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Current Affairs Reverse Engineering CARE (March 2024)

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Polity and Governance

Q.1) The 22nd Law Commission recommended that new law is needed to protect trade secrets with exceptions relating to whistleblower protection, compulsory licensing, government use, and public interest.’ In light of this, discuss the composition of Law Commission of India and why there is need for a separate law on trade secrets? (250 words)

Topic- Statutory Bodies	
Introduction	Primarily tasked with spearheading legal reforms, the Law Commission serves as an advisory body to the Ministry of Law and Justice during its tenure. In the present scenario trade secrets protection is fundamental to encourage innovative steps, foreign investment and to promote healthy competition. There is a need of having a unified codified law for this asset in India and also the need of getting a proper remedy against any violation or infringement of the right.
Body	<ul style="list-style-type: none">● Law Commission of India● Composition● About Trade secrets● History of trade secrets in India● Need of law
Conclusion	Law Commission of India has explored the development of laws relating to trade secrets and economic espionage in other jurisdictions like the UK, USA, EU, and Germany while proposing a draft Protection of Trade Secrets Bill, 2024. There is a need of a law that define the punishments and repercussions in case of wrong done by the person in infringing the confidentiality information which has been getting private by the business.

UPSC Syllabus	Statutory Bodies
Why was this question asked?	Which steps are required for the constitutionalization of a commission? Do you think imparting constitutionality to the National Commission for Women would ensure greater gender justice and empowerment in India? Give reasons. (UPSC Main 2020)
Introduction	Primarily tasked with spearheading legal reforms, the Law Commission serves as an advisory body to the Ministry of Law and Justice during its tenure. In the present scenario trade secrets protection is fundamental to encourage innovative steps, foreign investment and to promote

healthy competition. There is a need of having a unified codified law for this asset in India and also the need of getting a proper remedy against any violation or infringement of the right.

Body

Law Commission of India

- The Law Commission of India is a non-statutory body that conducts research and advises the Law Ministry on legal reforms. The Commission is made up of legal and judicial experts.
- The Commission was originally constituted in 1955 and is re-constituted from time to time.
- The Twenty-second Law Commission of India's term has been extended until August 31, 2024.
- Justice Rituraj Awasthi (Former Chief Justice of the Karnataka HC) was appointed as the chairperson of the 22nd Law Commission on November 7, 2022.

Composition

- Apart from having a full-time chairperson, the commission will have four full-time members, including a member-secretary.
- Law and Legislative Secretaries in the Law Ministry will be the ex-officio members of the commission.
- It will also have not more than five part-time members.
- A retired Supreme Court judge or Chief Justice of a High Court will head the Commission.

About Trade secrets

- Trade secrets are intellectual property rights on confidential information that may be sold or licensed. They derive their value from being kept secret.
- However, unlike other forms of intellectual property, which are limited in duration, trade secrets can be protected indefinitely.
- Legal landscape surrounding trade secrets in India has evolved through case laws leading to variations and inconsistencies in its application.
- Thus, the company must take legal and protective steps for the protection of the secrets and should avoid getting the information leaked to outsiders.

History of trade secrets in India

- The concept of trade secrets first came to the limelight in 1977 when the government asked Coca-Cola to hand over the formula for its cola drink, which led to the company exiting India to re-

enter only a decade later.

- However, the National Intellectual Property Rights Policy, 2016, and the Parliamentary Standing Committee Report have brought back focus on the need for introducing legislation to deal with trade secrets, the report informs.
- On the subject of economic espionage, the report states that “even trade secrets held by the Government of India have been consistently targeted by foreign governments in acts of active and passive economic espionage”, and hence, there is a need for a single statute to address “all issues related to trade secret leakages and economic espionage”.

Need of law

- Trade secrets have become a very important intellectual property in today’s scenario as all the business works on their techniques, and processes and uses their secret recipes, so therefore protection becomes an important and mandatory aspect.
- In India trade secrets is a most deserted field as there is no proper policy framework for the protection of trade secrets.
- In India, there is no effective legislation or regime for protection of trade secrets, though Section 27 of the Contract Act provides civil remedy up to a certain limit.
- It restricts a person from disclosing information which he acquired during the course of his employment. But again there is no uniformity in the views of the Courts over this issue. Unlike US, there is no provision of criminal liability in India.
- However, the 289th Law Commission Report, published on ‘Trade Secrets and Economic Espionage’, states that the reference to the commission arose after deliberations in the government, where the need for legislation on the subject was felt.
- Commission has looked at the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement and India’s obligations arising from it.

Conclusion

Law Commission of India has explored the development of laws relating to trade secrets and economic espionage in other jurisdictions like the UK, USA, EU, and Germany while proposing a draft Protection of Trade Secrets Bill, 2024. There is a need of a law that define the punishments and repercussions in case of wrong done by the person in infringing the confidentiality information which has been getting private by the business.

Q.2) 'Recently former President of India Ram Nath Kovind led committee submitted its report on feasibility of One Nation, One Poll to the present President of India.' In light of the above statement, discuss the composition of the committee and necessity of the concept. What are the recommendations of the committee on 'One Nation, One Election' in India? (250 words)

Topic- Election Reforms in India	
Introduction	The high-level committee on "one nation one election", headed by former President Ram Nath Kovind, submitted its report on simultaneous polls to President Droupadi Murmu on March 14. The committee met the Honourable President of India at Rashtrapati Bhavan. The panel recommended simultaneous elections for Lok Sabha and state assemblies as the first step followed by synchronised local body polls within 100 days.
Body	<ul style="list-style-type: none"> ● Concept ● Composition of Committee ● Benefits of simultaneous elections ● One-time transitional measure ● Mechanism to implement ● Amendments
Conclusion	Majority of political parties should agree on the scheme of one nation, one poll, so that expenditures incurred on continuous elections can be curtailed, but balance of federal polity and effective governance should also be ensured. The outcome of 'One Nation, One Election has the potential to alter the fundamentals of democratic set-up and reset the federal structure, it is necessary to examine the legal issues at the earliest juncture. The 22nd Law Commission, that has examined the issue in detail, had also suggested holding simultaneous polls from the general election of 2029.

UPSC Syllabus	Election Reforms in India
Why was this question asked?	Q. 'Simultaneous election to the Lok Sabha and the State Assemblies will limit the amount of time and money spent in electioneering but it will reduce the government's accountability to the people' Discuss. (UPSC Main 2017)
Introduction	The high-level committee on "one nation one election", headed by former President Ram Nath Kovind, submitted its report on simultaneous polls to President Droupadi Murmu on March 14. The committee met the Honourable President of India at Rashtrapati

	<p>Bhavan. The panel recommended simultaneous elections for Lok Sabha and state assemblies as the first step followed by synchronised local body polls within 100 days.</p>
<p>Body</p>	<p>Concept</p> <ul style="list-style-type: none"> ● Simultaneous elections, popularly referred to as “One Nation, One Election”, means holding elections to Lok Sabha, all state Legislative Assemblies, and urban and rural local bodies (municipalities and panchayats) at the same time. ● Currently, all these elections are held independently of one another, following timelines dictated by the terms of every individual elected body. ● Simultaneous elections were by and large in vogue until the fourth general elections of 1967. ● However, as successive central governments used constitutional provisions to dismiss state governments before the end of their term, and as coalition governments in the states and the Centre kept collapsing, a country came to see elections at different times through the year. ● The country now sees five to six elections in a year — if municipalities and panchayat elections are also included, the number of elections will increase manifold. <p>Composition of Committee</p> <ul style="list-style-type: none"> ● The committee on One Nation, One Poll, was set up on September 2, 2023 under Chairmanship of former President, Ram Nath Kovind. ● Committee included Home Minister Amit Shah, former Leader of Opposition in the Rajya Sabha Ghulam Nabi Azad, former Finance Commission chairperson N K Singh, former Lok Sabha secretary-general Subhash C Kashyap, senior advocate Harish Salve and former Chief Vigilance Commissioner Sanjay Kothari. <p>Benefits of simultaneous elections</p> <ul style="list-style-type: none"> ● Frequent elections burden the government exchequer with additional expenditure. If the expenditure incurred by political parties is also added, these figures will be even higher. ● Asynchronous elections cause uncertainty and instability, thwarting supply chains, business investments and economic growth. ● Disruption of government machinery due to asynchronous elections causes hardship to citizens.

- Frequent use of government officials and security forces adversely affect discharge of their duties.
- Frequent imposition of the Model Code of Conduct (MCC) causes policy paralysis and slows down the pace of the developmental programmes.
- Staggered elections induce ‘voters’ fatigue’ and present a significant challenge in ensuring their participation.

One-time transitional measure

As the first step to holding simultaneous elections in the country, the high-level committee headed by former President Ram Nath Kovind has recommended that the government take a “one-time transitory measure”, which would require the Union government to identify an “appointed date” immediately after a Lok Sabha election and all state assemblies that go to poll after the said date would have their terms expire with the Parliament.

- This would synchronise the electoral cycles of the central and state governments and bring back simultaneous elections.
- Then, as the second step, municipality and panchayat elections should be held within 100 days of the Lok Sabha and state elections.

Mechanism to implement

- To ensure that synchronicity is not disrupted due to the premature dissolution of the Parliament or a state assembly due to a no-confidence motion, a hung House or any other event, the committee has suggested that fresh elections should be conducted only for the remainder of the term, or the “unexpired term”, until the next cycle of simultaneous polls is due.

Amendments

- The committee recommended that Article 325 of the Constitution be amended to enable preparation of a single electoral roll and single Elector’s Photo Identity Card (EPIC) by the Election Commission of India, in consultation with the State Election Commissions.
- To enable municipal and panchayat elections to be held simultaneously with the others, the committee recommended an article 324A, which states that Parliament may make a law to ensure that elections to municipalities and panchayats be held together with General Elections.

Conclusion

Majority of political parties should agree on the scheme of one nation, one poll, so that expenditures incurred on continuous elections can be

	<p>curtailed, but balance of federal polity and effective governance should also be ensured. The outcome of ‘One Nation, One Election has the potential to alter the fundamentals of democratic set-up and reset the federal structure, it is necessary to examine the legal issues at the earliest juncture. The 22nd Law Commission, that has examined the issue in detail, had also suggested holding simultaneous polls from the general election of 2029.</p>
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Q.3) ‘Media is considered as the fourth pillar of democracy. However, in recent past, courts have granted pre-trial injunction against the media in civil suits for defamation.’ In light of the above statement, what is phenomenon of ‘SLAPP suits? Discuss the supreme court observations on freedom speech and media rights. (250 words)

Topic- Supreme Court and Media Rights	
Introduction	<p>Right of the media is enshrined under Article 19 (1) (a) of the Constitution that guarantees freedom of speech and expression. The Supreme Court’s recent order cautioning courts against granting pre-trial injunctions against the media in civil suits for defamation is a reminder that such orders could have severe ramifications on the freedom of speech and may impair the public’s right to know.</p>
Body	<ul style="list-style-type: none"> ● Phenomenon of ‘SLAPP suits’ ● Supreme Court Ruling ● Standard test for granting interim injunctions ● Judicial orders put curbs on journalistic publications ● Law principle
Conclusion	<p>The Supreme Court has highlighted the problem of the affluent getting pre-trial injunctions from courts against the media and civil society, gagging free speech and the public’s right to information about important affairs. The Court has struck the right note when it warns that an early injunction in what could be a prolonged trial acts as a ‘death sentence’ against the material to be published.</p>

UPSC Syllabus	Supreme Court and Media Rights
Why was this question asked?	<p>Q. What do you understand by the concept “freedom of speech and expression”? Does it cover hate speech also? Why do the films in India stand on a slightly different plane from other forms of expression? Discuss. (UPSC Main 2014)</p>

Introduction

Right of the media is enshrined under Article 19 (1) (a) of the Constitution that guarantees freedom of speech and expression. The Supreme Court's recent order cautioning courts against granting pre-trial injunctions against the media in civil suits for defamation is a reminder that such orders could have severe ramifications on the freedom of speech and may impair the public's right to know.

Body

Phenomenon of 'SLAPP suits'

- It is an umbrella term used to refer to litigation predominantly initiated by entities that wield immense economic power against members of the media or civil society, to prevent the public from knowing about or participating in important affairs in the public interest.
- With ex-parte injunction preventing a media outlet from publishing the article or material anytime soon or even in the distant future, a case — which could include expensive allegations of libel by the cash-rich entity against the media or civil society — tends to drag on.

Supreme Court Ruling

- Supreme Court recently observed that “Granting interim injunctions before the trial commences, in a cavalier manner results in the stifling of public debate.”
- Courts granting an injunction are also expected to record reasons by analysing the facts.
- The Supreme Court Bench said courts should grant pre-trial injunctions only in exceptional cases.
- For others, an injunction against the publication of material should be granted only after the conduct of a full-fledged trial.
- The Supreme Court order reminded the judicial officers that the “constitutional mandate of protecting journalistic expression cannot be understated” when it comes to cases against the media.

Standard test for granting interim injunctions

- Courts mechanically apply the three limbs of the test — whether there is a prima facie case, whether the ‘balance of convenience’ is in favour of an interim restraint, and lastly, whether not granting it will cause “irreparable loss or harm” to the plaintiff.
- Ex-parte interim injunctions granted by courts rather mechanically spell a death sentence to journalistic stories even before the allegations against them are proven right, if ever.

Judicial orders put curbs on journalistic publications

- Three kinds of judicial orders place questionable curbs on

	<p>journalistic publications:</p> <ul style="list-style-type: none"> ● Outright gag orders banning any publication of information related to cases being heard by the courts, ● Omnibus prior restraint orders against all media houses based on a plaintiff's fear that a defamatory statement may be repeated by others and, ● Pre-trial orders to specific media houses to take down an article and refrain from further publication. <p>Law principle</p> <ul style="list-style-type: none"> ● The common law principle in <i>Bonnard vs Perryman</i>, lays down the standard that there can be an injunction in a defamation suit only if the court feels that the content is defamatory and that there can be no way the publication can be justified during trial, for instance by pleading the defence of truth and public interest. ● The latest Supreme Court order contains a reminder that those with influence and economic power can resort to 'SLAPP' (Strategic Litigation/Lawsuit against Public Participation), a tactic often used to stifle public criticism of projects and companies.
Conclusion	<p>The Supreme Court has highlighted the problem of the affluent getting pre-trial injunctions from courts against the media and civil society, gagging free speech and the public's right to information about important affairs. The Court has struck the right note when it warns that an early injunction in what could be a prolonged trial acts as a 'death sentence' against the material to be published.</p>

Q.4) 'The Supreme Court recently asked the Centre to consider allowing the Kerala government a "one-time package" in the present financial year to help it tide over funds shortage.' In light of the above statement, discuss the fiscal management in India between centre and states with regards to recommendation of 15th Finance Commission? (250 words)

Topic- Fiscal federalism

Introduction

The Kerala government and the Centre are at loggerheads over the latter's decision to limit the state's borrowing limit. Kerala government has moved the Supreme Court alleging that the Centre's move violates fiscal federalism and will prevent it from fulfilling the commitments it made in annual budgets.

Body	<ul style="list-style-type: none"> ● Background ● 15th Finance Commission ● Fiscal autonomy and fiscal responsibility ● Centre's stand ● Kerala's stand ● Supreme Court's advise ● Way Ahead
Conclusion	Fiscal mismanagement of the states is an issue with which the Union must be concerned because ultimately it has its own impact on the nation's economy. The Supreme Court has asked the Centre and Kerala government, which have been sparring over the state's borrowing limit, to hold further discussions to sort out their differences.

UPSC Syllabus	Fiscal Federalism
Why was this question asked?	Q. The public expenditure management is a challenge to the Government of India in context of budget making during the post liberalization period. Clarify it. [UPSC Main 2019]
Introduction	The Kerala government and the Centre are at loggerheads over the latter's decision to limit the state's borrowing limit. Kerala government has moved the Supreme Court alleging that the Centre's move violates fiscal federalism and will prevent it from fulfilling the commitments it made in annual budgets.
Body	<p>Background</p> <ul style="list-style-type: none"> ● Historically, the FRBM Act 2003 required states to limit their fiscal deficit to 3% of the GSDP. ● However, the Covid pandemic and the ensuing lockdowns required both state and Central governments to stretch their borrowings in order to meet the gap between falling revenues and rising expenditures. ● The Kerala government has challenged two letters issued by the Union finance ministry last year and certain amendments made to the Fiscal Responsibility and Budget Management Act in 2018 for "imposing a net borrowing ceiling (NBC) on the state by limiting borrowings from all sources, including open market borrowings." <p>15th Finance Commission</p>

- The 15th Finance Commission designated Kerala to be a “highly debt stressed” state.
- Kerala is reeling under unhealthy levels of Revenue Deficit-Fiscal Deficit ratio (65% in 2018-19).
- A high RD-FD ratio implies that the state government is borrowing not to invest in productive schemes but to meet its day to day expenses such as salaries and pensions.
- Data revealed that Kerala had largely failed to limit its fiscal deficit to 3% of GSDP for almost all of the past decade.
- Based on the recommendation of the 15th Finance Commission, the normal Net Borrowing Ceiling (NBC) of the States including Kerala have been fixed at 3 per cent of the Gross State Domestic Product for the financial year 2023-24.
- Accordingly, the normal NBC of the State of Kerala has been arrived at Rs 32,442 crore for the Financial Year (FY) 2023-24”.
- The commission noted that Kerala had the second highest levels of salaries (as a percentage of total revenue expenditure), and worse, the trend growth of salaries was the highest — suggesting that this burden was continuing to rise.

Fiscal autonomy and fiscal responsibility

- Article 293 of the Constitution grants fiscal autonomy to states and mandates them to borrow only from within the territory of India on guarantee from the Consolidated Fund of the State.
- For the states, the extent of borrowing is defined in the fiscal responsibility Acts of each state.
- All transactions between the Centre and the state governments are carried out under the Fiscal Responsibility and Budget Management Act, 2003.

