such as glaciers and ice sheets.
- How has sea level changes due to tectonic activity? – Eustatic sea-level changes are global sea-level changes related either to changes in the volume of glacial ice on land or to changes in the shape of the sea floor caused by plate tectonic processes.
- Explain the above two points with case studies.
- Briefly discuss the effects of Sea level rise.
- What can be done?

##### Conclusion

Conclude with way forward, role of humans in causing and curing the increasing rate of sea level rise.

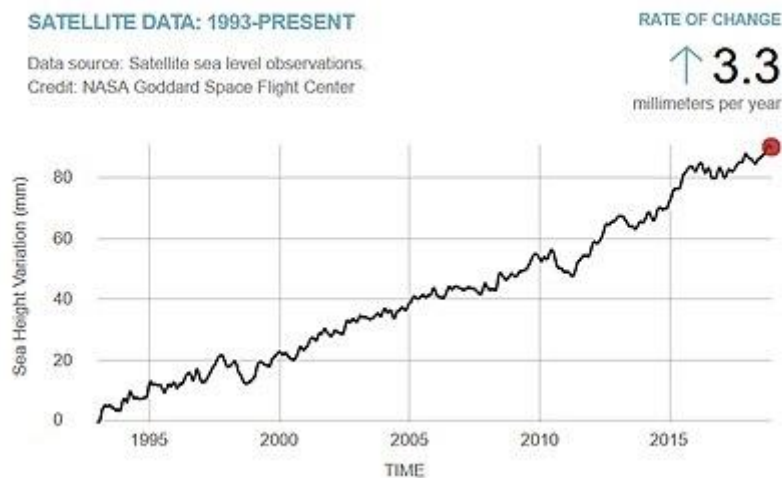
### Introduction:

- Sea level rise is the inevitable result of global warming and coastal areas of intensified human activities, and it affects the sustainable development of society and economy of the coastal areas in the 21st century.



- Global average sea levels have risen roughly 19 centimetres (7.5 inches) since the 19th century, after 2,000 years of relatively little change. The rate of sea-level rise has continued to increase in recent decades.

Body:



#### Thermal influence and Sea level rise:

- The two major causes of global sea level rise are **thermal expansion caused by warming of the ocean** and **increased melting of land-based ice, such as glaciers and ice sheets**.
- The oceans are absorbing more than 90 percent of the increased atmospheric heat associated with emissions from human activity.
- 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.
- 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.

#### Tectonics and Sea level rise:

The tectonic processes at work on the Earth influence the size of ocean basins and therefore, sea level in many, complex ways. The following list gives an idea of some of these processes and their interactions and feedback mechanisms:

- Rifting of tectonic plates at divergent plate boundaries.
- Assembly of micro-continents, volcanic terrains, continents – especially supercontinents like Rodinia, Pangea, etc.
- Subduction of tectonic plates at ocean trenches at convergent plate boundaries.
- Eruption and formation of large igneous provinces that originate from massive extrusions of lava, oceanic plateaus, hotspot volcanic island chains, etc.
- High rates of volcanism on the seafloor volumetrically displace water out of the ocean basin **producing higher sea levels**, called transgression of sea level.
- When rates of volcanism are high, it takes longer for the rocks to cool, and **sea level remains higher for longer periods of time** after the rate of volcanism subsides.

**Conclusion:**

- The sea level rise caused due to Tectonic movements is out of human control. However, those due to Thermal expansions caused by global warming can be controlled **by limiting the greenhouse gas emissions, increasing the green cover on earth, strengthening the scientific research for cleaner fuels and global efforts like Paris deal.**

**Q) Climate, vegetation and soils exist in long preserved active equilibrium and this should also apply to landforms. Explain. (250 words)**

**Why this question:**

Landscapes are composed of a diversity of landforms that may be characterized as equilibrium, disequilibrium or nonequilibrium. Equilibrium is a constant relation between input and output or form, toward which a landform tends or around which it fluctuates in time. Because of recent environmental changes and long relaxation times, however, many landforms are not adjusted to present inputs. Thus one has to analyse if this concept is applicable to landforms.

**Demand of the question:**

Discuss in detail the application of dynamic equilibrium processes on landforms just like the equilibrium that exists between Climate, vegetation and soils.

**Directive word:**

**Explain** – Clarify the topic by giving a detailed account as to how and why it occurred, or what is the particular context. You must be defining key terms where ever appropriate, and substantiate with relevant associated facts.

**Structure of the answer:****Introduction**

The question is straightforward and conceptual, thus there is not much to discuss, one can start by defining what is meant by Equilibrium.

**Body**

Explain in detail what you understand by Equilibrium. Topography acts as a template for numerous landscape processes that include hydrologic, ecologic, and biologic phenomena. These processes not only interact with each other but also contribute to shaping the landscape as they influence geomorphic processes.

First explain with examples the dynamic equilibrium that exists between Climate, vegetation and soils with examples, then move on to explain how it can be applied to landforms too.

**Conclusion**

Conclude with a balanced opinion based on the points you present.

**Introduction:**

- An Active Equilibrium is a state where there is a lack of change in a system as inputs and outputs remain in balance. If changes do occur, then feedbacks will allow for correction. The Geomorphological processes on earth are usually in an active equilibrium until and unless any of the causative factors are hampered with.