Centre’s stand

- The Centre, has claimed it has not curtailed the borrowing limit and the financial crisis in Kerala is a result of the state government’s “mismanagement and extravagance”.
- The Centre has argued that the financial edifice of the Kerala has several issues.
- It has given statistics to show the revenue deficit in Kerala as a percentage of gross state domestic product (GSDP) to be 3.17% for 2021-22, higher than the all-states average of 0.46%, and the fiscal deficit rate for Kerala to be 4.94% compared to an all-state average of 2.80%.
- If a one-time exception can be made for Kerala this time, the step

would end up dividing states based on their approaching courts

Kerala's stand

- The Kerala government has approached the Supreme Court accusing the Centre of interfering in the exercise of its “exclusive, autonomous and plenary powers” to regulate the state’s finances by imposing a ceiling on net borrowing.
- In an original suit filed under **Article 131**, the Kerala government has said the Constitution bestows fiscal autonomy upon states to regulate their finances under various articles, and the borrowing limits are regulated by a state legislation.
- Kerala government, claim that it has no money to clear outstanding arrears of salaries, pension, and provident fund for state employees and for other beneficiaries in the state under various welfare schemes.
- As per Kerala government, the Centre’s orders and amendment create unconstitutional limits and impediments on the state to borrow and regulate its own finances, therefore violating the provisions and principles of fiscal federalism under the Constitution.

Supreme Court's advise

- The Supreme Court recently urged the Centre to consider rescuing Kerala from its severe financial crisis with a special package in the current fiscal year even as the Centre maintained that as a matter of principle, bailout packages were turned down for other states too.
- The Supreme court earlier advised Kerala to exercise prudence in fiscal matters while imploring the Centre to relax its norms to enable the state to tide over the crisis
- Supreme Court earlier had suggested that the Kerala state should accept the Centre’s proposal to borrow an additional ₹13,608 crore for the time being, subject to meeting certain stipulations.
- At the same time, it added the Centre should not put the withdrawal of the suit by Kerala as a precondition for allowing additional borrowing.

Way Ahead

- The fiscal war between the Centre and the Kerala government is not just restricted to borrowing limits but extends to many other fiscal issues such as GST collection and allocation of Central funds.
- Kerala is not the only state that has financial problem going on.

	<ul style="list-style-type: none"> ● The Centre has also slashed the borrowing limits of Punjab from Rs 39,000 crore to Rs 21,000 crore. ● It has reduced Himachal Pradesh's limit from Rs 14,000 crore to Rs 9,000 crore while in Telangana, the state's borrowing limit was cut by Rs 15,000 crore.
Conclusion	Fiscal mismanagement of the states is an issue with which the Union must be concerned because ultimately it has its own impact on the nation's economy. The Supreme Court has asked the Centre and Kerala government, which have been sparring over the state's borrowing limit, to hold further discussions to sort out their differences.

Q.5) 'Inclusive elections, where all those eligible have the opportunity to vote to choose their elected representatives, are central to democracy.' In light of the above statement, discuss the concept of inclusive elections. What steps have been taken by Election Commission to promote inclusive elections in India? (250 words)

Topic- Elections in India	
Introduction	Genuine and credible elections play an important role in inclusive democracy. They provide a crucial opportunity for all voters to participate in their democracy and make their voice heard. To make the process inclusive and accessible, the Election Commission of India (ECI) has, for the first time in the history of the Lok Sabha elections, extended its 'vote-from-home' facility to Persons with Disabilities (PwD) and senior citizens aged 85 and above.
Body	<ul style="list-style-type: none"> ● Concept of Inclusive Election ● Vote from home ● Benefits of vote from home scheme ● Assured minimum facilities ● Encouraging the participation of women ● Enfranchising migrant communities ● Other initiatives of ECI
Conclusion	Inclusion and accessibility have become important guiding principles for electoral integrity. There is a global trend to expand the franchise to enable more citizens to vote. Elections must be transparent, in order to inspire trust among the general population. That's why we need inclusive and transparent electoral institutions, which advance and protect the level playing field. But, in order for elections to play this role, they must present citizens with a real choice, where different parties adopt clear and distinct policies. And where

the candidates reflect the diversity of society – and all groups have a fair chance of running.

UPSC Syllabus	Elections in India
Why was this question asked?	Q. Discuss the role of the Election Commission of India in the light of the evolution of the Model Code of Conduct. (UPSC Main 2022)
Introduction	Genuine and credible elections play an important role in inclusive democracy. They provide a crucial opportunity for all voters to participate in their democracy and make their voice heard. To make the process inclusive and accessible, the Election Commission of India (ECI) has, for the first time in the history of the Lok Sabha elections, extended its ‘vote-from-home’ facility to Persons with Disabilities (PwD) and senior citizens aged 85 and above.
Body	<p>Concept of Inclusive Election</p> <ul style="list-style-type: none">• Elections around the world are plagued with the problem of unequal levels of participation. This can have profound consequences for election results, representation and policies.• Concept of inclusive election practices to refer to policy instruments which can reduce turnout inequality between groups and mitigate other inequalities within the electoral process.• The Convention on the Rights of Persons with Disabilities (CRPD) clarifies that persons with disabilities have the right to participate in political life and enshrines their right to vote and stand as candidates in elections. <p>Vote from home</p> <ul style="list-style-type: none">• To make the process inclusive and accessible, the Election Commission of India (ECI) has, for the first time in the history of the Lok Sabha elections, extended its ‘vote-from-home’ facility to Persons with Disabilities (PwD) and senior citizens aged 85 and above.• The postal ballot-home voting facility was amended to include senior citizens and PwD candidates; the benchmark disability should be not less than 40% of the specified disability as certified by the concerned certifying authority.• The VfH facility was previously tried out during Assembly elections in select regions, allowing PwD, senior citizens and

people affected by COVID-19 to vote from home.

- The ECI this year has, increased the upper age limit of elderly voters, from 80 to 85 years.
- People with blindness or physical infirmity are allowed to nominate a companion and take their assistance while home voting

Benefits of vote from home scheme

- Vote from home scheme has helped almost 3.30 lakh people with disabilities and electors above 80 years
- The scheme is “useful” as senior voters may not prefer to step out during the summer heat
- The ECI also extended the postal ballot option to media personnel covering ‘polling day activities’ who have authorisation letters from the Election Commission, and those part of essential services such as metros, railways and health care.
- The option is also open for service voters, such as personnel of the armed forces posted away from their hometowns, Central Armed Police Forces personnel deployed away from home, Central and State police personnel on election duty, and polling personnel and embassy staff on postings.

Assured minimum facilities

- Senior citizen or a person with disability who choose to go to the booth, the ECI has mandated officials to provide Assured Minimum Facilities (AMF) like ramps, wheelchairs, first aid and toilets at polling stations.
- Measures, new and old, are being highlighted, including provision of free transportation on poll day, appointment of State and District PwD icons, and Braille-enabled EVMs and EPICs.

Encouraging the participation of women

- India has 460 million women voters, which is almost equal to the number of men voters. In the last General Election to Parliament in 2019, more women than men voted.
- India’s Election Commission has been trying to encourage more women to vote by improving the safety of polling booths to reduce voter intimidation and by setting up separate queues for women on election day.

Enfranchising migrant communities

- ECI is also experimenting with remote voting for domestic

migrants, according to a December 2022 press release.

- The Multi Constituency Remote Electronic Voting Machine (RVM) would allow people who migrate within the country for employment and opportunity (almost 450 million, as per the latest 2011 census) to vote for their home constituencies from remote locations.
- Internal migrants face a string of challenges due to the transient nature of their life and livelihood.
- Many are reluctant to get themselves enrolled multiple times, unwilling to get names deleted from electoral roll of home constituencies and facing an emotional disconnect with the places they migrate to.
- If implemented, “it can lead to a social transformation for the migrants and connect with their roots,” the government said.

Other initiatives of ECI

- **SVEEP (Systematic Voters' Education and Electoral Participation)** is a flagship programme of the Election Commission of India to promote voter education and participation in elections.
- It provides information and resources on voter education and participation in elections in India.
- The portal was launched in 2009 and is available in English, and Hindi.
- Election Commission of India has been working for Inclusive elections under premise of ‘No Voter to be Left Behind’.
- The Election Commission of India (ECI) hosted the 3rd International Conference on the theme ‘Inclusive Elections and Elections Integrity’ in virtual format on 09 March 2023.

Conclusion

Inclusion and accessibility have become important guiding principles for electoral integrity. There is a global trend to expand the franchise to enable more citizens to vote. Elections must be transparent, in order to inspire trust among the general population. That’s why we need inclusive and transparent electoral institutions, which advance and protect the level playing field. But, in order for elections to play this role, they must present citizens with a real choice, where different parties adopt clear and distinct policies. And where the candidates reflect the diversity of society – and all groups have a fair chance of running.

Q.6) “Kerala government has recently petitioned the Supreme Court against President Droupadi Murmu withholding assent to four bills passed by the state assembly.” Discuss the above case in light of various constitutional provisions provided in the Indian constitution. (250 words)

Topic- Centre-State Relations	
Introduction	In an unusual move, the Kerala government has petitioned the Supreme Court against President Droupadi Murmu withholding assent to four bills passed by the state assembly. The Constitution is silent on how much time the president can take in granting assent to a bill passed by a state legislature and referred to the Rashtrapati Bhavan for presidential consideration or for denying consent.
Body	<ul style="list-style-type: none"> ● Concept of Federalism in India ● Recent Controversy ● Kerala government’s view ● About Kerala Bills ● Constitutional provisions ● Role of Supreme Court
Conclusion	Institutional arrangements for facilitating exchange of views between the States and the Union on important legislative matters need to be explored to resolve disputes between Kerala and Central government. Governors should adhere to the guidelines of Article 200, promptly communicating their concerns about Bills and sending them back to the State Legislature for reconsideration. Clear guidelines and transparent processes can help avoid misunderstandings. Governors should provide transparent reasoning when withholding assent to a Bill, ensuring accountability for their decisions.

UPSC Syllabus	Centre-State Relations
Why was this question asked?	Q. Though the federal principle is dominant in our Constitution and that principle is one of its basic features, but it is equally true that federalism under the Indian Constitution leans in favour of a strong Centre, a feature that militates against the concept of strong federalism. Discuss. (UPSC Main 2014)
Introduction	In an unusual move, the Kerala government has petitioned the Supreme Court against President Droupadi Murmu withholding assent to four bills passed by the state assembly. The Constitution is silent on how much time the president can take in granting assent to a bill passed by a

state legislature and referred to the Rashtrapati Bhavan for presidential consideration or for denying consent.

Body

Concept of Federalism in India

- The Constitution in its very first article describes India as a Union of States.
- The Constitution of India establishes the structure of the Indian government, including the relationship between the federal government and state governments.
- Part XI of the Indian constitution specifies the distribution of legislative, administrative and executive powers between the union government and the States of India.

Role of Supreme Court

- When a dispute arises with other states or union territory or the union government, the Supreme Court adjudicates per Article 131.
- **Article-131: Original Jurisdiction-** The SC (as a federal court of India) possesses original jurisdiction to decide the disputes arising between different units of the Indian Federation like: Centre and one or more states; or Centre & any state(s) on one side and one or more states on the other; or Two or more states.
- However, **Article 262** excludes Supreme Court jurisdiction with respect to the adjudication of disputes in the use, distribution or control of interstate river waters.
- Under **Article 263** the President can establish an interstate council to coordinate/resolve disputes between states and the Union. States have their own jurisdiction.

Recent Controversy

- The Kerala government has approached the Supreme Court against Governor Arif Mohammed Khan referring seven Bills passed by the state legislature to the President and the latter withholding assent to four of them “without giving any reason”, terming their actions “manifestly arbitrary”.
- The state government said that on February 23 and 29, the Ministry of Home Affairs informed it that the president has withheld assent to four of the seven bills- University Laws (Amendment) (No. 2) Bill, 2021, the Kerala Co-operative Societies (Amendment) Bill, 2022, the University Laws (Amendment) Bill, 2022, and the University Laws (Amendment) (No. 3) Bill, 2022.

Kerala government's view

- Not one of the seven bills which are pending with Governor and President had anything to do with Centre-state relations.
- The state government said these bills had been pending with the governor for as long as about two years and his action "subverted" the functioning of the state legislature, rendering its very existence "ineffective and otiose".
- State government's plea said 'The conduct of the Governor in keeping Bills pending for long and indefinite periods of time, and thereafter reserving the Bills for the consideration of the President without any reasons relatable to the Constitution is manifestly arbitrary and violates Article 14 (equality before law) of the Constitution.'
- The state government has urged the court to declare as "illegal" Governor Arif Mohammed Khan reserving a total of seven bills, including these four, for the consideration of the president.

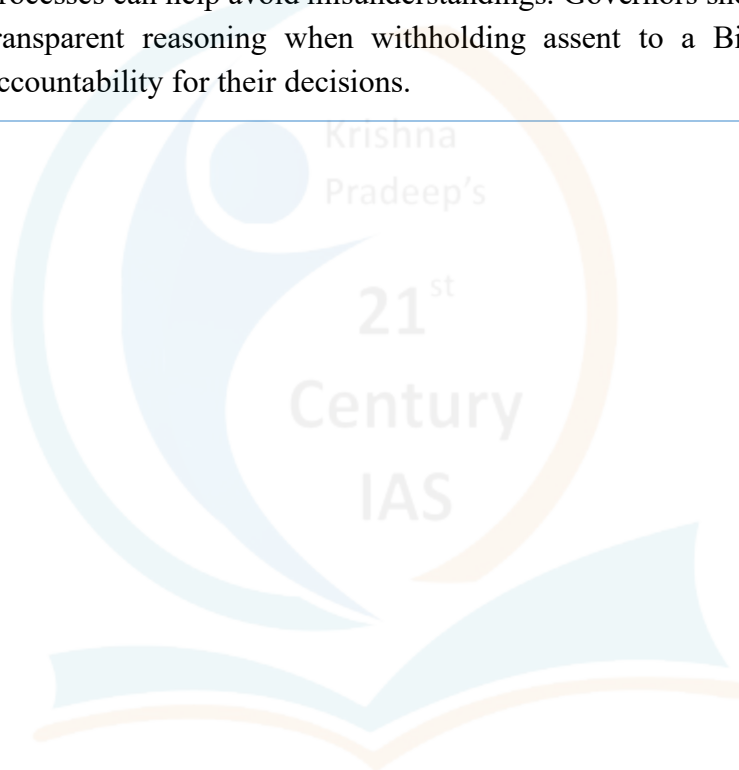
About Kerala Bills

- The Kerala Co-operative Societies (Amendment) Bill, 2022 has provisions allowing voting rights for nominated members of Kerala Co-operative Milk Marketing Federation (MILMA). Governor Khan was of the view that it was "undemocratic" to give voting rights to nominated members, who are not engaged in the dairy sector.
- The other three Bills are pertaining to the universities in Kerala. They were aimed at removing the Governor as Chancellor of the universities in the state. These Bills were envisaged to grant power to the state government to appoint eminent academicians as chancellors of the universities.

Constitutional provisions

- **Article 361** of the Constitution says the president, or the governor of a state shall not be answerable to any court for the exercise and performance of the powers and duties of his office or for any act done or purporting to be done by him in the exercise and performance of those powers and duties.
- **Article 200** outlines the process for a Bill passed by the Legislative Assembly of a State to be presented to the Governor for assent, who may either assent, withhold assent or reserve the Bill for consideration by the President.
- The Governor may also return the Bill with a message requesting reconsideration by the House or Houses.
- **Article 201:** When a Bill is reserved for the consideration of the

	<p>President, the President may assent to or withhold assent from the Bill.</p> <ul style="list-style-type: none">• The President may also direct the Governor to return the Bill to the House or Houses of the Legislature of the State for reconsideration.
Conclusion	<p>Institutional arrangements for facilitating exchange of views between the States and the Union on important legislative matters need to be explored to resolve disputes between Kerala and Central government. Governors should adhere to the guidelines of Article 200, promptly communicating their concerns about Bills and sending them back to the State Legislature for reconsideration. Clear guidelines and transparent processes can help avoid misunderstandings. Governors should provide transparent reasoning when withholding assent to a Bill, ensuring accountability for their decisions.</p>



Social Issues and Justice

Q.7) ‘Seven years after the Rights of Persons with Disabilities Act, 2016 came into being, one of its main aims — making public buildings accessible to persons with disabilities — remains unfulfilled.’ Discuss India’s disability law, and status of accessibility of govt buildings to Divyang people? (250 words)

Topic- Government policies for development in various sector	
Introduction	After India signed and ratified the UNCRPD in 2007, the process of enacting a new legislation in place of the Persons with Disabilities Act, 1995 (PWD Act, 1995) began in 2010 to make it compliant with the UNCRPD. Rights of PWD Act, 2016 (RPWD Act, 2016) was passed by both the houses of the Parliament. The Act seeks to create a more inclusive and equitable society where persons with disabilities can live with dignity and enjoy their full rights and freedoms.
Body	<ul style="list-style-type: none"> ● Constitutional Framework for Disabled in India ● About Rights of Persons with Disabilities Act 2016 ● What does the law mandate for public buildings? ● Issues in implementation of the act ● Government Interventions ● Way Ahead
Conclusion	Having comprehensive disability rights legislation is a crucial first step, but it must be complemented by sustained efforts to sensitize government functionaries, service providers, and the general public. This is necessary to ensure that the rights and needs of persons with disabilities are recognized and respected and that they can fully participate in society on an equal basis. It’s an ongoing process that requires collaboration between government agencies, civil society, and the public at large.

UPSC Syllabus	Government policies for development in various sector
Why was this question asked?	The Rights of Persons with Disabilities Act, 2016 remains only a legal document without intense sensitisation of government functionaries and citizens regarding disability. Comment. (2022)
Introduction	After India signed and ratified the UNCRPD in 2007, the process of enacting a new legislation in place of the Persons with Disabilities Act, 1995 (PWD Act, 1995) began in 2010 to make it compliant with the

UNCRPD. Rights of PWD Act, 2016 (RPWD Act, 2016) was passed by both the houses of the Parliament. The Act seeks to create a more inclusive and equitable society where persons with disabilities can live with dignity and enjoy their full rights and freedoms.

Body

Constitutional Framework for Disabled in India

- Article 41 of the Directive Principles of State Policy (DPSP) states that the State shall make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement, within the limits of its economic capacity and development.
- The subject of 'relief of the disabled and unemployable' is specified in the state list of the Seventh Schedule of the constitution.

About Rights of Persons with Disabilities Act 2016

- The Act was passed by the Parliament of India to give effect to the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), which India ratified in 2007.
- The Act replaces the earlier Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, which was considered inadequate and outdated in addressing the needs and challenges of persons with disabilities in India.
- It mandated the central government to notify guidelines and standards for public buildings, and to review them "from time to time" based "on the latest scientific knowledge and technology".

What does the law mandate for public buildings?

- Rule 15 of the Rights of Persons with Disabilities Rules, 2017, which flowed from the PwD Act, covers accessibility of physical environment, transport, and information and communication technology.
- Every establishment is required to comply with the standards in the Act which, for public buildings, were the 2016 harmonised guidelines.
- Last year, Rule 15 was amended to make compliance with the 2021 harmonised guidelines mandatory.
- The 428-page guidelines and standards covered everything from planning and tendering of building projects to specifications for ramps, grab rails, lifts, toilets, and other accessibility features.
- They recommended that universal accessibility should be incorporated in the site planning and detailed working drawings

of the project. The guidelines also covered the implementation, evaluation, and maintenance stages.

- All building plans are required to adhere to the guidelines and standards. Existing buildings must be made accessible within five years.

Issues in implementation of the act

- Experts have flagged the lack of awareness and accountability for those responsible for implementing the guidelines — the engineers of public works departments in the country.
- PwDs face harassment in acquiring disability certificates due to bureaucratic apathy.
- The implementation of accessibility standards has been haphazard. There is no consistency, there is a lack of budgetary allocation, and no monitoring and sensitisation.
- Posts reserved for disabled remain unfilled due to mismatch of skillset requirements.
- Government initiatives like Digital India are increasingly delivering basic government functions through information technologies; most of which are still inaccessible for users with visual or other disabilities.
- PwDs are often denied wage labour due to wrong notion that disabled could not work and even if they work, output would not be worth the payment made. As a result, they were kept away from labour market.

Government interventions

- **Unique Disability Identification Portal-** The Objective of UDID Project is to create a National Database for all Persons with Disabilities (PwDs) along with their socio-economic details as well as issuing all Divyangjan with a UDID card through a single online portal across all States/UTs in India.
- **Accessible India Campaign-** is a nationwide campaign launched in 2015 to provide universal accessibility to people with disabilities. The campaign is also known as Sugamya Bharat Abhiyan.
- **DeenDayal Disabled Rehabilitation Scheme-** a Central Sector Scheme of the Government of India that provides financial assistance to voluntary organizations working for the education and rehabilitation of persons with disabilities.
- **Assistance to Disabled Persons for Purchase/fitting of Aids and Appliances-** assist the needy disabled persons in procuring durable, sophisticated and scientifically manufactured, modern,

	<p>standard aids and appliances that can promote their physical, social and psychological rehabilitation, by reducing the effects of disabilities and enhance their economic potential.</p> <ul style="list-style-type: none"> ● National Fellowship for Students with Disabilities- a fellowship scheme launched by the Government of India in 2012-13 to increase opportunities for students with disabilities to pursue higher education leading to degrees such as M. Phil. and Ph. <p>Way Ahead</p> <ul style="list-style-type: none"> ● The disability rights movement in India has undoubtedly touched the lives of masses of PWDs and pushed for a more disabled friendly environment in the country. ● With the passing of the RPWD Act 2016 and with India ratifying the UN convention on the rights of the disabled, the ground has been laid to ensure rights to citizenship, respect and opportunities for persons with disabilities. ● However, the challenges before the Disability Rights Movement in India are enormous. ● Building a strong movement would require a better grasp of the complexity of socio-political contexts which the PWDs inhabit. ● Lessons from the past and learning from other movements would go a long way in strengthening the movement and thereby furthering the cause of rights of PWDs in India.
<p>Conclusion</p>	<p>Having comprehensive disability rights legislation is a crucial first step, but it must be complemented by sustained efforts to sensitize government functionaries, service providers, and the general public. This is necessary to ensure that the rights and needs of persons with disabilities are recognized and respected and that they can fully participate in society on an equal basis. It's an ongoing process that requires collaboration between government agencies, civil society, and the public at large.</p>

Q.8) 'Without a paradigm shift in the pedagogies, National Education Policy's education strategy would remain a mere rhetorical policy statement enacted through some mechanical, ritualised processes.' In light of the above statement, discuss the learning pedagogies followed in India and what new pedagogies can be used in NEP2020 for effective learning? (250 words)

Topic- Issues related to development of Education sector in India

Introduction Educators play a crucial role in imparting quality and value education and

	fostering qualitative change through teaching and learning. They bring about valuable pedagogical and curriculum changes, thus promoting equity and helping students overcome cultural barriers. Avant-garde pedagogies can enhance the active participatory teaching-learning process
Body	<ul style="list-style-type: none"> ● Feminist pedagogy ● Peer teaching ● Paolo Freire's 'banking model' ● Freire's 'problem-posing model' ● New Education Policy 2020 ● Way Ahead
Conclusion	Segregating learners into prejudices and gender socialisation in terms of their class, caste, gender, religion, sexuality, and region would not provide the desired sense of belonging to diverse learning population in India. Instead, they should be included in the least restrictive environment possible, prompting successful self-actualization. NEP, seeks the implementation of the aforementioned objectives.

UPSC Syllabus	Issues related to development of Education sector in India
Why was this question asked?	National Education Policy 2020 is in conformity with the Sustainable Development Goal-4 (2030). It intends to restructure and reorient the education system in India. Critically examine the statement. (UPSC Main 2022)
Introduction	Educators play a crucial role in imparting quality and value education and fostering qualitative change through teaching and learning. They bring about valuable pedagogical and curriculum changes, thus promoting equity and helping students overcome cultural barriers. Avant-garde pedagogies can enhance the active participatory teaching-learning process
Body	<p>Feminist pedagogy</p> <ul style="list-style-type: none"> ● The UN promotes feminist pedagogy to create space for open discussions to ensure a curriculum aligned with themes to develop learner strategies to resist institutional challenges and apply the and 'trans' scientifically. ● Therefore, it does not address the nuances of class-based gendered violence, caste-based gendered offences, frotteurism, paraphilia, and the arbitrary role of religion in sociosexual stratification.

- A curriculum accommodating ‘peer teaching’ as a pedagogical strategy is becoming increasingly popular in Indian education.

Peer teaching

- Peer teaching can effectively deal with conflicts arising out of class, caste, religion, region, community, and their gender-specific indexes present in the social hinterland of India where the learners inhabit.
- Learners encountering gendered situations and experiences of conflict would call for a revised moral assessment and action.
- Peer teaching, therefore, has the potential to erase gendered conflict from knowledge. It can endorse a syncretic discourse to ‘illegitimate’ particular patriarchal visions and chauvinistic claims of society.
- However, peer teaching requires the educators, the academicians, and the learners to ‘unlearn’ their preconceived notions of gender norms, traditional values, and patriarchal ideals.

Paolo Freire’s ‘banking model’

- Indian classrooms reflect Paolo Freire’s ‘banking model’, i.e., the teacher is more knowledgeable than the students and therefore possesses the authority; therefore, the teacher ‘deposits’ facts into the students’ minds, who are to memorise and recall them.
- The teacher is superior to the rest and thus determines what is good or correct.
- Therefore, peer teaching, even in such a classroom, can issue communiqué but does not ensure ‘inquiry’ about learning.
- NEP’s emphasis on “education as the single greatest tool for achieving social justice and equality” is deemed fit to offer an educational praxis for the Indian education scenario that can liberate learners from gendered oppression, garnering a positive change in Indian society.

Freire’s ‘problem-posing model’

- Educators can think of Freire’s ‘problem-posing model’ as one of the liberating pedagogies. This technique, as enunciated in Paolo Freire’s Pedagogy of the Oppressed, is, hitherto, underused in the Indian education context.
- However, it restores a more equal relationship between the educator and the students, as everyone simultaneously fills the roles of the teacher and the student.

- These ‘teacher-students’ and ‘student teachers’ decide on important topical points to talk about together.
 1. The teacher becomes a facilitator.
 2. The educator becomes an instructor.
 3. The topical points are presented as ‘problems’ to the whole class.
- The ‘problems’ are the issues raised to be solved together without any ‘correctness’ prejudice of authoritative ‘ranking’.
- The classroom becomes a real academic discourses into a method of gender liberation, deterring gender polarisation from becoming a tool of oppression and patriarchal dominance.

New Education Policy 2020

- NEP provides for setting up a Gender Inclusion Fund (GIF), especially for girls and transgender students, and recommends that Samagra Shiksha integrate and universalize access to education in all states and UTs.
- The most critical task in ensuring equity and inclusion at all levels of education is to make the learner an independent thinker.
- Identification and incorporation of real-life situations and experiences, reflecting the gender paradigm, include discussion, role play, skit, narration, presentation, improvisation, hot seat, etc.; appreciate gender-inclusive participation; and inculcate empathy among the young to adult learners of primary to higher education.

Way Ahead

- Thus, educators can adopt feminist pedagogy to dismantle gender dysphoria, the hegemony of gendered hierarchy in Indian education.
- Such a pedagogy approaches curriculum design in line with international benchmarking to develop academic critical thinking and intellectual open-mindedness, directly reflecting the learning curve of outcome-based education (OBE).
- The zeal for problem-solving and perception of gender inconsistencies, gender gaps, or gendered disturbances become the essential stimuli in this creative pursuit and experiential learning process.

Conclusion

Segregating learners into prejudices and gender socialisation in terms of their class, caste, gender, religion, sexuality, and region would not provide the desired sense of belonging to diverse learning population in

India. Instead, they should be included in the least restrictive environment possible, prompting successful self-actualization. NEP, seeks the implementation of the aforementioned objectives.

Q.9) 'The World Health Organization (WHO) has urged increased focus on the issue of violence against women with disabilities and older women.' In light of the above statement, discuss the issue of violence and abuse against women with disabilities and older women. What steps have been taken by Indian government for welfare of women with disabilities and older women? (250 words)

Topic- Welfare of vulnerable sections

Introduction	The World Health Organization (WHO) is urging increased focus on a hidden epidemic: Violence against women with disabilities and older women. A recent press release by the global health agency highlighted the lack of data on this issue, calling for better research and tailored support for these vulnerable populations. Indian Government has taken several initiatives to make sure that Persons with Disabilities and elderly women are able to live their lives with dignity and respect. However, the lack of data about the disabled and older women who face violence further hampers the ability of civil society to advocate for them.
Body	<ul style="list-style-type: none"> ● Data gap ● Common forms of abuse ● Steps suggested by WHO ● Indian government initiatives for welfare of old age women ● Initiatives taken by the Indian government for PwDs
Conclusion	Article 41 of the Constitution of India directs the State to provide public assistance to its citizens in case of unemployment, old age, sickness and disablement and in other cases of undeserved want within the limit of its economic capacity and development. However, even with the pathbreaking RPwD Act of 2016, disabled people, especially old women are not seen as right holders or enforcers.

UPSC Syllabus	Welfare of vulnerable sections
Why was this question asked?	Q. The Rights of Persons with Disabilities Act, 2016 remains only a legal document without intense sensitisation of government functionaries and citizens regarding disability. Comment. (UPSC Main 2022)

Introduction

The World Health Organization (WHO) is urging increased focus on a hidden epidemic: Violence against women with disabilities and older women. A recent press release by the global health agency highlighted the lack of data on this issue, calling for better research and tailored support for these vulnerable populations. Indian Government has taken several initiatives to make sure that Persons with Disabilities and elderly women are able to live their lives with dignity and respect. However, the lack of data about the disabled and older women who face violence further hampers the ability of civil society to advocate for them.

Body

Data gap

- Existing data suggests a high prevalence of violence against these groups, the WHO said. However, the true scope of the problem remains unclear due to a critical gap in data collection.
- This data gap stems from several factors.
- Stigma and discrimination can prevent women from reporting abuse. Additionally, older women and women with disabilities may face challenges accessing services or support, or their accounts may be dismissed by responders / authorities.
- One systematic review by WHO indicated heightened risks of intimate partner violence for women with disabilities compared to those without, while another identified elevated rates of sexual violence among this demographic.
- For older women and women with disabilities, their dependency and isolation are further exploited by perpetrators, increasing their risk of abuse.

Common forms of abuse

- **Physical abuse:** A WHO review among women aged 60 years and older revealed that physical and/or sexual intimate partner violence remained the most common forms of abuse.
- **Psychological abuse:** However, with partners aging, some women noted a transition from primarily physical and/or sexual violence to psychological abuse, such as threats of abandonment and other controlling behaviours.
- **Prevalent forms of abuse:** Intimate partner and sexual violence rank among the most prevalent forms of gender-based violence worldwide, impacting approximately 1 in 3 women.
- Despite this, older women and women with disabilities continue to endure these types of violence, along with specific risks and additional forms of abuse, the WHO warned.

- **Abuse by caregivers:** In some cases, caregivers or healthcare professionals may perpetrate these abuses, including coercive and controlling behaviours such as withholding medications, assistive devices, or other essential aspects of care, as well as financial exploitation.

Steps suggested by WHO

- WHO emphasised the need for improved data collection methods that are inclusive of women with disabilities and older women. This will require collaboration among governments, researchers and organisations working with these populations.
- It also highlighted the importance of addressing the root causes of violence, such as harmful gender norms and attitudes. Additionally, WHO calls for the development and implementation of comprehensive support services tailored to the specific needs of older women and women with disabilities.
- WHO has also created a survey module to facilitate data collection on violence against older women, designed to complement existing surveys. Later in the year, resources will also be released to aid in the incorporation of disability measures into such surveys.

Indian government initiatives for welfare of old age women

- The Government of India is implementing various schemes and programmes to provide healthy, empowered dignified and self-reliant life to senior citizens.
- **Elder Line: Toll-Free Number for Elderly:** It provides information, guidance, emotional support - particularly on pension, medical and legal issues - besides immediate assistance in cases of abuse.
- It is devised to provide all senior citizens, or their well-wishers, with ONE platform across the country to connect and share their concerns and get information and guidance on problems that they face on a day-to-day basis.
- **The National Social Assistance Programme (NSAP)** is a welfare program run by the Ministry of Rural Development that provides financial assistance to the elderly, widows, and people with disabilities.
- The program aims to ensure minimum national standards in addition to the benefits that the states are currently providing or might provide in future. The NSAP only includes beneficiaries below the poverty line.

- **Pradhan Mantri Vaya Vandana Yojana (PMVVY):** It is a Pension Scheme announced by the Government of India exclusively for the senior citizens aged 60 years and above.
- **Integrated Program for Older Persons (IPOP):** The main goal of this policy is to improve the quality of life of senior citizens. This is done by providing them with various basic amenities such as food, shelter, medical care, and even entertainment opportunities.
- **Rashtriya Vayoshree Yojana:** It is a central sector scheme funded from the Senior Citizens' Welfare Fund. The fund was notified in the year 2016. All unclaimed amounts from small savings accounts, PPF and EPF are transferred to this fund.

Initiatives taken by the Indian government for PwDs

- **Deendayal Disabled Rehabilitation Scheme:** The scheme was originally created in 1999 and revised in 2003. The main goals of the DDRS are to improve educational opportunities for people with disabilities, to expand vocational and professional opportunities, and to assist with employment placement efforts.
- **Rights of Persons with Disabilities:** The 2016 Rights of Persons with Disabilities Act (RPWD) satisfies India's commitments under the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), to which India is a signatory.
- The 2016 act broadens the definition of disability to include not only physical but also mental and intellectual disabilities.
- **District Rehabilitation Centre(DRC) Scheme -DRS** is an initiative of the Ministry of Social Justice and Empowerment, Gov. of India, to help disabled people in rural regions. Under this scheme, DRCs are proposed to be set up in every district of the country with a view to providing comprehensive rehabilitation services to persons with disabilities living in rural areas.
- **Assistance to Disabled Persons for Purchase / Fitting of Aids and Appliances Scheme:** This scheme was started by the Ministry of Social Justice and Empowerment with the goal of helping handicapped people improve their economic situation. The scheme provides financial assistance to eligible disabled persons for the purchase/fitting of aids and appliances. It also covers costs related to repairs, maintenance, and replacement of equipment.

Conclusion

Article 41 of the Constitution of India directs the State to provide public

assistance to its citizens in case of unemployment, old age, sickness and disablement and in other cases of undeserved want within the limit of its economic capacity and development. However, even with the pathbreaking RPwD Act of 2016, disabled people, especially old women are not seen as right holders or enforcers.