**Body:**

- Climate affects the soil formation by affecting the microclimate of the region and reflecting effect of climate indirectly, acting through the vegetation existing in that region. The influence of climate on soils is tremendous. The principal climatic elements which influence the soil are **temperature, precipitation and wind.**
- Healthy soils are crucial for ensuring the continued growth **of natural and managed vegetation**, providing feed, fibre, fuel, medicinal products and other ecosystem services such as climate regulation and oxygen production. Soils and vegetation have a reciprocal relationship. Fertile soil encourages plant growth by providing plants with nutrients, acting as a water holding tank, and serving as the substrate to which plants anchor their roots. In return, vegetation, tree cover and forests prevent soil degradation and desertification by stabilizing the soil, maintaining water and nutrient cycling, and reducing water and wind erosion.
- Thus, we see an active equilibrium existing between climate, soil and vegetation. However, as global economic growth and demographic shifts increase the demand for vegetation, animal feed and vegetation by products such as wood, soils are put under tremendous pressure and their risk of degradation increases greatly. A negative feedback loop will in turn lead to effects in every factor.



- **Landforms** are natural features of the landscape, natural physical features of the earth's surface, for example, valleys, plateaus, mountains, plains, hills, loess, or glaciers. The equilibrium should be maintained for the landforms too. However, increasing population has added to the pressures on the landforms like extensive mining in the mountains, global warming melting down the glaciers, intensive agriculture sucking out all the nutrients in the plains etc.

#### Conclusion:

- Any disequilibrium will affect all the components which are related to each other, thus harming the entire ecosystem. It is imperative for humans to understand and respect this strong yet fragile relationship among the entities of environment.

*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) The world is passing through a global resource quandary. Explain with the examples. (250 words)**

#### Why this question:

The question is in the context of growing resource dilemma across the globe. The question hints towards the tragedy of commons.

#### Key demands of the question:

The answer must provide for a brief discussion on resource crisis the world is facing with examples ranging from – water crisis, air pollution, resource scarcity, Ocean garbage gyres etc.

#### Directive word

**Explain** – Clarify the topic by giving a detailed account as to how and why it occurred, or what is the particular context. You must be defining key terms where ever appropriate, and substantiate with relevant associated facts.

#### Structure of the answer:

##### Introduction

In a few introductory lines explain what you understand by resource crisis.

##### Body

Discuss the following aspects in the answer:

- What is resource crisis? explain tragedy of the commons – situations when an individual must choose between their self-interest and more of a resource, or the interest of the community and sharing the resource so everybody has a portion.
- Discuss examples that justify this resource crisis – growing population, and the insufficient availability of clean drinking water, lack of cleaner air, depleting fossil fuels, waste management etc.
- Discuss the significance of efforts to tackle such a dilemma, what needs to be done – need for sustainable future.

##### Conclusion

Conclude with way forward.

#### Introduction:

- The world is heading for an “**ecological credit crunch**” far worse than the current financial crisis because humans are over-using the natural resources of the planet.
- The **WWF's Living Planet report** calculates that humans are using 50% more resources than the Earth can replenish each year, which is leading to deforestation, degraded soils, polluted air and water, and dramatic declines in numbers of fish and other species.

#### Body:

##### Current Scenario:

- In a world of 8 billion people, however, resource scarcity goes far beyond precious metals and rare earth metals.
- The per capita availability of biomass and fresh water is rapidly declining.
- Phosphorus and phosphate, critical to global food production, are also under pressure — and more than half of the world's remaining, mineable reserves of that substance sit in one country, Morocco.





- “Water footprint” shows that 50 countries are already experiencing “moderate to severe water stress on a year-round basis”.
- 27 countries are “importing” more than half the water they consume – in the form of water used to produce goods from wheat to cotton – including the UK, Switzerland, Austria, Norway and the Netherlands.
- Systems that support human life are being depleted now rapidly, with unpredictable effects but with food being the ultimate resource.
- Oil is the only primary energy source that plays an important role in all of the national energy systems. Coal is the world’s fastest growing fossil fuel energy source, currently providing about one-third of the global primary energy supply.
- Large deposits of these essential minerals are currently found in areas awash in violence and political conflict, creating other issues. Example: Middle East and oil richness.
- Natural gas is the fastest growing fuel of choice for electricity generation in the Western hemisphere and has also gained an increasing importance in emerging economies.
- The key threat to the world’s remaining commons is excessive consumerism and the high levels of pollution it creates (such as CO2 emissions), particularly from the lifestyles of those in rich countries.

#### Impacts:

- **Ecological:**
  - The resource crisis is getting worse as populations and consumption keep growing faster than technology finds new ways of expanding what can be produced from the natural world.
  - It would upset the ecological cycles leading to worsened climate events, food insecurity etc.
  - If nothing changes, mankind would need two planets to sustain its lifestyle.
- **Political:**
  - The richer countries which have access to resources could encroach upon the share of the poorer and developing countries too leading to regional imbalances and disparity.
  -
- **Economic:**
  - The possibility of financial recession pales in comparison to the looming ecological credit crunch.
  - The resource crises can lead to inflation and in turn global economic crises.
- **Social:**
  - Resource crises can lead to social unrest like wars, insurgencies, civil wars etc.
  - The share of world poverty would rapidly increase leading to impoverishment of weaker sections like women, children, aged.

#### Measures needed:

- **Sustainable Development Goals** signed up by most nations in the world is a step in the right direction.
- Establish some form of ‘**Global Commons Trust**’ which could enable the international community to take collective responsibility for managing the world’s remaining commons and ensuring a balanced pattern of resource use and consumption across the world.
- There is a need for more **Research and Development** for transition from **Non-renewable to renewable resources**, be it energy or minerals.
- The Developed countries have a responsibility to **transfer the technology** and help the developing, SIDS countries.
- **Global governance bodies** such as the World Trade Organisation (WTO), International Monetary Fund (IMF) and World Bank need to be radically reformed to ensure that they are far more representative of the developing world.
- reforms at the national level, including de-prioritising economic growth, dismantling the culture of consumerism and investing heavily in low-carbon infrastructure
- Checking the global population is also a feasible option.