International Relations

Q.10) 'Defence cooperation between India and the Philippines, including the potential for joint sales as well as joint patrols is increasing.' In light of the above statement, discuss India's Act east policy, with focus on India-Philippines relations. How increasing maritime and defence cooperation between India and Philippines can challenge the Chinese belligerency in the Indo-pacific? (250 words)

Topic- India- Philippines Relations	
Introduction	India's 'Act East Policy' promotes economic, strategic and cultural relations with the vast Asia-Pacific region at different levels. It involves intensive and continuous engagement with Southeast Asian countries. The impact of this policy can be seen in India's ties with the Philippines which have seen very perceptible growth in recent times. The bilateral trade between the two nations crossed the USD 3 billion level in 2023. Apart from trade and investment, relation is extending to health and food security, education and science and technology, defence and maritime cooperation.
Body	<ul style="list-style-type: none">● India's Act East policy● Background of India-Philippines relations● Trade and commerce● Defence and security● China factor
Conclusion	With the Act East Policy initiated in 2014, the relationship with Philippines has diversified into political-security; trade and industry and people-to-people realms. New Delhi has maintained strong ties with Manila, exemplified by the recent contract to supply three batteries of BrahMos missiles to the Philippines, aimed at countering China's influence in the South China Sea. India, as a proud non-aligned member of BRICS and a member in the U.S.-led "Quad," supports Philippines.

UPSC Syllabus	India- Philippines Relations
Why was this question asked?	Q. Evaluate the economic and strategic dimensions of India's Look East Policy in the context of the post-Cold War international scenario. (UPSC Main 2016)
Introduction	India's 'Act East Policy' promotes economic, strategic and cultural relations with the vast Asia-Pacific region at different levels. It involves

intensive and continuous engagement with Southeast Asian countries. The impact of this policy can be seen in India's ties with the Philippines which have seen very perceptible growth in recent times. The bilateral trade between the two nations crossed the USD 3 billion level in 2023. Apart from trade and investment, relation is extending to health and food security, education and science and technology, defence and maritime cooperation.

Body

India's Act East Policy

- The Act East Policy which was started in November 2014, focuses on the Indo-Pacific region, with ASEAN at its core.
- The objective of Act East Policy is to promote economic cooperation, cultural ties and develop strategic relationships with countries in the Indo-Pacific region through continuous engagement at bilateral, regional and multilateral levels, thereby providing enhanced connectivity in its broadest sense.

Background of India-Philippines relations

- India and the Philippines have had diplomatic relations since 1949, shortly after both countries gained independence. The two countries have signed a number of agreements, including:
- Joint Commission on Bilateral Co-operation: Signed in 2007 to strengthen cooperation in trade, economics, and science
- Defence cooperation agreement: Signed in 2006
- Policy Consultation Talks: Established in 2000 to discuss bilateral, regional, and international issues
- Security Dialogue: Established to share security assessments and review and direct cooperation in bilateral/regional security and defense matters
- Agreement on Cooperation and Mutual Assistance in Custom Matters: Signed in 2022 and ratified in June 2023 to facilitate trade.

Trade and commerce

- The bilateral trade between the two nations crossed the USD 3 billion level in 2023.
- The Philippines exports gold, office machine parts, and gas turbines to India.
- The two countries are also exploring cooperation in the field of Information and Communication Technology (ICT), and Renewable Energy.
- India and Philippines signed five Memorandums of Understanding (MOUs) on Defense Industry and Logistics

Cooperation, Agriculture Cooperation, collaboration between the Indian Council of World Affairs and the Philippines' Foreign Service Institute, cooperation on micro, small, and medium enterprises (MSME), and a partnership between the Indian Council for Cultural Relations and the University of the Philippines to establish a chair of India studies.

Defence and security

- India and the Philippines share a common interest in the Indo-Pacific, envisioning it as free, open, and inclusive.
- India has strongly supported Philippines in defending its national sovereignty.
- In January 2022, the Philippines reached an agreement with India to purchase three batteries of the shore-based anti-ship variant of the Brahmos supersonic cruise missiles.
- In 2023, 21 personnel of the Philippines navy underwent training in India to operate the missile systems. This is the first export order for the Brahmos, a joint Indo-Russian development.

China Factor

- China's activities in the South China Sea constitute a "major challenge" for the Philippines.
- Most of the activities by the maritime units and "land reclamation" by China are taking place inside the Exclusive Economic Zone of the Philippines in the South China Sea.
- Philippines does not recognise the "so called nine dash line" in the South China Sea that Beijing uses to claim most of the crucial water body.
- Manila had approached an international tribunal at The Hague challenging China's position over the South China Sea. In a ruling delivered in 2016, the tribunal had supported the Philippines' position over the South China Sea that China had rejected.

Conclusion

With the Act East Policy initiated in 2014, the relationship with Philippines has diversified into political-security; trade and industry and people-to-people realms. New Delhi has maintained strong ties with Manila, exemplified by the recent contract to supply three batteries of BrahMos missiles to the Philippines, aimed at countering China's influence in the South China Sea. India, as a proud non-aligned member of BRICS and a member in the U.S.-led "Quad," supports Philippines.

Q.11) ‘There is need for safeguarding maritime security in the Indian Ocean region.’ In this context, discuss the bilateral relations between India and Mauritius. How will recently inaugurated India-built airstrip in Mauritius help countering influence of China in the Indian Ocean Region. (250 words).

Topic- India-Mauritius Relations	
Introduction	Prime Ministers of India and Mauritius jointly inaugurated a new airstrip and a jetty in Agalega Island in Mauritius. India and Mauritius are the natural partners in maritime security to deal with traditional and non-traditional challenges in the Indian Ocean Region. However, India cannot take its influence in Mauritius for granted and should continue to enhance its engagement with this important island country.
Body	<ul style="list-style-type: none"> ● History ● India-Mauritius Trade pact ● India & Mauritius – Cultural Relations ● Strategic Relations ● Defence and Security cooperation ● India-China Rivalry
Conclusion	India and Mauritius share cultural contiguity dating back to colonial times and a special partnership in recent years. The domestic politics of Indian Ocean regions nations often impact their behaviour and policies abroad — and India will have to manage its diplomatic relationships well while continuously pursuing its strategic interests in the region.

UPSC Syllabus	India-Mauritius Relations
Why was this question asked?	India is an age-old friend of Sri Lanka.’ Discuss India’s role in the recent crisis in Sri Lanka in the light of the preceding statement. [UPSC Main 2022]
Introduction	Prime Ministers of India and Mauritius jointly inaugurated a new airstrip and a jetty in Agalega Island in Mauritius. India and Mauritius are the natural partners in maritime security to deal with traditional and non-traditional challenges in the Indian Ocean Region. However, India cannot take its influence in Mauritius for granted and should continue to enhance its engagement with this important island country.
Body	<p>History</p> <ul style="list-style-type: none"> ● India and Mauritius are connected by shared history and connections between India and Mauritius date back to 1730 ● Diplomatic relations between India and Mauritius were

established in 1948, and since Mauritius gained independence from Britain in 1968, the two nations have maintained a strong relationship.

- Also, almost 68 percent of the population of the country is of Indian origin.

India-Mauritius Trade pact

- The Comprehensive Economic Cooperation and Partnership Agreement (CECPA) was signed by India and Mauritius on February 22, 2021, during the visit of the External Affairs Minister Dr. Subrahmanyam Jaishankar. The CECPA came into force on April 1, 2021
- The CECPA aims to cut or eliminate duties on the majority of goods as well as liberalize norms to promote services trade.
- In May 2016, India had extended a grant of USD 353 mn to Mauritius as Special Economic Package (SEP) to execute five priority projects identified by Mauritius, among others: Metro Express Project; Supreme court building; New ENT Hospital.

India & Mauritius – Cultural Relations

- The Indira Gandhi Centre for Indian Culture (IGCIC) at Phoenix is one of the largest centres of ICCR, which from March 2000, has emerged as an important venue for the promotion of Indian cultural activities in Mauritius
- The Mahatma Gandhi Institute (MGI) was founded as a joint venture between the Government of India and the Government of Mauritius for the promotion of Indian culture and education
- The Rabindranath Tagore Institute was established with the assistance of the Government of India in 2000 as a Centre of Studies on Indian culture and traditions

Strategic Relations

- India-Mauritius relationship is very significant for India's geostrategic policies in the Indian Ocean Region.
- Recently, India and Mauritius jointly inaugurated an India-assisted social housing units project in Mauritius virtually as part of India's development support.
- In 2015, India and Mauritius signed an agreement that allows India to develop infrastructure in terms of establishing military bases on the Mauritian islands.

Defence and Security cooperation

- India and Mauritius signed two agreements in the security realm:
- The first agreement relates to the transfer of a Dornier aircraft

	<p>and an Advanced Light Helicopter, Dhruv, on lease to Mauritius. These platforms will go a long way in helping the country monitor its extensive maritime zone.</p> <ul style="list-style-type: none"> ● The second agreement relates to a \$100 million Line of Credit (LoC), to enable the procurement of defence equipment by Mauritius. ● India has extended support to Mauritius in enhancing its coastal surveillance capabilities by setting up the Coastal Surveillance Radar System (CSRS), in 2011. <p>India-China Rivalry</p> <ul style="list-style-type: none"> ● The Indian Ocean has increasingly become an area of contention between India and China. ● In January 2021, China’s Free Trade Agreement (FTA) with Mauritius came into effect. ● Indian Ocean is the main trading route between China and Europe. ● The presence of India in Mauritius would lead to more effective monitoring of Mauritius’ vast 2.3 million sq km Exclusive Economic Zone, and equip it to better counter-piracy, terrorism, narcotics and human trafficking, and illegal and unregulated fishing.
Conclusion	<p>India and Mauritius share cultural contiguity dating back to colonial times and a special partnership in recent years. The domestic politics of Indian Ocean regions nations often impact their behaviour and policies abroad — and India will have to manage its diplomatic relationships well while continuously pursuing its strategic interests in the region.</p>

Q.12) Recent visit of Bhutan’s Prime Minister to India assumes importance due to China’s geopolitical dynamics in the region. Analyse India-Bhutan relations amid challenges it faces from China. (250 words)

Topic- India- Bhutan relations	
Introduction	<p>Bhutan’s Prime Minister Tshering Tobgay is on official visit to India and held discussions on bilateral cooperation and regional and global issues of mutual interest with Indian Prime Minister. The visit is his first foreign trip after re-election and assumes importance due to China’s geopolitical dynamics in the region. As Bhutan’s primary development partner, India plays a pivotal role in its socio-economic progress.</p>
Body	<ul style="list-style-type: none"> ● Diplomatic relations

	<ul style="list-style-type: none"> ● Strategic Importance ● Trade Relations ● Defence ties ● Cultural Ties ● Hydropower cooperation ● China factor
Conclusion	<p>India and Bhutan are a part of several multilateral organizations like the South Asian Association for Regional Cooperation (SAARC), the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), and Bangladesh, Bhutan, India, Nepal (BBIN). India can work on improving regional cooperation mechanisms to ensure Bhutan's interests are well represented in regional forums. India can focus on removing existing bottlenecks in the relationship and strengthening defense and security ties with Bhutan to ensure safety and countering potential Chinese influence.</p>

UPSC Syllabus	India-Bhutan Relations
Why was this question asked?	<p>Q. "Increasing cross-border terrorist attacks in India and growing interference in the internal affairs of several member-states by Pakistan are not conducive for the future of SAARC (South Asian Association for Regional Cooperation)." Explain with suitable examples. (UPSC Main 2016)</p>
Introduction	<p>Bhutan's Prime Minister Tshering Tobgay is on official visit to India and held discussions on bilateral cooperation and regional and global issues of mutual interest with Indian Prime Minister. The visit is his first foreign trip after re-election and assumes importance due to China's geopolitical dynamics in the region. As Bhutan's primary development partner, India plays a pivotal role in its socio-economic progress.</p>
Body	<p>Diplomatic relations:</p> <ul style="list-style-type: none"> ● The diplomatic relations between Bhutan and India were established in 1968 with the establishment of a special office of India in Thimphu. ● Bhutan shares its border with four Indian states: Assam, Arunachal Pradesh, West Bengal and Sikkim. with a length of 699 km and serve as a buffer between India and China. ● Treaty of Friendship and Cooperation: The basic framework of India-Bhutan bilateral relations was the Treaty of Friendship

and Cooperation signed in 1949 between the two countries. It called for **peace between the two nations** and **non-interference** in each other's internal affairs. The Treaty was **revised in 2007**.

- However, **Bhutan agreed to let India guide its foreign policy** and both nations would consult each other closely on foreign and defence affairs.

Strategic Importance-

- India considers Bhutan as a buffer state between India and China, as Bhutan shares its borders with China.
- It gives buffer for the Siliguri corridor(chicken's neck) which connects the Indian mainland with the north eastern states.

Trade Relations-

- India is Bhutan's largest trading partner and provides significant economic support.
- For instance, since 2014, India's trade with Bhutan has almost tripled from US\$484 million in 2014-15 to US\$1.42 billion in 2021-22, accounting for about 80 percent of Bhutan's overall trade.
- India must further strengthen the economic ties with Bhutan to counter the growing chinese economic influence.
- Recently, India has extended the additional "standby" credit facility to Bhutan and offered financial assurances to Bhutan for its 13th Five Year Plan and administrative reforms.

Defence ties

- India has been playing a crucial role in ensuring the security of Bhutan.
- For instance, India's military helps secure Bhutan's borders, and India has helped Bhutan in countering insurgent groups. For Ex-Doklam crisis 2017.
- India and Bhutan can work towards enhancing their defense cooperation by increasing the frequency of joint military exercises and training programs. This will help Bhutan in improving its defense capabilities.

Cultural Ties-

- Bhutan has deep cultural ties with India. Bhutan's religion, language, and customs are heavily influenced by India's culture.
- Additionally, Bhutan has been a strong supporter of India's cultural diplomacy.

Hydropower cooperation-

- Mutually beneficial hydropower cooperation with Bhutan forms the core of bilateral economic cooperation, providing clean power for India and economic prosperity for Bhutan.
- Hydroelectricity has become one of the biggest revenue earners of Bhutan, which makes Bhutan the country with the highest per capita income in South Asia today.
- India has recently allowed Bhutan to sell power from its Basochhu hydroelectric project in India.

China Factor

- Incidentally, Bhutan does not have any diplomatic relations with China, but both sides have been working on the border dispute (since 1984), which primarily focused on three areas—Jakarlung and Pasamlung in north Bhutan, and Doklam in west Bhutan.
- And, the Doklam plateau has vital strategic importance for India because of its proximity to the Siliguri Corridor—also called the Chicken’s Neck—a 22-km stretch connecting the Indian mainland with the Northeast.
- In 2017, the Indian Army and the Chinese People’s Liberation Army had a 73-day-long military standoff in the Doklam tri-junction, when the Indian side objected to large-scale construction activities by the Chinese military in the disputed territory.
- The Doklam military standoff has triggered the PLA to scale up its military presence along the Line of Actual Control, which eventually led to a clash in Eastern Ladakh in 2020.
- India has been keenly observing the recently concluded 25th round of boundary talks between China and Bhutan in Beijing, where both sides signed a cooperation agreement on the “Responsibilities and Functions of the Joint Technical Team on the Delimitation and Demarcation of the Bhutan-China Boundary”.

Conclusion

India and Bhutan are a part of several multilateral organizations like the South Asian Association for Regional Cooperation (SAARC), the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), and Bangladesh, Bhutan, India, Nepal (BBIN). India can work on improving regional cooperation mechanisms to ensure Bhutan’s interests are well represented in regional forums. India can focus on removing existing bottlenecks in the relationship and strengthening defense and security ties with Bhutan to ensure safety and

countering potential Chinese influence.

Q.13) 'Even though India and Nepal share a unique relation of friendship and cooperation, yet China's interference in Nepal's unstable polity to promote its own interests is detrimental to India's interests.' In light of the above statement, discuss the India-Nepal relations, including challenges it faces from China. (250 words)

Topic- India-Nepal Relations

Introduction	The relationship between Nepal and India transcends formal documents and diplomatic agreements, as it is characterised by a deep-rooted bond that defies political boundaries and legal definitions. Therefore, the extraordinary political instability in Nepal is of concern to India. India is Nepal's largest trade partner, and India provides transit for almost all of Nepal's third country trade. China has been pouring aid and investment in infrastructure to wean Kathmandu away from New Delhi. New Delhi's position on the politics and future of Nepal must remain nuanced and flexible, with the people of Nepal at its centre.
Body	<ul style="list-style-type: none">● Nepal's unstable polity and its impact● Historical ties● Trade relations● Challenges● China factor
Conclusion	The Nepalese Constitution was adopted in 2015 with great enthusiasm and expectations, but the frequent political instabilities are making the Constitution fail. Nepali politicians should work to stabilise Nepal's economy, undertake reforms, crack down on corruption, and build infrastructure in the country. India needs to step up cooperation with Nepal in all areas, and India's development and economic aid must remain open. India must ensure that China or its proxies do not get an opportunity to ride on suspicion or prejudice against India. More than an "elder brother", India should seek to be an equal partner for Nepal.

UPSC Syllabus

India-Nepal Relations

Why was this question asked?

Q. China is using its economic relations and positive trade surplus as tools to develop potential military power status in Asia', In the light of this statement, discuss its impact on India as her neighbour. [150 Words] [UPSC Main 2017]

Introduction

The relationship between Nepal and India transcends formal documents and diplomatic agreements, as it is characterised by a deep-rooted bond that defies political boundaries and legal definitions. Therefore, the extraordinary political instability in Nepal is of concern to India. India is Nepal's largest trade partner, and India provides transit for almost all of Nepal's third country trade. China has been pouring aid and investment in infrastructure to wean Kathmandu away from New Delhi. New Delhi's position on the politics and future of Nepal must remain nuanced and flexible, with the people of Nepal at its centre.

Body

Nepal's unstable polity and its impact

- Nepal is a parliamentary republic with a multi-party system.
- According to the United States Institute of Peace, Nepal has experienced political instability for the past decade, which has contributed to a lack of governance.
- The political instability in Nepal has impacted the country's economy.
- Thousands of young Nepalis are heading abroad, mainly to the Middle East, South Korea, and Malaysia, in search of work.
- In 2022-23, about 7.7 lakh people got permits to go to foreign job destinations, and remittances sent by Nepalese expatriates has been a major source of both sustenance for many Nepalese families, and of foreign exchange for the country.