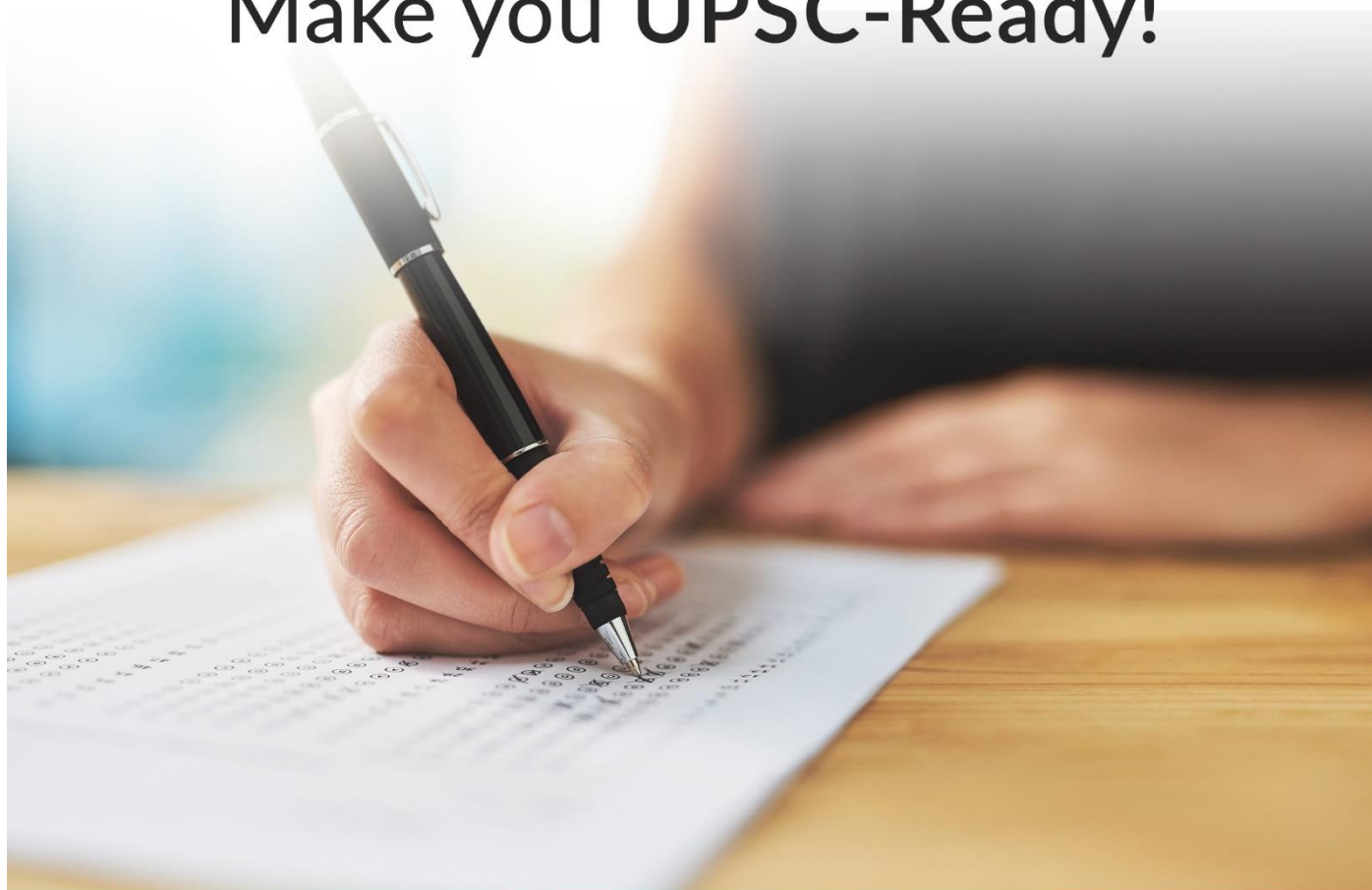
#### Conclusion:

- As Gandhiji had once said that mother Earth provides enough for everyone’s need but not greed. It must be advocated to every single person that we are indebted to our future generations and need to utilize the resources sustainably.



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## Q) Discuss the significance of woollen textile Industries in employment generation and economic growth in India. (250 words)

### **Why this question:**

The question is in the context of Woollen industry in India and its significant role in creating employment opportunities vis-à-vis promoting economic growth in the country.

### **Demand of the question:**

This question seeks to examine the prospects Woollen industry in India has in generating employment and contributing significantly to the economy.

### **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**

Start with brief introduction stating the textile scenario of the country.

#### **Body**

Discuss the following points in detail:

- What is the role of textile industry in Indian economy in general and discuss specifically the role of Woollen industry – Indian Textile industry contributes to 7 per cent of industrial output in terms of value, 2 per cent of India's GDP and to 15 per cent of country's export earnings.
- Why is Woollen textile industry important for our country?
- Discuss the various policy initiatives and programmes for development of textiles – specifically Woollen, particularly for technology, infrastructure creation, skill development etc.
- Explain how it can bring in employment generation ; economy.

#### **Conclusion**

Conclude with significance of the Woollen sector in Indian perspective, and the perfect match it has with the skill set in Indian society.

#### **Introduction:**

- India's wool and woollen textile industry is the **seventh-largest** in the world. Woollen textiles and clothing industry is relatively small compared to the cotton and manmade fibre based textiles and clothing industry.
- However, the woollen sector plays an important role in **linking the rural economy with the manufacturing industry**, represented by small, medium and large scale units.