Historical ties

- **The India-Nepal Treaty of Peace and Friendship of 1950** forms the bedrock of the special relations that exist between India and Nepal.
- The treaty grants nationals of one country the same privileges in the territories of the other, including residence, property ownership, participation in trade and commerce, and movement.
- India and Nepal have a long-standing military tie, with each country awarding the honorary rank of General to the other's Army Chiefs. India has also been giving training and equipment to aid the Nepali Army in modernizing.
- Cooperation in power, water, and infrastructure has been a major element of India's diplomatic toolkit with regard to Nepal.

Trade relations

- India is Nepal's largest trade partner, with bilateral trade crossing \$7 billion in FY 2019-20, and that India provides transit for almost all of Nepal's third country trade.
- Indian exports to Nepal have grown more than eight times over

the past decade, while exports from Nepal have almost doubled.

- During the Covid-19 pandemic, India provided assistance of more than \$7 million to Nepal, which included the supply of more than 23 tonnes of medicines and medical equipment, more than 9.5 million doses of vaccines, and a medical oxygen plant.
- About 8 million Nepalese citizens live and work in India, and some 6 lakh Indians live in Nepal. Indians are about 30% of foreign tourists in Nepal.
- The bilateral remittance flow is estimated at \$3 billion from Nepal to India, and \$1 billion in the opposite direction.

Challenges

- One of the main challenges in the Indo-Nepal ties is the **Kalapani boundary issue**. These boundaries had been fixed in 1816 by the British, and India inherited the areas over which the British had exercised territorial control in 1947.
- In 2019, Nepal released a new political map claiming Kalapani, Limpiyadhura and Lipulekh of Uttarakhand and the area of Susta (West Champaran district, Bihar) as part of Nepal's territory.
- The porous and poorly guarded border between India and Nepal allows terrorist groups to exploit it for smuggling weapons, ammunition, trained members and fake currency, which poses a significant security risk to India.
- Nepal wants to revise the 1950 Treaty of Peace and Friendship, as it views this as an unequal relationship, imposed by India.
- India and Nepal have had disputes over the water of several rivers, including the Kali, Kosi, Gandaki, Karnali, and Mahakali.

China factor

- Nepal established its relations with China in 1955. Nepal always played the Chinese card when it felt India was dominating its policies.
- China dispatched arms and ammunition to Nepal during the insurgency from 1996 to 2005 to help Maoist insurgents.
- Through the Belt and Road Initiative, China is present in Nepal.
- China has opened the Confucius Institute to spread its culture and language in Nepal.
- Nepal attracted attention when learning the Chinese language was made mandatory by private schools in Nepal in 2019.
- Nepalese imports from China almost tripled from (Indian) Rs 49.5 billion in 2013-14 to Rs 138.75 billion (\$1.67 billion) in 2022-23.

Conclusion

The Nepalese Constitution was adopted in 2015 with great enthusiasm and expectations, but the frequent political instabilities are making the Constitution fail. Nepali politicians should work to stabilise Nepal's economy, undertake reforms, crack down on corruption, and build infrastructure in the country. India needs to step up cooperation with Nepal in all areas, and India's development and economic aid must remain open. India must ensure that China or its proxies do not get an opportunity to ride on suspicion or prejudice against India. More than an "elder brother", India should seek to be an equal partner for Nepal.

Q.14) While the Indian government's focus was fixed on the Indo-Pacific to strengthen the Quad, policy attention has shifted back to the Indian Ocean in recent months.' Discuss the factors that have caused new focus on Indian ocean, specifying the significance of Indian Ocean for India. (250 words)

Topic- International Relations

Introduction

India is suspicious of China's growing presence in the Indian Ocean and its influence in the Maldives, a chain of 1,192 tiny coral islands stretching around 800 km across the equator, as well as in neighbouring Sri Lanka. The strategic contestation between China and India is intensifying in Indian Ocean region. China's intent to create an adverse environment for India's security by turning the country's neighbours against it.

Body

- Significance of Indian Ocean
- Maldives
- Sri Lanka
- Mauritius
- West Asian crisis and attacks by Houthi rebels
- Expansion of the Chinese Navy's footprint in the region
- Tackling China
- Way Ahead

Conclusion

Chinese activities and influence in India's extended neighbourhood have grown increasingly with the sole purpose of keeping New Delhi constrained and occupied in facing the resultant challenges. It may be time for New Delhi to encourage the **creation of a new mechanism** with the objective of bolstering maritime security and optimising the potential for the Blue Economy.

UPSC Syllabus	International Relations
Why was this question asked?	Q. China is using its economic relations and positive trade surplus as tools to develop potential military power status in Asia', In the light of this statement, discuss its impact on India as her neighbour. [150 Words] [10 Marks] [UPSC Main 2017]
Introduction	India is suspicious of China's growing presence in the Indian Ocean and its influence in the Maldives, a chain of 1,192 tiny coral islands stretching around 800 km across the equator, as well as in neighbouring Sri Lanka. The strategic contestation between China and India is intensifying in Indian Ocean region. China's intent to create an adverse environment for India's security by turning the country's neighbours against it.
Body	<p>Significance of Indian Ocean</p> <ul style="list-style-type: none"> ● The Indian Ocean basin is of particular importance for India as the region's most populous country and geopolitical keystone. India's 90% of trade by volume and almost all oil imports come via sea route which underscores the significance the region. ● Economic: The Ocean is a valuable source of mineral and oil resources. Forty per cent of the world's offshore oil production takes place in the Indian Ocean basin. ● India is also the fourth-largest importer of liquefied natural gas (LNG), with about 45 per cent coming by sea. ● Deep Sea Exploration: In 2002, International Seabed Authority under UNCLOS granted permission to India to explore ocean regions and prospect for precious metals. ● Strategic and Security: India has a coastline of about 7500 km, and a large population is dependent on the fishing sector. Therefore, the security in the region is vital for coastal security as well as economic development. <p>Maldives</p> <ul style="list-style-type: none"> ● The Maldives, with Mohamed Muizzu as President, seems to be heading on a collision course with India. Despite New Delhi's patience and diplomatic tact, Male continues to deepen its embrace of China. ● India's relation with Maldives has been going steadily downhill since the coming of the new government which is known to be pro-China. ● The Chinese President with his Maldivian counterpart signed 20

“key” agreements, including on tourism cooperation, disaster risk reduction and the blue economy.

- Maldives has also decided not to renew the agreement with India on a hydrographic survey of its waters.
- The agreement, signed in 2019, allowed India to conduct a hydrographic survey of the Maldivian territorial waters, study and chart reefs, lagoons, coastlines, ocean currents and tide levels.

Sri Lanka

- Recently, Sri Lanka **showed greater sensitivity to India’s security concerns** by imposing a year-long moratorium on foreign research ships, including Chinese ones, to its ports.
- Though the moratorium comes ostensibly for capacity building it is seen as a reaction to growing concerns in India.
- Chinese ships have docked in Colombo in recent years for research based on agreements between agencies in China and Sri Lanka.
- There were fears in India that these vessels could be used to monitor the region.
- China has been trying to expand its influence in Sri Lanka, which is located on one of the world’s busiest shipping routes in what India considers part of its strategic backyard.

Mauritius

- Last month, India’s SAGAR policy produced a valuable dividend as the Prime Ministers of India and Mauritius inaugurated a new airstrip and a jetty in the Agaléga Islands, boosting Mauritius’s capability to curb illegal activities in its vast Extended Economic Zone.
- This infrastructure development project, along with six more India-assisted development projects in Mauritius, is part of the Modi administration’s Security and Growth for All (Sagar) policy.
- The policy aims to deepen India’s economic and security cooperation with maritime partners, further helping them in improving their maritime security capabilities.
- The new infrastructure will also bolster India’s image as a maritime power and enhance its presence in the Indian Ocean Region.

West Asian crisis and attacks by Houthi rebels

- Both the Western Indian Ocean littered with island nations and the Northern Indian Ocean stretching from the Arabian Sea to the Suez have become active geographies again.
- The gradual regionalisation of the Israel-Hamas conflict, as reflected in the attacks by Houthi rebels on international shipping, has now led to a massive drop in transits through the Suez Canal.
- The diversion of ships to the longer route around the Cape of Good Hope adversely affects all nations in the region, big or small.

Expansion of the Chinese Navy's footprint in the region

- The new chain of developments is set to expand the Chinese Navy's footprint in the region. Its broad objective is to assert dominance.
- With the Maldives as a willing partner, Beijing lost little time in announcing a new agreement under which unspecified military assistance would be extended gratis to Maldives.
- This comes when 88 Indian military personnel, deployed with the host nation's consent to operate humanitarian flights of three aviation platforms, has been replaced.
- The strategic contestation between China and India is intensifying.
- Much of China's trade and energy supplies pass through the region, so its case for security for its supply routes cannot be dismissed.
- But what is worrisome is its strategic intent to create an adverse environment for India's security by turning the country's neighbours against it.
- A clear pattern is emerging behind Beijing's quest for naval bases in Djibouti, Kyaukphyu, Gwadar, and Hambantota.
- This, combined with the nearly four-year-old border standoff, which has defied a diplomatic resolution, has meant the two nations continue to confront each other as adversaries.

Tackling China

- India needs to prepare for the possibility of conflict with China which involves bolstering India's military capabilities.
- The Indian Ocean is vital to India's economy, with 80% of its external trade and 90% of its energy trade occurring through these ocean lines.

- India is striving to counter China by **joining hands with the USA, Japan** and others and expanding Indian Navy's activity in the Indian Ocean by fulfilling the role of Security Provider.

Agreement with other nations:

- India signed a strategic pact with France to use each other's warships across the Indian Ocean.
- India also signed an agreement for a new base in Seychelles. India negotiated military access to facilities at Oman's port (Duqm) and airfields.
- India signed an agreement with Singapore and Indonesia for naval cooperation.
- India is creating a security grid with the littoral countries to prevent militarization of the Indian Ocean.
- **Malacca Straits:** The Andaman and Nicobar Islands are strategically important. These islands are near the Malacca Straits, providing an excellent location for tracking China's submarine activities. India needs to modernise the infrastructure to deploy more and larger warships and planes in the Andaman and Nicobar Islands.

Way Ahead

- U.K., European Union, France, and Germany should be persuaded to take a clear line on China's activities.
- While they are concerned about Beijing's illegal claims in the South China Sea, they must see that a similar kind of assertiveness and hostile intent is building up in the Indian Ocean too.
- **First**, India needs to convey a clear message to its strategic partners that while it is conscious of its Indo-Pacific responsibilities, it prioritises the Indian Ocean region.
- **Second**, a critical audit of the Indian Ocean Rim Association (IORA) and the Colombo Security Conclave (CSC) is needed.
- While IORA is underperforming and has become too amorphous to be effective, the CSC faces the danger of losing a key member, the Maldives, if the island nation's partnership with China deepens.
- **Third**, Foreign Affairs Insights & Review ranked the Indian Navy the seventh most powerful in the world. As India aims to become the third largest economy, it should find new budgetary

	resources for its Navy to make it the third or fourth strongest.
Conclusion	Chinese activities and influence in India's extended neighbourhood have grown increasingly with the sole purpose of keeping New Delhi constrained and occupied in facing the resultant challenges. It may be time for New Delhi to encourage the creation of a new mechanism with the objective of bolstering maritime security and optimising the potential for the Blue Economy.

Q.15) 'US President has recently announced that the US military will build a temporary port on Gaza's Mediterranean coast to receive humanitarian aid by sea.' Will US temporary port plan stop famine in Gaza? What are the issues with temporary port to be built in Gaza? Critically analyse. (150 words)

Topic- International Relations	
Introduction	President Joe Biden has announced that the military will build a temporary port on Gaza's Mediterranean coast to receive humanitarian aid by sea. It's part of an effort to avert famine in the Palestinian enclave five months into Israel's military campaign against Hamas, which has devastated the tiny Gaza Strip and plunged its 2.3 million people into a humanitarian catastrophe. Meanwhile, Israel has supported the deployment of a temporary dock and promised cooperation.
Body	<ul style="list-style-type: none"> ● Background ● Why now? ● Present aid situation ● Issues related to Temporary port
Conclusion	Negotiations on a ceasefire in Israel's war against Hamas remain deadlocked. Due to which, the issue of security has increasingly dogged all aid distribution in Gaza. There is an easier, more efficient way of bringing in assistances and that is via the road crossings that connect Israel with Gaza. As per experts, aid and sea is not a substitute for land.

UPSC Syllabus	International Relations
Why was this question asked?	Q. 'Too little cash, too much politics, leaves UNESCO fighting for life.' Discuss the statement in the light of US' withdrawal and its accusation of the cultural body as being 'anti-Israel bias'. [150 Words] [10 Marks] [UPSC Main 2019]
Introduction	President Joe Biden has announced that the military will build a

temporary port on Gaza's Mediterranean coast to receive humanitarian aid by sea. It's part of an effort to avert famine in the Palestinian enclave five months into Israel's military campaign against Hamas, which has devastated the tiny Gaza Strip and plunged its 2.3 million people into a humanitarian catastrophe. Meanwhile, Israel has supported the deployment of a temporary dock and promised cooperation.

Body

Background

- The latest Israel- Gaza conflict has displaced most of Gaza's 2.3 million people, with many cramped into makeshift tents with little in the way of food or basic medical supplies in the southern city of Rafah.
- Israeli forces fired on a United Nations convoy carrying vital food supplies in central Gaza on February 5, before ultimately blocking the trucks from progressing to the northern part of the territory, where Palestinians are on the verge of famine.
- Israel militarily cut off north Gaza from the south early in the conflict and it stops people moving between them.
- Aid convoys have struggled to pass through Israeli checkpoints from the south into the north.

Why now?

- The UN has warned Gaza faces famine and has complained of "overwhelming obstacles" in getting in aid and distributing it around the enclave.
- Aid agencies have implored Israel to ease access for relief supplies into Gaza and to give their convoys safe passage inside the territory.
- US President has meanwhile come under pressure from his Democratic Party to get close ally Israel to do more to let in relief supplies.
- Israel has said there is no limit on the amount of humanitarian aid for civilians in Gaza and blames slow delivery on UN distribution capacity.

Present aid situation

- Most aid to Gaza had been coming by road through the Rafah border crossing with Egypt and, since December, via the Kerem Shalom crossing with Israel, but the pace has been painfully slow.
- The UN has complained of crossing closures, restrictions on movement and communication, onerous vetting procedures,

unrest, damaged roads and unexploded ordnance as problems it faces importing and distributing supplies.

- Some countries including the United States and Jordan have also started dropping in aid by air, though relief agencies say this is only possible in much smaller volumes than can come in by truck.
- The **European Commission** has also said a **maritime aid corridor** from Cyprus to Gaza will start operating soon with help from the United Arab Emirates.

Issues related to Temporary port

- Gaza does not have a functioning port and its coastal waters are too shallow for most vessels — particularly the large barges that would be necessary to ferry the enormous amounts of cargo necessary for hundreds of thousands of hungry Palestinians.
- Most of Gaza's coast is beach, and there may be limited locations where larger ships can approach without dredging.
- Under the 1993 Oslo peace accords, European countries promised to build a seaport near Gaza City in the north of the enclave.
- But the idea fell apart when Palestinians staged an uprising against Israeli occupation in 2000 and there is **now only a small fishing harbour there**, unsuitable for large ships.
- It is unclear who will manage and secure the port area and the convoys that would be needed to distribute the aid.
- The remaining employees of Hamas's civilian police could step in to provide security, U.N. officials have said, but their involvement would likely be unacceptable to Israel and the United States.

Conclusion

Negotiations on a ceasefire in Israel's war against Hamas remain deadlocked. Due to which, the issue of security has increasingly dogged all aid distribution in Gaza. There is an easier, more efficient way of bringing in assistances and that is via the road crossings that connect Israel with Gaza. As per experts, aid and sea is not a substitute for land.

Q.16) The World Happiness Index serves as a compass for policymakers, guiding efforts toward a happier and more fulfilled society. Discuss the key outcomes of World Happiness report, 2024 that was released recently. Critically analyse the significance of World happiness Index to India. (250 words)

Topic- World Happiness Index	
Introduction	Over time, happiness has emerged as a vital metric for both nations and corporations to monitor. The World Happiness Report for 2024 was released recently, noting that while the top 10 countries in the list have remained the same since before the Covid-19 pandemic, the United States and Germany have fallen in the rankings, making way for several Eastern European nations to rise on the list. India ranked 126 th . The report observed that in India, older age is associated with higher life satisfaction. However, older Indian women reported lower life satisfaction than older men.
Body	<ul style="list-style-type: none"> ● About World Happiness Report ● Key outcomes of World Happiness report, 2024 ● Factors that contribute to happiness in India ● Significance of World happiness Index to India
Conclusion	World Happiness Index provides a lens through which India can assess its progress, identify areas for improvement, and work toward a happier and more harmonious future. India's happiness is influenced by a mix of economic, social, and personal factors. Understanding these dynamics can guide policies aimed at enhancing overall well-being. The government should focus on equitable distribution of wealth and focus on increasing the GDP per capita, so as to improve the Happiness Index.

UPSC Syllabus	World Happiness Index
Why was this question asked?	Q. 'Too little cash, too much politics, leaves UNESCO fighting for life.' Discuss the statement in the light of US' withdrawal and its accusation of the cultural body as being 'anti-Israel bias'. [150 Words] [10 Marks] [2019]
Introduction	Over time, happiness has emerged as a vital metric for both nations and corporations to monitor. The World Happiness Report for 2024 was released recently, noting that while the top 10 countries in the list have remained the same since before the Covid-19 pandemic, the United States and Germany have fallen in the rankings, making way for several Eastern European nations to rise on the list. India ranked 126 th . The report observed that in India, older age is associated with higher life

satisfaction. However, older Indian women reported lower life satisfaction than older men.

Body

About World Happiness Report

- From 2024, the World Happiness Report is a publication of the Wellbeing Research Centre at the University of Oxford.
- Until then, the report was a publication of the Sustainable Development Solutions Network, a global initiative of the United Nations.
- SDSN promotes integrated approaches to implement the Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change, through education, research, policy analysis, and global cooperation.
- The report primarily uses data from the Gallup World Poll.
- It takes into account six variables — GDP per capita, healthy life expectancy, having someone to count on, freedom to make life choices, generosity, and freedom from corruption.

Key outcomes of World Happiness report, 2024

- **Life Satisfaction Among Older Adults:**
- The report highlights that older men in India express higher life satisfaction than older women.
- Interestingly, older women still report higher life satisfaction than their male counterparts.
- **Refuting Stereotypes:**
- The report challenges the notion that high life satisfaction exists only in higher-income nations.
- **Factors Influencing Happiness:**
- Marital status, social engagement, and physical health play crucial roles in determining life satisfaction among older Indians.
- These factors underscore the importance of holistic well-being beyond economic indicators.
- **Global Context:**
- While India's ranking may not be at the top, it reflects the nation's unique challenges and opportunities.
- The World Happiness Index serves as a compass for policymakers, guiding efforts toward a happier and more fulfilled society.

Factors that contribute to happiness in India

- Factors such as health, employment, living conditions, and spiritual well-being influence Indians' happiness.

	<ul style="list-style-type: none"> ● Wellbeing is one major measure in the Happiness Index as reported by the World Happiness Report. ● Factors such as GDP per capita, social support, and life expectancy play a role in determining happiness. ● Wellbeing and Happiness are becoming an important measure reflecting the true growth of any economy. <p>Significance of World happiness Index to India</p> <ul style="list-style-type: none"> ● In the World Happiness Index 2024, India is ranked 126th, which remains consistent with the previous year's ranking. ● While India's position is not among the top-ranked countries, understanding the factors contributing to this ranking is essential. ● India's ranking demonstrates that life satisfaction can be significant even in a diverse and economically varied context. ● India can use these findings to inform policies aimed at enhancing overall happiness and quality of life. ● Addressing gender disparities and promoting social connections can contribute to improved well-being.
Conclusion	<p>World Happiness Index provides a lens through which India can assess its progress, identify areas for improvement, and work toward a happier and more harmonious future. India's happiness is influenced by a mix of economic, social, and personal factors. Understanding these dynamics can guide policies aimed at enhancing overall well-being. The government should focus on equitable distribution of wealth and focus on increasing the GDP per capita, so as to improve the Happiness Index.</p>

Q.17) Famine is imminent in northern Gaza and approaching in Haiti, with hundreds of thousands of people in both places struggling to avoid starvation.' In light of the above statement, discuss how a region fall into famine? Elaborate the steps to avoid famine in a region. (250 words)

Topic- Food Insecurity and Famines	
Introduction	<p>Food security experts and aid groups, are warning about the toll from hunger caused by the war between Israel and Hamas in Gaza and the crisis in Haiti caused by criminal gangs attacking the country's key government institutions. A declaration of famine by United Nations serves to focus global attention on the problem, however, carries no binding obligations on UN Members.</p>
Body	<ul style="list-style-type: none"> ● What is hunger, malnutrition, and starvation?

	<ul style="list-style-type: none"> ● What is the threshold for famine? ● What is the IPC? ● Working of IPC ● Most vulnerable ● Steps taken to control famine
Conclusion	<p>Even as international governments and aid agencies try to find air and sea routes for delivering food and supplies to Gaza, experts say land deliveries are still, in theory, the most efficient and cost-effective route. Gaza has long been reliant on humanitarian aid, as the territory has been under a yearslong blockade by Israel and Egypt. Before the war began in October, two-thirds of Gazans were supported by food assistance. Now, nearly the entire population is dependent on aid to eat.</p>

UPSC Syllabus	Food Insecurity and Famines
Why was this question asked?	<p>Q. Why was there a sudden spurt in famines in colonial India since the mid-eighteenth century? Give reasons. (UPSC Main 2022)</p>
Introduction	<p>Food security experts and aid groups, are warning about the toll from hunger caused by the war between Israel and Hamas in Gaza and the crisis in Haiti caused by criminal gangs attacking the country's key government institutions. A declaration of famine by United Nations serves to focus global attention on the problem, however, carries no binding obligations on UN Members.</p>
Body	<p>What is hunger, malnutrition, and starvation?</p> <ul style="list-style-type: none"> ● Aid groups say hunger occurs when people can't afford or physically obtain sufficient nutrition for an extended period of time. ● Malnutrition is a medical condition that occurs when people don't get the right calories to grow and function properly, leading to health problems. ● The deadliest form of malnutrition is severe acute malnutrition, which occurs when children are too thin for their height. ● Starvation is not a technical term, but it describes extreme suffering or death caused by lack of food. ● Without food, the body uses carbohydrates and fats first, then turns to breaking down protein, including muscle and vital organs.

- The body begins to shut down functions, including digestion, which make it harder to absorb any nutrients that are available.

What is the threshold for famine?

- Famine is essentially a technical term, referring to a population that faces widespread malnutrition and hunger-related deaths due to a lack of access to food.
- Three conditions come together in a specific geographic area
- At least 20 per cent of the population in that particular area are facing extreme levels of hunger;
- 30 per cent of the children in the same place are wasted, or too thin for their height; and
- The death – or mortality – rate has doubled, from the average, surpassing two deaths per 10,000 daily for adults and four deaths per 10,000 daily for children.

What is the IPC?

- The IPC, a group of 15 global organisations and charities, was developed in 2004 during the famine in Somalia.
- The IPC is an innovative multi-partner initiative for improving food security and nutrition analysis and decision making.
- The IPC classification and analytical approach facilitates governments, UN Agencies, non-governmental organizations, civil society and other relevant actors in working together to determine the severity and magnitude of acute and chronic food insecurity and acute malnutrition situations in a country according to internationally recognised standards.
- The IPC tracks hunger but can also raise alarms ahead of potential widespread acute malnutrition before it transforms into more serious life-threatening conditions.

Working of IPC

- The group uses a five-tier scale to monitor access to food and levels of hunger.
- Famine is the top tier, Phase 5, “the absolute inaccessibility of food to an entire population or sub-group of a population, potentially causing death in the short term.”
- It occurs when 20% of households have an extreme lack of food, 30% of children suffer from acute malnutrition and at least two adults or four children per every 10,000 people die daily because of outright starvation or the interaction of malnutrition and disease.
- That top level follows the Phase 3 “crisis” and Phase 4

“emergency” levels of food need.

Most vulnerable

- Worldwide, nearly 158 million people face crisis hunger situations or worse, according to the IPC.
- Children younger than 5, pregnant and breastfeeding women, the elderly and people with underlying health conditions are most at risk from malnutrition.
- In acute crises like that seen in Gaza, malnutrition affects the youngest children first.
- Worldwide, nearly 158 million people face crisis hunger situations or worse, according to the IPC.

Steps taken to control famine

- World Health Organisation, is currently supporting a nutrition stabilization center in Rafah to treat children with severe acute malnutrition with medical complications, who are at the highest risk of imminent death if not urgently treated.
- WHO is supporting hospitals and the centers with medical supplies for the children being treated.
- The European Union (EU) and the United States (US) have taken steps to deliver aid to Gaza, including humanitarian airdrops, a sea corridor, and a temporary pier.

Conclusion

Even as international governments and aid agencies try to find air and sea routes for delivering food and supplies to Gaza, experts say land deliveries are still, in theory, the most efficient and cost-effective route. Gaza has long been reliant on humanitarian aid, as the territory has been under a yearslong blockade by Israel and Egypt. Before the war began in October, two-thirds of Gazans were supported by food assistance. Now, nearly the entire population is dependent on aid to eat.

Ecology and Environment

Q.18) Recently, India has decided to join US-led co-operative work programme on carbon market under the Clean Energy Pillar of the US-led Indo Pacific Economic Framework (IPEF). What is carbon market and how India's clean energy goal align with that of IPEF. Discuss the challenges in implementing renewable energy sources in India. (250 words)

Topic- Carbon markets	
Introduction	India has decided to participate in one of the four cooperative work programmes initiated under the Clean Energy Pillar of the US-led Indo Pacific Economic Framework (IPEF). Specifically, India will join the cooperative working group on carbon markets, with the Ministry of Power leading this initiative. Clean Energy Pillar within the Strategic Clean Energy Partnership (SCEP) focuses on clean energy innovation, efficiency, and sustainable power systems, contributing to a greener and more resilient future for both the United States and India.
Body	<ul style="list-style-type: none"> ● Carbon markets ● Types of Carbon markets ● About IPEF ● Alignment with India's goal ● Challenges in implementing renewable energy sources in India
Conclusion	Despite these challenges, India has immense potential. It aims to become a net-zero emitter of CO ₂ by 2070 and generate at least half of its power from non-fossil sources by 2030. Leveraging its abundant sunshine, long coastline, and vacant lands, India can rank among the top global producers of wind and solar energy. Initiatives like Ultra Mega Renewable Energy Parks and policy measures contribute to this transition.

UPSC Syllabus	Carbon markets
Why was this question asked?	Q. "Access to affordable, reliable, sustainable and modern energy is the sine qua non to achieve Sustainable Development Goals (SDGs)". Comment on the progress made in India in this regard. (UPSC Main 2018)
Introduction	India has decided to participate in one of the four cooperative work programmes initiated under the Clean Energy Pillar of the US-led Indo Pacific Economic Framework (IPEF). Specifically, India will join the

cooperative working group on carbon markets, with the Ministry of Power leading this initiative. Clean Energy Pillar within the Strategic Clean Energy Partnership (SCEP) focuses on clean energy innovation, efficiency, and sustainable power systems, contributing to a greener and more resilient future for both the United States and India.

Body

Carbon markets

- Carbon markets are trading systems in which carbon credits are sold and bought.
- Companies or individuals can use carbon markets to compensate for their greenhouse gas emissions by purchasing carbon credits from entities that remove or reduce greenhouse gas emissions.
- One tradable carbon credit equals one tonne of carbon dioxide or the equivalent amount of a different greenhouse gas reduced, sequestered or avoided.
- When a credit is used to reduce, sequester, or avoid emissions, it becomes an offset and is no longer tradable.

Types of Carbon markets

- There are broadly two types of carbon markets: compliance and voluntary.
- Compliance markets are created as a result of any national, regional and/or international policy or regulatory requirement.
- Voluntary carbon markets – national and international – refer to the issuance, buying and selling of carbon credits, on a voluntary basis.

About IPEF

- The Indo Pacific Economic Framework (IPEF), launched in May 2022, brings together 14 regional partners, including Australia, Brunei, Fiji, India, Indonesia, Japan, the Republic of Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand, the US, and Vietnam.
- It aims to establish common rules and standards across four key areas: connectivity and digital trade, resilient supply chains, clean energy, and corruption-free fair trade.
- While India has opted out of the trade pillar, it is also considering two of the other co-operative work programme initiatives, one on clean electricity and the other on use of sustainable aviation fuel but will take a call on whether to join or not after thorough analysis.

Alignment with India's goal

- India's focus on developing its own carbon market aligns with global efforts to combat climate change.
- By joining the cooperative work programme on carbon markets, India aims to learn from others' experiences and contribute to standardized and integrated carbon markets in the future.
- This collaborative effort underscores the importance of international cooperation in addressing environmental challenges and promoting sustainable practices.
- In India, the Ministry of Power, brought in amendments to the carbon credits trading scheme (CCTS) recently which puts it on track towards establishing independent standards for carbon trading and also allows non-obligated entities to generate carbon credits.
- The Bureau of Energy Efficiency is the nodal authority working on it.

Challenges in implementing renewable energy sources in India

India, as a significant player in the global clean energy transition, faces both challenges and opportunities in its pursuit of sustainable energy.:

- **Energy Demand and Transition:** India experiences a substantial increase in energy demand due to rapid economic growth. This necessitates a shift away from fossil fuels.
- **Investment and Infrastructure:** An estimated \$9.2 trillion in annual average spending on clean energy assets is needed, with an additional \$3.5 trillion required to scale up investments between 2021 and 2050.
- **Off-Taker Risk and Financial Intermediaries:** Despite progress, India faces obstacles such as off-taker risk (uncertainty in payment from buyers), lack of financial intermediaries, and investor understanding.
- **Intermittency and Location-Specific Potential:** Renewable energy sources, such as solar and wind, are intermittent. Managing their variability poses challenges.
- **Land Acquisition and Utilization:** Land acquisition remains a significant challenge. Issues include lack of proper land utilization policies, poorly maintained land records, and obtaining permissions from local bodies.
- **Balancing Affordability and Emissions Reduction:** India must expand reliable energy access while maintaining affordability for consumers and financial stability for distribution companies (DISCOMs).

Conclusion	Despite these challenges, India has immense potential. It aims to become a net-zero emitter of CO ₂ by 2070 and generate at least half of its power from non-fossil sources by 2030. Leveraging its abundant sunshine, long coastline, and vacant lands, India can rank among the top global producers of wind and solar energy. Initiatives like Ultra Mega Renewable Energy Parks and policy measures contribute to this transition.
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Q.19) ‘Widespread bleaching affect not only the marine ecosystem but also the fisheries and tourism industries that rely on the allure of healthy reefs. ‘In light of the above statement, discuss the causes of coral bleaching and its impact on ecosystem. (250 words)

Topic- Coral Bleaching and Climate Change	
Introduction	Coral bleaching, a stress response triggered by elevated sea temperatures, leads to corals expelling the symbiotic algae that give them their vibrant colors. The world stands on the brink of witnessing its fourth mass coral bleaching event, a phenomenon that threatens to hit a vast expanses of tropical reefs, including significant portions of Australia's iconic Great Barrier Reef.
Body	<ul style="list-style-type: none"> ● About Coral Bleaching ● Causes of Coral Bleaching ● Earlier Mass Coral Bleaching Events ● Impact of Coral bleaching ● Way Ahead
Conclusion	Known as one of the richest and most biodiverse natural ecosystems on Earth, the Great Barrier Reef was designated a UNESCO World Heritage site in 1981. Impacts from climate change and extreme weather are a reminder of the importance of global greenhouse gas emissions reduction and strong marine management actions that support the resilience of this magnificent living ecosystem.

UPSC Syllabus	Coral Bleaching and Climate Change
Why was this question asked?	‘Climate Change’ is a global problem. How India will be affected by climate change? How Himalayan and coastal states of India will be affected by climate change? [250 Words] [UPSC Main 2017]

Introduction

Known as one of the richest and most biodiverse natural ecosystems on Earth, the Great Barrier Reef was designated a UNESCO World Heritage site in 1981. Impacts from climate change and extreme weather are a reminder of the importance of global greenhouse gas emissions reduction and strong marine management actions that support the resilience of this magnificent living ecosystem

Body

About Coral Bleaching

- Corals are marine invertebrates or animals not possessing a spine.
- Each coral is called a polyp and thousands of such polyps live together to form a colony, which grows when polyps multiply to make copies of themselves.
- Warmer water temperatures can result in coral bleaching. When water is too warm, corals will expel the algae (zooxanthellae) living in their tissues causing the coral to turn completely white. This is called coral bleaching.
- When a coral bleaches, it is not dead. Corals can survive a bleaching event, but they are under more stress and are subject to mortality.
- Preliminary findings indicate that the current situation could be catastrophic, with the Caribbean already experiencing its most severe bleaching on record following the Northern Hemisphere's summer last year.
- Now, as the Southern Hemisphere concludes its summer season, reports of widespread bleaching are pouring in from across the globe, including the entirety of the Great Barrier Reef and regions like American Samoa.

Causes of Coral Bleaching

- Australia's Great Barrier Reef is the world's largest reef system stretching across 2,300 km.
- It hosts 400 different types of coral, gives shelter to 1,500 species of fish and 4,000 types of mollusc.
- Bleaching events are **caused by sustained, warmer-than-average sea surface temperatures (SSTs)**.
- Corals have a symbiotic relationship with photosynthetic algae known as zooxanthellae, which provide the coral polyps with nutrients as well as their bright colors.
- Heat stress causes the corals to expel the zooxanthellae, leaving the skeletal structures with a "bleached" appearance.

- As the climate warms, mass bleaching events are lasting longer, becoming more frequent, and are affecting reefs that had never bleached before
- **Runoff and pollution** Storm generated precipitation can rapidly dilute ocean water and runoff can carry pollutants — these can bleach near-shore corals.
- **Overexposure to sunlight** - When temperatures are high, high solar irradiance contributes to bleaching in shallow-water corals.
- **Extreme low tides** - Exposure to the air during extreme low tides can cause bleaching in shallow corals

Earlier Mass Coral Bleaching Events

- To officially declare a global mass bleaching event, widespread bleaching must be observed in three major ocean basins: the Atlantic, Pacific, and Indian Oceans.
- **The first mass bleaching event occurred in 1998** when the El Niño weather pattern caused sea surfaces in the Pacific Ocean to heat up. This event caused 8% of the world's coral to die.
- **The second global coral bleaching event** on record occurred in 2010 due to elevated ocean temperatures.
- **The third global mass bleaching event**, spanning from 2014 to 2017, resulted in the loss of nearly a third of the corals in the Great Barrier Reef.

Impact of Coral Bleaching

- The repercussions of such widespread bleaching are far-reaching, affecting not only the **marine ecosystem** but also the fisheries and tourism industries that rely on the allure of healthy reefs.
- Coral bleaching can cause significant coral mortality, which can lead to **large shifts in fish communities**. This can result in reduced catches for fishers targeting reef fish species.
- Climate-driven coral bleaching and subsequent habitat shifts may change micronutrient availability for fisheries.
- Coral bleaching can cause reefs to lose their aesthetic appeal, which can lead to a **loss of revenue from reduced tourist activity**. This can threaten the livelihoods of local communities.
- This year's conditions are exacerbated by the world having recently experienced its first 12-month period with average temperatures exceeding 1.5 degrees Celsius above preindustrial levels—a threshold scientists consider critical for coral survival.