#### **Body:**

##### **Woollen textile industries in India:**

- India has the **3<sup>rd</sup> largest sheep population country** in the world having 07 million sheep producing 43.50 million kg of raw wool in 2017-18.
- The most important producers are Punjab, Maharashtra and Uttar Pradesh followed by Gujarat, Karnataka, and Jammu & Kashmir.
- Out of this about **85% is carpet grade wool, 5% apparel grade and remaining 10% coarse grade wool for making rough Kambals**
- The woollen industries comprises of **organized sector** and the **Decentralized Sector**.

##### **Employment potential:**

- There are several woollen units in the country, majority of which are in the small scale sector.
- The woollen industry employs a workforce of 7 million and 30,000 technical supervisory level personnel.
- With the spurt of the textile activity and the projected target growth, while 5 million direct jobs are likely to be created in the textile industry with another 7 million jobs in allied
- It is safe to estimate the requirement of about 2 lakh new jobs in the woollen sector consisting of skilled and semi-skilled workforce; in addition to trained /qualified supervisory personnel & managers.

##### **Economic growth:**

- The aggregate export of woollen items from wool tops to finished products like textiles, clothing, blankets and carpets is currently estimated around app. Rs. 11484Cr.

**Challenges:**

- The production of wool in the country is not sufficient to meet the demand of the wool industry particularly of apparel sector and most of it is being imported from Australia, New Zealand and many other countries.
- Low priority of State Governments in development of wool sector.
- Lack of awareness, traditional management practices, and lack of education and poor economic conditions of woolgrowers.
- Inadequate marketing facilities and infrastructure.
- Absence of organized marketing and minimum support price system for ensuring remunerative return.
- No educational institute for wool technology resulting lack of expertise in wool sector.
- Shortage of pasture land which force breeders to migrate their flock from one area to another throughout the year.
- Uneconomical return of the produces to sheep breeders e. Sale of raw wool, live sheep, manure, milk, mutton, skin etc.

**Measures taken:**

- **Integrated Wool Development Programme, (IWDP):** For the holistic growth of the wool sector, Ministry of Textiles, formulated a new integrated programme. This programme would be implemented through Central Wool Development Board in major wool producing States in Financial Years from 2017-18 to 2019-20 with total financial outlay of Rs. 112 crores.
- **Wool Marketing Scheme (WMS):** To ensure remunerative prices.
- **Wool Processing Scheme:** this scheme will provide support for establishing Common Facility Centre (CFC) for different kind of wool and woollen processing

**Conclusion:**

- The Indian Wool Industry is an important industry since it is one of the prominent sources of livelihood for the rural India and it represents small, medium, and large scale units.
- Further, the India wool Industry also caters to civil and defence requirements for warm clothing for the Indian Army.

**Q) Discuss the pattern in the distribution of agro based industry in India. (250 words)**

**Why this question:**

The question is about discussing the pattern in the distribution of agro based industry in India .

**Key demands of the question:**

The answer must provide for a brief discussion on what are Agro based industries, factors that decide their distribution pattern – Natural and human factors and also discuss any recent trend in shift of these industries.

**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**

In a few introductory lines explain the significance of Agro based industries.

**Body**

Discuss the following aspects in the answer:

- Which is an agro based industry? – includes industries related to textiles, sugar, paper and vegetable oil. These industries use agricultural products as their raw materials.
- Why agro based industries are important?
- Discuss the factors responsible for their distribution – Availability of raw materials, labour, access to domestic market, degree of interdependence with forward and backward activities, etc.
- Then explain shifting trends of these industries from past to present on the basis of – coming of technology, automation, policies such as food parks etc.



### Conclusion

Conclude with their significance for a country like India which is primarily an agricultural economy.

### Introduction:

- The **agro-based industry depends on the raw material produced by the agricultural sector**. It includes industries related to textiles, sugar, paper and vegetable oil.
- The products comprise mostly consumer goods. Agro- based industry is important from the point of view of contribution to industrial production and employment generation.

### Body:

Various agro- based industries is given below

- **Textile Industry:** The textile industry plays predominant presence in the Indian economy. It is the only industry which is self-reliant, from raw material to the highest value added products, viz., garments/made-ups.
  - **Cotton Textiles:** Since cotton industry is not a weight losing industry, it does not make much difference if either raw material or the finished product is transported. Hence, the industry tends to be located at sites with favourable transport links with the market. **AP, Maharastra, Gujarat, TN, Karnataka** are the major cotton textile centers and growers of Cotton.
  - **Woollen Textiles:** Most of the woollen textiles mills are situated in **Punjab along the Amritsar-Gurdaspur-Ludhiana belt, and at Patiala and Dhariwal**. The concentration in Punjab is due to its closeness to the sheep-rearing regions of Jammu and Kashmir (where the Bakerwals are associated with sheep-rearing) and Himachal Pradesh (where the Gaddis rear sheep).
  - **Silk Textiles:** Sericulture is a labour- intensive industry. It provides employment to nearly 55 lakh people, most of them being small and marginal farmers, or working in tiny and household industry mainly in the hand reeling and hand weaving sections. Karnataka produces most of the silk in the country. **Major silk producing centres in the state are Tumkur, Doddballapur, Bengaluru and Mysore. Other areas include TN, AP, Assam, WB**
  - **Synthetic Textiles:** With the growth of petrochemicals, more raw material is available and there is more scope for growth in production. Also, because of paucity of raw cotton, the mills are going in for blended materials. **Mumbai, Ahmedabad, Delhi, Surat, Kolkata, Amritsar and Gwalior** are the centres of this industry.
  - **Jute textiles:** The jute sector has been playing an important role in the economy of the country in general and the eastern region in particular. **Nearly 90 per cent of the manufacturing capacity is located in a narrow belt about 100 km long and 3 km wide along river Hooghly.**
- **Sugar Industry:** Indian sugar industry is the second largest agro- based industry in India. Since sugarcane is a weight-losing material and cannot be stored for long, the sugar industries need to be located in the vicinity of sugarcane growing areas. **Uttar Pradesh, Maharashtra and Tamil Nadu** account for about **70 per cent** of the total production of sugar in the country. Other centers include Bihar, Punjab, Karnataka, TN etc.
- **Vegetable Oil Industry:** Vegetable oil is a major source of fat in Indian diet and a widely used cooking medium. Vanaspati' is hydrogenated vegetable oil. Different regions use different raw materials for oil, depending on the technology used. The vegetable oil industry is widely scattered and the sizes of the units differ from location to location. **Maharashtra has the largest number of vanaspati units, followed by Gujarat, Uttar Pradesh, West Bengal, Karnataka, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Rajasthan and Punjab.** New emerging raw materials for edible oil include sunflower, safflower, soyabean, cottonseed, rice bran, etc.
- **Tea Industry:** Tea cultivation in India first started in the mid- 19th century in **Darjeeling, Assam and the Nilgiris**. **Nearly 98 per cent of the tea production comes from Assam, West Bengal, Tamil Nadu, Kerala and Karnataka.** Some tea is also grown in **Himachal Pradesh, Arunachal Pradesh, Manipur and Tripura.**
- **Coffee Industry:** Coffee was first grown in Bababudan Hills in Karnataka during the 17th century, but on a plantation scale, it was cultivated in **Chikmagalur (Karnataka) in 1826. More than half of the country's coffee production comes from Karnataka, of which 80 per cent comes from Coorg and Chikmagalur.** Hassan is the third largest producer in the state. In Kerala, coffee is produced in **Wayanad (Palghat region), Kozhikode and Cannanore.** In **Tamil Nadu, coffee comes from the Nilgiris, Annamalai (Coimbatore region) Shevaroy hills (Salem district), Palani hills, Tirunelveli and Madurai.** Small quantities come from **Orissa, Andhra Pradesh and the north-eastern states.**





- **Leather Goods Industry:** The importance of this sector lies in wide dispersal, vast employment and export potential. Hides and skins are the basic raw materials which come from pelts of cattle and large animals and small ones like goat and sheep. India has a large livestock population.

West Bengal and Tamil Nadu are the largest producers of cattle hides and Uttar Pradesh and West Bengal of the goat skin. Rajasthan and Madhya Pradesh also produce substantial quality hides. Major footwear production centres in the country include Kanpur, Agra, Lucknow, Kolkata, Chennai, Mumbai, Bengaluru and Jaipur.

#### Challenges:

- Agribusiness is characterized by raw materials that are mostly perishable, variable in quality and not regularly available.
- The sector is subject to stringent regulatory controls on consumer safety, product quality and environmental protection.
- Traditional production and distribution methods are being replaced by more closely coordinated and better planned linkages between agribusiness firms, farmers, retailers and others in the supply chains.

#### Conclusion:

- Agro-based industries have to set up at rural areas where raw material may be available in plenty – helps in the up-liftment of the rural economy.
- It provides rural population an opportunity for employment. Generates income and thereby improve economic condition of people – which in turn creates potential for demand based industries.

**Q) What are the challenges faced by the silk industry in India ? Discuss the government initiatives to revive the same. (250 words)**

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

The question is in the context of Silk Industry and the issues facing it. The question requires to evaluate the government initiatives to revive the same.

#### **Key demands of the question:**

The answer must provide for a brief discussion on location and distribution of Silk Industry, the issues and concerns associated and significant policy initiatives by the Government in this direction.

#### **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**

In a few introductory lines explain the significance of Silk Industry with respect to India – Indian Sericulture has the distinction of being the only country in the world producing all Five major types of silk.

##### **Body**

Discuss the following aspects in the answer:

- common problems faced by the Indian silk industry are – Price fluctuation, Absence of proper market, Lack of transport facilities, Absence of storage facilities, Poor information on market trend, Lack of finance, High cost of production and low productivity, lack of technology penetration, prevalent rural nature of the industry etc., competition from synthetic fibers.
- Government initiatives – Introduction of high-yielding mulberry varieties, boost to cocoons productivity, Tasar reeling technology package, Developed pest-management measures against various pests of mulberry and silkworms, increase in non-mulberry silk production, Adopt clusters of villages for better marketing conditions, Impose anti-dumping duty. List down initiatives such as – Integrated Scheme for Development of Silk Industry, role of Central silk board etc.
- Discuss however the piecemeal approach of the government has not been very successful thus suggest way forward – Establishment of close linkage between forward and backward sub-systems for greater efficiency and synergy as sericulture and silk industry is highly scattered and unorganized. Adequate thrust on non-traditional uses of silk such as use for artificial skin and



other medical applications could create a positive pressure for high value addition. Protection to some extent of Indian silk market from Chinese cheap raw silk and fabrics by implementation of anti-dumping duty. Identification and promotion of potential clusters for silk production in potential traditional and nontraditional areas. Skill up-gradation through structured and specially designed training programme. Evolution of appropriate cost-effective technologies through focused research projects for the development of superior and hybrid breeds.

### Conclusion

Conclude with significance of sericulture and its potential.