	<p>Way Ahead</p> <ul style="list-style-type: none"> ● In Australia, efforts are underway to assess the damage to the Great Barrier Reef through aerial surveys and in-water coral assessments ● Dead reefs can revive over time if there are enough fish species that can graze off the weeds that settle on dead corals, but it takes almost a decade for the reef to start setting up again. ● Bleached corals can survive depending on the levels of bleaching and the recovery of sea temperatures to normal levels. ● If heat-pollution subsides in time, over a few weeks, the zooxanthellae can come back to the corals and restart the partnership.
<p>Conclusion</p>	<p>Known as one of the richest and most biodiverse natural ecosystems on Earth, the Great Barrier Reef was designated a UNESCO World Heritage site in 1981. Impacts from climate change and extreme weather are a reminder of the importance of global greenhouse gas emissions reduction and strong marine management actions that support the resilience of this magnificent living ecosystem</p>

Q.20) Many Indian cities are facing water scarcity, the latest being Bengaluru. In spite of various steps taken by government, effective water management is still illusive. Discuss the causes of water crisis in Indian cities. Critically analyse the government steps taken in this regard. (250 words)

Topic- Water conservation	
<p>Introduction</p>	<p>Leonardo da Vinci once said, “Water is the driving force of all nature.” India has four per cent of the world’s water resources, but in 2011, it moved to be water-stressed. Huge investments in water harvesting are needed to build and protect water availability and to harvest a reasonable part of the monsoon flows. World Wildlife Fund proposes nature-based solutions and enhancing the health of river basins, watersheds and wetlands to build resilience to water risks</p>
<p>Body</p>	<ul style="list-style-type: none"> ● Background ● Reasons behind Water Scarcity in India ● Effects of Water Scarcity in India ● Government Initiatives ● Way Ahead
<p>Conclusion</p>	<p>Improving India's water security will require a combination of policy,</p>

technology, and behavioral solutions. It is important to recognise the changing patterns of water availability due to climate change, especially modelling future scenarios that will cause our rivers to dry up and altered rainfall patterns affecting cropping patterns and impacting food security.

UPSC Syllabus	Water conservation
Why was this question asked?	Q. Suggest measures to improve water storage and irrigation system to make its judicious use under depleting scenario. (UPSC Main 2020)
Introduction	Leonardo da Vinci once said, “Water is the driving force of all nature.” India has four per cent of the world’s water resources, but in 2011, it moved to be water-stressed. Huge investments in water harvesting are needed to build and protect water availability and to harvest a reasonable part of the monsoon flows. World Wildlife Fund proposes nature-based solutions and enhancing the health of river basins, watersheds and wetlands to build resilience to water risks
Body	<p>Background</p> <ul style="list-style-type: none"> • A 2019 NITI Aayog report said that India is suffering from the worst water crisis in its history, and almost 600 million of its population is water-deprived. • The report goes on to add that 21 cities — including Bangalore, Delhi, Hyderabad and Chennai — probably exhausted their groundwater resources in 2021. • A report by the NITI Aayog stated that around 2 lakh people die in India every year due to inadequate water supply. • We need to address the issues of budgetary support for the maintenance of infrastructure and supplementing and building up source stocks. <p>Reasons behind Water Scarcity in India</p> <ul style="list-style-type: none"> • Change in the climate and high temperatures related to climate change have a profound effect on water resources. Erratic monsoons, extended droughts, and changed precipitation patterns have disrupted the supply of water in numerous regions of India. • Excessive groundwater extraction for irrigation, industrial, and home functions has caused the depletion of aquifers. • Inefficient water management practices, like wastage in

irrigation systems, loss of water storage infrastructure, and insufficient upkeep of water sources, enhance the problem of water scarcity.

- New urban centres and industrial developments have led to increased water demand in towns and business hubs, which have depleted available water.
- More than 34 per cent of India's population lives in cities; however, 31 per cent of urban households, mostly those in unauthorised colonies and slums, lack access to piped water or public tap water.
- Pollution of rivers, lakes, and groundwater sources further exacerbates water scarcity. Water pollution affects the quality and quantity of water available for human and environmental use.

Effects of Water Scarcity in India

- India has continuously witnessed transboundary water disputes since its independence.
- With the rising demand for water and climate change impacting water availability, amicable resolution of these disputes has surfaced as one of the most pressing challenges for policymakers.
- Secondly, lack of access to safe drinking water can cause various health problems such as dehydration, infections, diseases, and even death.
- Water scarcity can reduce crop yields, affect food security, and increase poverty among farmers.
- Water scarcity can affect industrial production, reduce energy generation, and increase the cost of water supply and treatment.
- Water scarcity can also affect tourism, trade, and social welfare.

Government Initiatives

- **Pradhan Mantri Krishi Sinchayee Yojana**- It was launched in 2015 to improve farm productivity and ensure better utilization of the resources in the country.
- PMKSY is an umbrella scheme, consisting, inter alia, of two major components being implemented by the Ministry of Jal Shakti, namely, Accelerated Irrigation Benefit Programme (AIBP), and Har Khet Ko Pani (HKKP).
- **Per Drop More Crop**- Per Drop More Crop (PDMC) scheme was launched during 2015-16 . The scheme aims to increase water use efficiency at the farm level through Micro Irrigation

technologies i.e. drip and sprinkler irrigation systems.

- **Jal Shakti Abhiyan-** National Water Mission, Ministry of Jal Shakti launched a campaign “Catch The Rain” with the tag line “Catch the rain, where it falls, when it falls” in 2020 to nudge the states and all stakeholders to create Rain Water Harvesting Structures (RWHS) suitable to the climatic conditions and sub-soil strata, with people’s active participation.
- In 2021 & 2022 “Catch the Rain” was subsumed in Jal Shakti Abhiyan which was implemented across all district of the country.
- **Atal Bhujal Yojana-** The Atal Bhujal Yojana (ABHY) is a central sector scheme worth Rs.6,000 crore for sustainable management of groundwater with community participation.
- It envisages people's participation through the formation of ‘Water User Associations’, water budgeting, preparation & implementation of Gram-panchayat-wise water security plans, etc.
- It is being implemented by the Ministry of Jal Shakti (earlier known as Ministry of Water Resources, River Development and Ganga Rejuvenation).
- The scheme is being funded by the Government of India and the World Bank on 50:50 basis.

Way Ahead

- It is important to reimagine the assessment protocol for water as a resource and bring it on par with all other economic resources.
- By using modern technologies, such as IoT, AI, and remote sensing, water consumption can be measured and managed more effectively.
- We need to re-structure the Centre-state and local bodies’ relationship with water as a subject and allow for single-window decision making.
- Equally important is a national literacy mission around water to create multilevel hydro-literacy in schools and civil society. The media has a strong role to play in reiterating the message.
- It would be fruitful to relook at ancient farming practices that seemed more sustainable. Many of the northeastern states are using traditional ways of irrigating and recycling the run-off water to use in fields before it rejoins the river. In Tamil Nadu, a centuries-old tradition called ‘Eri’ is used in irrigating paddy fields from lake water.

Conclusion	Improving India's water security will require a combination of policy, technology, and behavioral solutions. It is important to recognise the changing patterns of water availability due to climate change, especially modelling future scenarios that will cause our rivers to dry up and altered rainfall patterns affecting cropping patterns and impacting food security.
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Q.21) 'The Supreme Court recently condemned the illegal felling of trees in Uttarakhand, as a "classic case" of nexus between politicians and officials.' In light of the above statement, discuss why eco-tourism in wildlife parks should not be at odds with conservation efforts? (250 words)

Topic- Environmental Conservation	
Introduction	The Supreme Court of India has come down heavily on the Uttarakhand government for the felling of about 6,000 trees in the Jim Corbett National Park. The link between political corruption and environmental damage is especially relevant in this case as the Court's judgment has consequences for the management of wildlife parks, particularly on the question of whether 'tiger safaris' in the buffer and fringe zones of wildlife parks gel well with conservation measures.
Body	<ul style="list-style-type: none"> ● Background ● Expert Bodies affiliated to the Union Environment Ministry ● Wildlife safaris ● 2019 NTCA guidelines ● Specialised committee ● Way Ahead
Conclusion	The Supreme Court has recommended that the Centre evolve guidelines on the conduct of safaris and the government would do well to deliver on this at the earliest and be extremely circumspect on its messaging regarding tourism and conservation. There is need to bring a proactive approach from all stakeholders toward ensuring effective protection and management of our valuable wildlife resources.

UPSC Syllabus	Environmental Conservation
Why was this question asked?	Q. How does biodiversity vary in India? How is the Biological Diversity Act, 2002 helpful in conservation of flora and fauna? (UPSC Main 2018) (250 words)
Introduction	The Supreme Court of India has come down heavily on the Uttarakhand

	<p>government for the felling of about 6,000 trees in the Jim Corbett National Park. The link between political corruption and environmental damage is especially relevant in this case as the Court's judgment has consequences for the management of wildlife parks, particularly on the question of whether 'tiger safaris' in the buffer and fringe zones of wildlife parks gel well with conservation measures.</p>
<p>Body</p>	<p>Background</p> <ul style="list-style-type: none"> ● Recently forest officials and a top politician in the State connived to vastly expand the scope of a tiger safari in the park precincts was a travesty of conservation practices, according to the Supreme Court. ● The judgment approved the Central Bureau of Investigation probe initiated into the case and directed the Central agency to submit a report of its investigation in the next three months. ● Court also directed the Uttarakhand government to establish an animal rescue centre in the vicinity of the safari. <p>Expert Bodies affiliated to the Union Environment Ministry</p> <ul style="list-style-type: none"> ● Both the Central Zoo Authority and the National Tiger Conservation Authority are expert bodies affiliated to the Union Environment Ministry, and tasked with the conservation and protection of wild animals. ● These organisations, in principle, have no objection to the existence of tiger safaris, provided these are conducted within the ambit of an array of guidelines. <p>Wildlife safaris</p> <ul style="list-style-type: none"> ● Wildlife safaris in a designated spot draw attention away from the core zones of the forest and hence promote its inviolate nature as well as raise public awareness about conservation. ● This is the underlying rationale for safaris. Their overarching aim, thus, ought to be eco-tourism and not commercial tourism. ● However, in recent times, the argument that this could be a source of employment opportunities for locals, and that State governments should be promoting this, has been gaining ground. ● The recent translocation of cheetahs from Africa to Kuno National Park, Madhya Pradesh, also aims to revive the cat's presence and promote tourism. <p>2019 NTCA guidelines</p> <ul style="list-style-type: none"> ● The Supreme court disagreed with the 2019 NTCA guidelines of bringing tigers exhibited in zoos for these safaris. ● Section 9 of the 2016 NTCA guidelines says that only injured

tigers after suitable treatment, conflict tigers or orphaned tiger cubs “unfit for re-wilding and release into the wild” ought to be put in the safari.

- The tigers should be sourced from the same landscape as where the safari was established.
- The court objected to provisions in the 2019 guidelines which said the selection of animals to be put in the safaris would be done with the approval of the Central Zoo Authority (CZA).
- The court dismissed the idea of the CZA formulating in the future a “Master Plan” for the management of tiger safaris.

Specialised committee

- The Supreme court directed the Ministry of Environment, Forest and Climate Change to form a specialised committee to study and recommend whether tiger safaris should be permitted in the buffer or fringe areas of a tiger reserve.
- The court said the proposed specialised committee of the Ministry would comprise representatives of the National Tiger Conservation Authority (NTCA), Wildlife Institute of India, Central Empowered Committee and a Joint Secretary from the Ministry.
- The panel would assess the extent of damage done to the Corbett reserve’s green cover, quantify the cost of restoration and identify the “delinquent” persons and officials responsible for the damage.
- The court said the cost for restoration would be recovered from these errant individuals and officials. The money would be used exclusively for forest restoration.
- The Bench said in case the committee’s recommendations were in favour of having tiger safaris in peripheral areas of tiger reserves, it should recommend guidelines for their operation. The guidelines would be applied on a pan-India basis.
- The approach to tiger safaris must be eco-centric and not human centric.

Way Ahead

- The presence of tigers in the forests is an indicator of the well-being of the ecosystem. Unless steps are taken for the protection of tigers, the ecosystem which revolves around tigers cannot be protected
- Tiger safaris should be established keeping in mind the precautionary principle of causing least damage to the

	<p>environment.</p> <ul style="list-style-type: none"> Resorts, if any, should be built in tune with the natural environment. Noise levels should be restricted. Safaris should be proximate to animal rescue centres.
Conclusion	The Supreme Court has recommended that the Centre evolve guidelines on the conduct of safaris and the government would do well to deliver on this at the earliest and be extremely circumspect on its messaging regarding tourism and conservation. There is need to bring a proactive approach from all stakeholders toward ensuring effective protection and management of our valuable wildlife resources.

Q.22) As the solar capacity of the country would expand, so would be the solar waste generated.’ In regard to the above statement, discuss the problem of solar waste in India. What steps can be taken to minimize the problem? (250 words)

Topic- Solar energy	
Introduction	India generated about 100 kilotonnes (kt) of solar waste in the financial year (FY) 2022-2023, according to a new study published. The amount of solar waste produced by the country is expected to reach 600 kt by 2030, the study said. The current solar capacity of India stands at 66.7 GW as of March 2023 — it has increased by 23 times in the past 10 years — and is slated to jump to 292 GW of installed solar capacity by 2030. Therefore, the management of solar waste is crucial for environmental, economic, and social reasons.
Body	<ul style="list-style-type: none"> About Solar Waste Research findings Environmental concerns Steps to deal with solar waste Key challenges in recycling solar panels
Conclusion	In the pursuit of sustainable energy, addressing solar waste’s challenges remains pivotal. This underscores the necessity for a comprehensive strategy that involves increased awareness, improved recycling infrastructure, regulatory structures, incentives for innovation and the fostering of collective efforts to ensure an economically feasible and ecologically responsible approach. Union government should facilitate and explore recycling methods and the recovery of vital materials in the context of solar PV systems in collaboration with research institutions and industry.

UPSC Syllabus	Solar energy
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<p>Why was this question asked?</p>	<p>Q. What are the impediments disposing the huge quantities of discarded solid waste which are continuously being generated? How do we remove safely the toxic wastes that have been accumulated in our habitable environment? (UPSC Main 2018)</p>
<p>Introduction</p>	<p>India generated about 100 kilotonnes (kt) of solar waste in the financial year (FY) 2022-2023, according to a new study published. The amount of solar waste produced by the country is expected to reach 600 kt by 2030, the study said. The current solar capacity of India stands at 66.7 GW as of March 2023 — it has increased by 23 times in the past 10 years — and is slated to jump to 292 GW of installed solar capacity by 2030. Therefore, the management of solar waste is crucial for environmental, economic, and social reasons.</p>
<p>Body</p>	<p>About Solar Waste</p> <ul style="list-style-type: none"> ● Solar waste refers to the waste generated during the manufacturing of solar modules and waste from the field (project lifetime). ● Manufacturing involves two streams of waste, including the scrap that's produced and the waste generated from PV modules failing quality tests. ● Meanwhile, waste from the field involves three streams of waste. ● One, waste generated during transporting and handling — the damaged modules are considered as waste. ● Two, waste produced due to the damage incurred by solar modules during their lifetime. ● Three, when the modules reach their end-of-life and are not usable anymore. <p>Research findings</p> <ul style="list-style-type: none"> ● By 2030, India's current installed solar capacity will generate about 340 kt — three times more than the present. ● Around 67 per cent of this waste is expected to be produced by five states, including Rajasthan, Gujarat, Karnataka, Tamil Nadu, and Andhra Pradesh. ● This is because these five states currently have more solar capacity than other states and therefore, will produce more solar waste. ● These states also plan to expand their solar capacity extensively in the following years.

- The cumulative waste from existing and new capacity (deployed between FY24 and FY30) will reach about 600 kt by 2030, according to the report. By 2050, it will increase to about 19,000 kt and 77 per cent of which will be generated from new capacities.

Environmental concerns

- Proper disposal of solar panels is essential to minimize environmental harm and ensure the responsible management of electronic waste (e-waste).
- Solar panels contain various materials, including silicon, glass, aluminum, and small amounts of toxic substances such as cadmium and lead.
- If not managed properly, these materials can pose environmental risks during disposal.

Steps to deal with solar waste

- Policymakers need to maintain a comprehensive database of the installed solar capacity, which would help in estimating solar waste in the following years.
- Policymakers should incentivise recyclers, and push stakeholders to effectively manage the growing solar waste.
- India needs to focus on creating a market for solar recycling.
- The report talked about two broad ways of recycling solar panels.
- **First is conventional recycling** or bulk material recycling, which involves mechanical processes like crushing, sieving, and shearing of the waste.
- While the majority of recycled materials consist of glass, aluminium, and copper, more valuable materials like silver and silicon cannot be recovered through this method.
- **The other way of recycling is known as high-value recycling.**
- It involves the use of a combination of mechanical, chemical, and thermal processes to recycle the modules.
- Unlike conventional recycling, this method can recover silver and silicon also with the help of chemical processes.

Key challenges in recycling solar panels

- Solar panel materials are intricately mixed, posing challenges in efficient component separation during recycling.
- Recovering materials from the solar panels holds limited economic value, hindering cost recovery in recycling efforts.