### Introduction:

- Silk, a highly priced agricultural commodity, accounts for about **0.2% of the total world production of textile fibre**. Since **sericulture stands next to agriculture for rural employment** in India, it becomes a matter of concern to examine the sericulture production trend over the years and reasons for slow growth. Sericulture is an important agro industry in Indian economy

### Body:

The **strengths of Indian silk industry** are:

- The 2nd largest producer of silk in the world after China;
- The largest consumer of silk in the world;
- The only country in the world that produces all 5 varieties of silk on a commercial scale;
- Holds the global monopoly for production of the famed golden 'Muga' silk;
- Has abundant arable land for sericulture expansion;
- Has developed world class research organization with highly qualified and experienced Scientists and Technicians;
- Posses enough skilled man power.

### Challenges faced by Silk Industry in India:

- **Urbanization in Traditional Sericulture Areas:**
  - Along with the rapid economic development in the traditional areas of the country, the industrialization and urbanization process has accelerated significantly.
  - This, clubbed with the rising land and labour costs, are hampering the horizontal expansion of sericulture there.
- **Augmentation of Bivoltine Raw Silk Production:**
  - **Tropicalisation and popularization of bivoltine sericulture** in our country is a big challenge.
  - The bivoltine breeds alone can produce the gradable raw silk with the strength and tenacity required for our power looms.
  - However, we are unable to produce appreciable quantity of import substitute bivoltine raw silk, even to meet our own domestic demand.
  - We are dependent on imports to cater to the needs of our power looms.
- **Depleting Water Table:**
  - Sericulture in India is practiced in select areas that depend largely on rain.
  - Hence, water resource for irrigation has been a major concern and depleting water table is a big threat for the industry.
- **Degrading Genetic Base:**
  - India has a very narrow genetic base required for developing the high yielding, disease tolerant breeds with better survival under fluctuating tropical conditions.
- **Unorganized nature of Sericulture:**
  - The Indian sericulture continues to remain with small, marginal farmers and small reelers, unlike China which has small producers but large converters.
- **Poor Credit Flow:**
  - Adequate institutional credit to the needy farmers, reelers, weavers etc., would help to improve the quality and productivity, thereby increasing the net income.
- **Low export earnings:**
  - Due to global recession and reduced demand in western countries for silk goods. A weaker rupee is also hurting exports.



- However, the silk exports are finding non-traditional/new markets in UAE, Nigeria, Thailand etc.
- **No Quality Protection:**
  - It leads to inadequate returns on hardwork of handloom workers since powerloom is much cheaper
- **Declining inclination of youth towards weaving:**
  - The younger generations are losing interest as one can earn the same money working at a powerloom with less stress
- **Competitive pricing:**
  - The blending of cheap imported Chinese silk or artificial/synthetic silk yarns putting the natural silk traders on the verge of distress sales.
- **Decline in area of Cultivation:**
  - Mulberry silk in the country has seen a steady decline in its area of mulberry cultivation because of rapid urbanization, industrialization and a shortage of agricultural labour.
- **Piece meal approach of government**
  - In terms of banning foreign silk, lack of integrated market and inadequate knowledge of sericulture amongst the traders.

#### Government initiatives through Central Silk Board (CSB) to revive Silk industry in India:

- **Integrated Scheme for the Development of Silk Industry (CSS)**
  - Central Silk Board (CSB) has been implementing a rationalized restructured Central Sector Scheme “Integrated Scheme for Development of Silk Industry” for development of sericulture in the Country.
  - It is an umbrella scheme consisting of following four components for the development of Sericulture and Silk industry.
  - The focus and emphasis are on improving production, quality and productivity of domestic silk thereby reducing the country’s dependence on imported silk.
  - The Scheme has four components –
    - Research & Development (R&D), Training, Transfer of Technology and IT Initiatives
    - Seed Organizations and farmers extension centres
    - Coordination and Market Development for seed, yarn and silk products and
    - Quality Certification System (QCS) by creating amongst others a chain of Silk Testing facilities, Farm based & post-cocoon Technology Up-gradation, and Export Brand Promotion.
- **North East Region Textile Promotion Scheme (NERTPS)**
  - Under “North East Region Textile Promotion Scheme” (NERTPS), 24 sericulture projects are being implemented under two broad categories viz., Integrated Sericulture Development Project (ISDP) and Intensive Bivoltine Sericulture Development Project [IBSDP] covering Mulberry, Eri and Muga sectors in all North Eastern States.
  - The projects aim at holistic development of sericulture in all its spheres from plantation development to production of fabrics with value addition at every stage of production chain.
- Sericulture is included as **agriculture allied activity under RKVY**. This enables the sericulturists to avail the benefits of the scheme for the entire sericulture activities up to reeling.
- The **CSB (Amendment) Act, Rules and Regulations** have been notified by the Govt. of India to bring quality standards in silkworm seed production.
- **Forest Conservation Act** has been **amended** to treat non mulberry sericulture as forest based activity enabling the farmers to undertake Vanya silkworm rearing in the natural host plantation in the forests.
- **Anti dumping duty on Chinese raw silk** – The Director General of Antidumping & Allied Duties (DGAD), New Delhi has recommended imposition of antidumping duty on Chinese raw silk of 3A Grade & Below in the form of fixed duty of US\$ 1.85 per Kg on the landed cost of imported raw silk
- CDP-MGMREGA convergence guideline have been finalized and issued jointly by the MOT and MORD. These guidelines will help sericulture farmers to avail assistance from MGNREGA scheme.

#### Conclusion:

- High Labour Force Participation Rate (LFPR) with potential to generate huge employment involving women, augmenting income of farmers, eco-friendly options which help in preserving the biodiversity makes Sericulture a viable option in India.



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

#### Reference

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

Amidst growing Global fossil fuel consumption over the long-term and consequent scarcity it is essential for us to evaluate options of renewable resources and in this context Solar energy.

##### **Demand of the question:**

The steady increase in energy consumption coupled with environmental pollution has promoted research activities in alternative and renewable energy fuels. Many countries in the world are continuously developing materials and methods for effectively utilizing the alternative fuel resources available in their region. Thus one must discuss the potential Solar energy has for us to overcome the energy shortages of present and future. Your discussion should focus on availability of raw material required for the generation of Solar energy in India and in the world.

##### **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**

Start with brief highlight of the current energy consumption patterns across the world, the crisis World is facing.

##### **Body**

Discuss the following points in detail:

- Explain how the world is gradually marching towards a severe energy crisis, with an ever-increasing demand of energy overstepping its supply and that the energy we use every day is not unlimited, yet we take it for granted.
- Discuss the causes of energy crisis
- Then move on to discuss potential of Solar energy as a renewable source of fuels.
- Discuss the factors associated such as – availability of raw material required for the generation of Solar energy in India and in the world – Tropical nature of the country, technology – PV solar cells, capacity in terms of skills etc.

##### **Conclusion**

Conclude with inevitableness of exploring newer and renewable resources given the conditions of present global energy crisis.

##### **Introduction:**

- Fossil fuels (coal, oil, gas) have, and continue to, play a dominant role in global energy systems.
- Fossil energy was a fundamental driver of the Industrial Revolution, and the technological, social, economic and development progress which has followed. Energy has played a strongly positive role in global change.

##### **Body:**

##### **India and fossil fuels:**

- As Indian population continues to grow and the limited amount of fossil fuels begins to diminish, it may not be possible to provide the amount of energy demanded by the world by only using fossil fuels to convert energy.
- India's current energy use is unsustainable.
- India has been dependent to a large extent on energy imports to meet its national energy requirements.
- 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
- It is estimated that at current rates of production, oil will run out in 53 years, natural gas in 54, and coal in 110.
- Nearly 300 million people in rural India lack access to grid-connected power, promoting use of archaic sources of energy such as kerosene, diesel, wood-fired chulhas, etc.
- It not only results in huge government subsidies, but also substantial health and environmental hazards.





### Solar energy in India:

- National Solar Mission envisages establishing **India as a global leader in solar energy**.
- The Mission has set the ambitious target of **deploying 100GW of grid connected solar power by 2022**. (40 GW Rooftop and 60 GW through Large and Medium Scale Grid Connected Solar Power Projects).
- The country's solar installed capacity reached **21 GW as of 31 December 2018**.
- India along with Paris, on the sidelines of UNFCCC's CoP 21 at Paris (2015) decided to set up **International Solar Alliance**.
- The ISA's major objectives include global deployment of over 1,000GW of solar generation capacity and mobilisation of investment of over US\$ 1000 billion into solar energy by 2030.

### Raw Material for Solar Energy in India and world:

- **A solar cell, or photovoltaic cell**, is an electrical device that converts the energy of light directly into electricity by the photovoltaic effect, which is a physical and chemical phenomenon.
- The basic component of a solar cell is pure silicon, which is not pure in its natural state.
- Pure silicon is derived from such silicon dioxides as quartzite gravel (the purest silica) or crushed quartz.
- The resulting pure silicon is then doped (treated with) with phosphorous and boron to produce an excess of electrons and a deficiency of electrons respectively to make a semiconductor capable of conducting electricity.
- The silicon disks are shiny and require an anti-reflective coating, usually titanium dioxide.
- copper, silver, silicon, indium, etc. are also vital to produce existing and future solar technologies.
- As domestic manufacturing of solar cells and panels was limited, the country is dependent on imports from China and other countries, including Germany.

### Distribution of raw materials in India and world:

- The silicon that you'll now find in a solar cell is highly processed. The material is sourced in silica mines, which are often found in regions with heavy quartz concentrations.
- Silicon is not produced in the India, we are totally import-dependent for it. Though we have plenty of sand as raw material, we don't have the technology to process it into silicon wafers for solar cells or panels
- Quartz reserves in India are found in Rajasthan, Behror, Haryana, Himachal Pradesh, Andhra Pradesh, and Madhya Pradesh. Deposits in Rajasthan are spread over the districts of Alwar, Ajmer, Bharatpur, Tonk, Sawai Madhopur, Pali, Udaipur, Churu, and Chittorgarh.
- Rare earth minerals in India mainly exist in the form of monazite and monazite distributed in coastal placers and inland placers.
- China is by far the world's largest producer of silicon, including thereby silicon content for ferrosilicon and silicon metal.
- Globally, more than 90% of the rare earth metals are located in China.

### Conclusion:

- India although has more than 300 days of sunny weather and the technology to manufacture PV cells to harness solar energy, we lack raw materials. Thus, it is imperative to sign bilateral treaties with countries which have the raw materials to push our solar industries and achieve our target of 100 GW of solar energy.

### Q) Do you think artificial recharge of the groundwater can solve India's groundwater crisis ? Present your argument with suitable case study. (250 words)

#### Why this question:

The question is in the context of significance of artificial recharge of ground water in the times of increasing severity of ground water crisis. One has to examine the means and ways of recharging ground water with special emphasis of artificial recharge.

#### Key demands of the question:

The answer must provide for a detailed discussion as to how Artificial recharge of the groundwater can solve the issue substantially but not completely because of very high rate of groundwater exploitation.

#### Structure of the answer:

##### Introduction

In a few introductory lines explain the significance of ground water, provide for some statistics highlighting the alarming depletion of ground water scenario in India.

##### Body

Discuss the following aspects in the answer:

- The water scarcity is one of the major issue which is yet to not solve completely and depletion of the water table has become a major problem across the world. Demands for water increases



as our population grow. Though 75% of the earth is covered by water, only a small percentage of it is fit for human use. The excessive demand has put a strain on our water resources. In many areas groundwater, which makes about 20% of our fresh water supply, is being used extensively for a variety of human, agriculture and industrial use. The recharge rate is much less than the rate at which the water is being pumped out.

- Discuss the effects of overexploitation – has a lot of environmental effects which include degradation of water quality, reduced quantity of water in wells and springs, and land subsidence to name a few.
- Explain the case of India – more prominent in areas with a high agriculture economy, though it is high in urban areas also.
- Case study – National Capital Delhi
- Significance of artificial recharge.
- What are the other methods?
- What can be done?

### Conclusion

Conclude with significance of the water as a critical resource for life.

### Introduction:

- India is the **largest user of the groundwater in the world with almost 90% being used for drinking water and almost 60-70% for irrigation.**
- Current statistics also show that **nearly 50% of urban water supply** comes from groundwater. India is on the threshold of a very serious groundwater crisis, which needs mitigation both in the fields and at the policy corridors of the country.

### Body:

The groundwater crisis is embedded at two different levels:

- **Groundwater exploitation of aquifers** (where groundwater is stored) in different parts of the India.
- **Groundwater contamination** that find origins, both in geogenic source such as Arsenic and Fluoride along with anthropogenic sources of contamination primarily due to poor disposal of waste and wastewater.
- **Artificial recharge** (also known as **aquifer re-injection**) is the process of injecting (or recharging) water into the ground in a controlled way, by means of special recharge wells. The water is pumped from the dewatering system and then piped to the recharge location, which may be a considerable distance away, where the water is injected back into the ground. Water may have to be treated prior to recharge, to reduce the risk of clogging of recharge wells.
- Artificial recharge of the groundwater can **solve the issue substantially but not completely** because of very high rate of groundwater exploitation. This method can solve the crisis in two types of the areas.

### Areas with high rainfall but the high water runoff due to deforestation or urbanization:

- Cities such as Mumbai and certain areas such as southern part of Tamil Nadu receive high monsoon rainfall but still has low underground water table due to surface runoff of rain water.
- In such areas artificial recharge methods such as **“Ditch and Furrow system”, “Stream Augmentation”, “Over irrigation”** can be deployed where the rain water is to be made spread over land for long period of time so that the water could percolate in to ground.
- **“Roof top rain water harvesting”** methods can also be deployed specially in metro cities such as Mumbai, Chennai, where the run off occurs due to construction of road and buildings which prevent water from percolating into ground.

### Areas with low rainfall:

- Certain semi arid areas such as Gujarat and Rajasthan where rainfall is low and ground water is major source during dry period.
- In such areas methods such as **“Recharge well, Recharge pit/shaft, Dug well”** can be deployed where a pit or well is dug and rainwater is channelized in to it, so that water could percolate in to ground.



### Other measures needed for alleviating this situation are

- **Reducing electricity subsidies:**
  - An analysis of panel data across 370 districts in India found that a reduction in electricity subsidy was correlated with a decrease in groundwater extraction.
  - Most empirical studies are in favour of pricing electricity on the basis of actual consumption. They show that the energy prices at which the farmers start responding to tariff changes in terms of reducing the demand for water and electricity would be socio-economically viable.
- **Micro-irrigation:**
  - Encouraging farmers to adopt micro-irrigation techniques such as drip irrigation and micro-sprinklers.
  - According to the CWMI report, adopting **micro-irrigation techniques** can save roughly 20% of the groundwater used annually on irrigation in India.
- **Creating awareness:**
  - Creating sustainable change would require a bottom-up approach by empowering the local community to become active participants in managing groundwater.
- **Proper implementation of initiatives:**
  - 12th five-year plan proposed a policy of **participatory groundwater management (PGM)**, which involves a collaborative approach among government departments, researchers, NGOs and community members. The plan involves training community workers to carry out aquifer mapping and implement innovative ways to use groundwater conservatively with the local community.
  - Government has come up with a Rs. 6,000-crore **World Bank-aided Atal Bhujal Yojana** with community participation to ensure sustained groundwater management in overexploited and ground water-stressed areas in seven States.
  - **World Bank's Water Scarce Cities Initiative** seeks to promote an integrated approach to managing water resources and service delivery in water-scarce cities as the basis for building resilience against climate change.
- Crisis can be tackled by restoring and enhancing groundwater recharge areas, stopping polluted water from recharging groundwater, rainwater and roof top harvesting and the restoration of ponds, lakes and other river systems.
- Growing less water-intensive crops in the dry season and transitioning away from irrigation-intensive systems where there is little water.
- In urban areas putting in place an efficient piped supply system has to be top on the agenda of policymakers and planners.
- Successful community-based groundwater management experiences from different states like Andhra Pradesh, Maharashtra, Gujarat and Rajasthan must also be studied. Collaboration, combination of ideas and community partnerships hold the key to the success of groundwater management in India.

### Conclusion:

- A new regulatory regime for the source of water that provides domestic water to around four-fifths of the population and the overwhelming majority of irrigation is urgently needed. The proposed new regime will benefit the resource, for instance through the introduction of groundwater security plans, and will benefit the overwhelming majority of people through local decision-making.
- Overall, the increasing crisis of groundwater and the failure of the existing legal regime make it imperative to entrust people directly dependent on the source of water the mandate to use it wisely and to protect it for their own benefit, as well as for future generations