	<p>Approximately 60 per cent of the total value is concentrated within a mere 3 per cent of the weight of the solar panels.</p> <ul style="list-style-type: none"> • The substantial costs associated with processing further strain recycling economics, demanding strategies to enhance efficiency and reduce expenses.
Conclusion	<p>In the pursuit of sustainable energy, addressing solar waste's challenges remains pivotal. This underscores the necessity for a comprehensive strategy that involves increased awareness, improved recycling infrastructure, regulatory structures, incentives for innovation and the fostering of collective efforts to ensure an economically feasible and ecologically responsible approach. Union government should facilitate and explore recycling methods and the recovery of vital materials in the context of solar PV systems in collaboration with research institutions and industry.</p>

Q.23) 'Transboundary cooperation on the sustainable management of water, can realise benefits across various sectors.' Comment (250 words)

Topic- Sustainable management of water	
Introduction	<p>Managing interdependencies of transboundary waters is one of the human development challenges facing the international community. In many aspects water is among the most 'shared' resources on Earth. The world needs a sophisticated form of cross-border water governance, promoting effective and equitable water allocation among nations that share water resources.</p>
Body	<ul style="list-style-type: none"> • About World Water Day • Importance of water • The issue of transboundary waters • Climate change-related challenges on water • Sustainable water management • Water diplomacy
Conclusion	<p>In the pursuit of sustainable energy, addressing solar waste's challenges remains pivotal. This underscores the necessity for a comprehensive strategy that involves increased awareness, improved recycling infrastructure, regulatory structures, incentives for innovation and the fostering of collective efforts to ensure an economically feasible and ecologically responsible approach. Union government should facilitate and explore recycling methods and the recovery of vital materials in the context of solar</p>

PV systems in collaboration with research institutions and industry.

UPSC Syllabus	Sustainable management of water
Why was this question asked?	Q. Enumerate the National Water Policy of India. Taking river Ganges as an example, discuss the strategies which may be adopted for river water pollution control and management. What are the legal provisions of management and handling of hazardous wastes in India? (UPSC Main 2013)
Introduction	Managing interdependencies of transboundary waters is one of the human development challenges facing the international community. In many aspects water is among the most ‘shared’ resources on Earth. The world needs a sophisticated form of cross-border water governance, promoting effective and equitable water allocation among nations that share water resources.
Body	About World Water Day <ul style="list-style-type: none">● March 22, 2024, is the 31st World Water Day, with the theme, “Leveraging water for peace”.● Under the ‘World Water Assessment Programme’, UNESCO led the development of the 2024 edition of the flagship United Nations World Water Development Report, “Water for Prosperity and Peace” as a part of UN Water (an interagency coordination mechanism on water and sanitation of 35 UN entities along with 48 other international partners). Importance of water <ul style="list-style-type: none">● Throughout history, water has been a pivotal resource for some of the greatest civilisations such as those that arose around the Indus, the Nile, the Tigris and the Euphrates.● But it is also true that in these civilisations, conflicts arose on account of this resource, like the well documented tensions between the Mesopotamian cities of Lagash and Umma.● This conflict, one of the oldest known wars in human history, centered around a fertile piece of land and water resources.● Notably, this historical episode also yielded what is considered the world’s first peace treaty, the Treaty of Mesilim, recognised as one of humanity’s oldest legal documents. The issue of transboundary waters <ul style="list-style-type: none">● Transboundary waters are lakes, aquifers, and river basins that

are shared by two or more countries. They account for 60% of the world's freshwater flows.

- If managed poorly, transboundary waters can cause social unrest and conflict.
- With its expansive landmass, India boasts a network of long rivers, not only serving its own needs but also shared with its neighbours.
- In the South Asian region, the extent of water pollution has worsened considerably in recent years, especially the Meghna, Brahmaputra, Ganga and Indus, warns the 2024 report.
- Out of UNESCO's 194 member-states and 12 associate members, 153 countries can be classified as water-sharing nations, and all transboundary waters account for 60% of the world's freshwater flows.
- In the agrarian sector, the efficient use of emerging artificial intelligence (AI) technology in the conservation of water, ranging from tackling crop and food loss, to minimising chemicals and fertilizers, and saving water, is starting to show that outputs that are both productive and sustainable can be enabled.

Sustainable water management

- Sustainable management of water resources and access to safe water and sanitation are essential for unlocking economic growth and productivity, and provide significant leverage for existing investments in health and education.
- Of these 153 countries, just 24 have managed to reach a 100% cooperation agreement on their shared waters, as per a 2021 UNESCO progress report on Sustainable Development Goal indicator 6.5.2 titled "Progress on transboundary water cooperation."
- Sustainable Development Goal 6 goes beyond drinking water, sanitation and hygiene to also address the quality and sustainability of water resources, which are critical to the survival of people and the planet.
- The 2030 Agenda recognizes the centrality of water resources to sustainable development and the vital role that improved drinking water, sanitation and hygiene play in progress in other areas, including health, education and poverty reduction.

Climate change-related challenges on water

- Today, the world is also experiencing countless meteorological

extremities: from intense heat waves to turbulent floods, magnifying concerns about the climate crisis as well as its continuing implications over water insecurity.

- In India, the monsoon has become erratic over the years and brings with it major uncertainties for agriculture, which lies at the heart of India's \$3 trillion economy.
- Within the added climate change-related pressures we face, the world needs to foster improved cooperation over water-sharing and embrace universal principles for International Water Law.
- By governing the use of shared waters and encouraging the use of water sustainably, we can strive for better water diplomacy — making water a force for peace.
- The shared recognition that water is a vital resource, with limitations in quality and availability, necessitates collaborative governance to ensure effective and equitable water allocation among nations, fostering regional stability and peace, and an understanding of the intricate relationships between water, climate, and international stability.

Water diplomacy

- There is a general shortage of water quality data globally and points more specifically to a prominent urban-rural divide.
- Water diplomacy requires inclusive approaches, acknowledging the indigenous and local communities' extensive cross-border networks.
- It involves civil society and academic networks, who can also play an important role in facilitating political processes to prevent, mitigate, and resolve water-related disputes.

Conclusion

Since time immemorial, man has made significant progress in fostering peace; however, if freshwater runs scarce, it threatens our collective well-being and peace. This is also crucial for the 2030 Agenda and achieving the SDGs. Through transboundary cooperation on the sustainable management of water, we can realise benefits across various sectors including health, food and energy security, protection from natural disasters, education, improved living standards, employment, economic development, and numerous ecosystem services.

Q.24) 'Between 2011 and 2020, the glaciers in the Hindu Kush Himalaya (HKH) region vanished 65 percent faster than in the previous decade, primarily due to the impacts of climate change.' In light of the above statement, discuss the impact of melting of Himalayan glaciers on India's water resources, its causes and strategies? (250 words)

Topic- Climate Change	
Introduction	In a report published by the International Centre for Integrated Mountain Development (ICIMOD) in 2023, alarming findings indicated that the Himalayan glaciers, vital sources of water for nearly two billion people, are melting at an unprecedented rate. The study reveals that between 2011 and 2020, the glaciers in the Hindu Kush Himalaya (HKH) region vanished 65 percent faster than in the previous decade, primarily due to the impacts of climate change.
Body	<ul style="list-style-type: none"> ● About Melting glaciers ● Frequent Flooding and Droughts ● Water Scarcity ● Changes in Weather Patterns ● Ecosystem Disruption ● Potential for Natural Disasters: ● Strategies
Conclusion	The melting of Himalayan glaciers poses significant challenges to India's water resources. It not only leads to water scarcity but also increases the risk of flooding, disrupts weather patterns, and threatens ecosystems. It is crucial to address the underlying causes of glacier melting, such as reducing greenhouse gas emissions and implementing adaptation measures, to mitigate the impacts on India's water resources and ensure the sustainability of the region's ecosystems and communities.

UPSC Syllabus	Climate Change
Why was this question asked?	Q. How will the melting of Himalayan glaciers have a far- reaching impact on the water resources of India? (UPSC Main 2020)
Introduction	In a report published by the International Centre for Integrated Mountain Development (ICIMOD) in 2023, alarming findings indicated that the Himalayan glaciers, vital sources of water for nearly two billion people, are melting at an unprecedented rate. The study reveals that between 2011 and 2020, the glaciers in the Hindu Kush Himalaya

(HKH) region vanished 65 percent faster than in the previous decade, primarily due to the impacts of climate change.

Body

About Melting glaciers

- The Hindu Kush Himalayan Mountain ranges are a crucial source of freshwater for rivers that flow through 16 countries in Asia, including India.
- These rivers provide water to nearly 2 billion people living downstream, including 240 million people in the mountains and 1.65 billion people in the plains.
- Melting glaciers have significant impact on water resources of Himalayan rivers due to change in glacier basin hydrology, downstream water budget, impact on hydropower plants due to variation in discharge, flash flood and sedimentation.
- They also increase in risk related to glacier hazards due to enhanced number and volume of glacier lakes, accelerated flash flood and Glacial Lake Outburst Floods (GLOFs), impact on agro practices in high Himalayan region etc.

Impact

- **Frequent Flooding and Droughts:** The rapid melting of Himalayan glaciers increases the risk of flash floods and glacial lake outbursts, which can lead to devastating floods in the region. For example, flash floods in Uttarakhand in 2013 and 2021 were attributed to the melting glaciers.
- **Water Scarcity:** Glaciers act as natural reservoirs, storing water in the form of ice and snow. As glaciers melt and retreat, the availability of freshwater decreases, leading to water scarcity in many regions. This can have a significant impact on agriculture, industries, and overall water security.
- **Changes in Weather Patterns:** Melting glaciers can disrupt weather patterns, leading to changes in temperature, precipitation, and other weather-related phenomena. The freshwater released from melting glaciers enters the ocean, which can affect the salinity balance of the North Atlantic and weaken the Atlantic Meridional Overturning Circulation (AMOC).
- These changes can have regional climate impacts, such as cooler temperatures in Europe and increased hurricane activity in the North Atlantic.
- **Ecosystem Disruption:** The melting of glaciers can disrupt ecosystems, leading to changes in biodiversity, food webs, and

	<p>other ecological systems.</p> <ul style="list-style-type: none"> ● Glaciers provide unique habitats for various species, and their disappearance can have cascading effects on the entire ecosystem. ● Potential for Natural Disasters: Melting glaciers can create the potential for natural disasters such as flash floods and landslides. These events can have catastrophic effects on human life, infrastructure, and the overall stability of the region. <p>Strategies</p> <ul style="list-style-type: none"> ● Increase the use of alternative energy sources ● Implement energy efficiency measures ● Encourage public transportation ● Plant more trees ● Reduce waste and promote recycling ● Combat deforestation ● Implement sustainable agriculture practices ● Support international agreements ● Plan and implement adaptation measures
<p>Conclusion</p>	<p>The melting of Himalayan glaciers poses significant challenges to India's water resources. It not only leads to water scarcity but also increases the risk of flooding, disrupts weather patterns, and threatens ecosystems. It is crucial to address the underlying causes of glacier melting, such as reducing greenhouse gas emissions and implementing adaptation measures, to mitigate the impacts on India's water resources and ensure the sustainability of the region's ecosystems and communities.</p>

Science & Technology

Q.25) The Indian Space Research Organisation (ISRO) has successfully conducted the Pushpak Reusable Landing Vehicle (RLV) LEX 02 landing experiment.' In light of the above statement, what is a reusable landing vehicle and how does it help cut costs? (250 words)

Topic- Space technology	
Introduction	The idea of a re-usable landing vehicle was mooted to regain super expensive rocket boosters that are used for launching spacecraft. It could be later used to refuel and reuse in space flights. Other smaller parts such as rocket engines and boosters can also be reused. By reusing these parts, the cost of launches reduces significantly. The Indian Space Research Organization (ISRO) recently successfully completed the landing mission of its reusable launch vehicle (RLV), Pushpak.
Body	<ul style="list-style-type: none"> ● Background ● Origin of concept ● About ISRO's Mission ● What is a re-usable landing vehicle? ● Functioning ● Role of Private sector
Conclusion	ISRO achieved a milestone in reusable launch vehicle technology with the successful landing experiment of RLV LEX-02. The mission simulated high-speed landing conditions of an RLV returning from space, demonstrating autonomous landing capability. ISRO's efforts in developing essential technologies for a fully reusable launch vehicle aim to enable low-cost access to space. This achievement reaffirms India's commitment to advancing space exploration through innovative technology development and successful mission execution.

UPSC Syllabus	Space Technology
Why was this question asked?	Q. What is India's plan to have its own space station and how will it benefit our space programme? (UPSC Main 2019)
Introduction	The idea of a re-usable landing vehicle was mooted to regain super expensive rocket boosters that are used for launching spacecraft. It could be later used to refuel and reuse in space flights. Other smaller parts

such as rocket engines and boosters can also be reused. By reusing these parts, the cost of launches reduces significantly. The Indian Space Research Organization (ISRO) recently successfully completed the landing mission of its reusable launch vehicle (RLV), Pushpak.

Body

Background

- The Indian Space Research Organization (ISRO) on March 22 said it has successfully completed the landing mission of its reusable launch vehicle (RLV), Pushpak, from the Aeronautical Test Range (ATR) in Chitradurga, Karnataka.
- This was the second such mission after the RLV-LEX-01 mission was successfully carried out last year.
- The winged vehicle, Pushpak, was lifted by an Indian Air Force Chinook helicopter and was released from 4.5 km altitude.

Origin of concept

- NASA and then Soviet Union operated the first manufactured reusable launch vehicles in the 1960s and 1970s.
- They remained in the prototype phase in the 1990s.
- However, the rise of private spaceflights gave a fillip the concept and it resulted in the rise of many spacecrafts such as SpaceX's Falcon 9 and Falcon Heavy, Electron, SpaceShipOne, and New Shephard.

About ISRO's Mission

- ISRO's landing mission of its reusable launch vehicle (RLV), Pushpak mission has re-validated the indigenously developed technologies in the areas of navigation, control systems, landing gear and deceleration systems essential for performing a high speed autonomous landing of a space returning vehicle
- The Pushpak launch vehicle is India's bold attempt to make access to space most affordable.
- It is India's futuristic reusable launch vehicle, where the most expensive part, the upper stage, which houses all the expensive electronics, is made reusable by bringing it back safely back to Earth.

What is a re-usable landing vehicle?

- The idea of a re-usable landing vehicle was mooted to regain super expensive rocket boosters that are used for launching spacecraft.
- It could be later used to refuel and reuse in space flights. Among the most common launch vehicle parts are the rocket stages, which are considered for reuse.

	<ul style="list-style-type: none"> ● Other smaller parts such as rocket engines and boosters can also be reused. By reusing these parts, the cost of launches reduces significantly. <p>Functioning</p> <ul style="list-style-type: none"> ● Reusable launch vehicle is equipped with additional protection such as heat shields, grid fins, and other flight control surfaces. ● They weigh more compared to the expendable counterparts because of additional avionics and propellant. ● The shape of the spaceplane is also modified to support the recovery process. <p>Role of Private sector</p> <ul style="list-style-type: none"> ● In the private space, Elon Musk has been one of the biggest proponent of the technology. ● His firm SpaceX has invested billions to develop its portfolio of reusable rockets. ● It has built Dragon spacecraft and many launch vehicles named Falcon. ● The firm conducted the first successful recovery of first stage of Falcon 9 rocket on a ground pad in 2015. ● Another billionaire, Jeff Bezos, is also involved in the development of reusable technology through his space firm Blue Origin. The name of the firm's spacecraft is New Shepard.
<p>Conclusion</p>	<p>ISRO achieved a milestone in reusable launch vehicle technology with the successful landing experiment of RLV LEX-02. The mission simulated high-speed landing conditions of an RLV returning from space, demonstrating autonomous landing capability. ISRO's efforts in developing essential technologies for a fully reusable launch vehicle aim to enable low-cost access to space. This achievement reaffirms India's commitment to advancing space exploration through innovative technology development and successful mission execution.</p>

Q.26) 'Process of core-loading in the indigenous prototype fast breeder reactor (PFBR) was started at the Madras Atomic Power Station in Kalpakkam recently.' In light of the above statement, discuss working and challenges of prototype fast breeder reactor. State the significance of operationalisation of the PFBR in India's three-stage nuclear power programme. (250 words).

Topic- India's nuclear power programme

Introduction India's nuclear power program is aimed to meet the twin goals of energy security and sustainable development. Today nuclear power has a new lease

	of life as country is looking to decarbonise, reduce its import of fossil fuels, and give its renewables sector more space. Thus, core-loading of prototype fast breeder reactor (PFBR) in recent times is a good start.
Body	<ul style="list-style-type: none"> ● Background ● About Prototype Fast Breeder Reactor (PFBR) ● Fuels of PFBR ● Advantages of PFBR ● Challenges of FBRs ● Why was the PFBR delayed? ● India's Three-Stage Nuclear Power Programme
Conclusion	The growth of the Indian nuclear power program is imperative to meet the twin goals of energy security and sustainable development. As a responsible nuclear power with advanced technology, India remains committed to expand peaceful applications of nuclear technology, both in power and non-power sector, while ensuring the security of nuclear and radiological materials.

UPSC Syllabus	India's nuclear power programme
Why was this question asked?	Q. With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy. [UPSC Main 2018]
Introduction	India's nuclear power program is aimed to meet the twin goals of energy security and sustainable development. Today nuclear power has a new lease of life as country is looking to decarbonise, reduce its import of fossil fuels, and give its renewables sector more space. Thus, core-loading of prototype fast breeder reactor (PFBR) in recent times is a good start.
Body	<p>Background</p> <ul style="list-style-type: none"> ● On March 4, Prime Minister Narendra Modi witnessed the start of the process of core-loading the indigenous prototype fast breeder reactor (PFBR) at the Madras Atomic Power Station in Kalpakkam, Tamil Nadu. ● Upon completion of the core loading, the first approach to criticality will be achieved, leading to generation of power subsequently

- In spirit of Aatmanirbhar Bharat, PFBR is indigenously designed and constructed by BHAVINI with contribution from more than 200 Indian industries including MSMEs

About Prototype Fast Breeder Reactor (PFBR)

- Government had approved in 2003, the creation of Bhartiya Nabhikiya Vidyut Nigam Ltd (BHAVINI) to construct and operate India's most advanced nuclear reactor-Prototype Fast Breeder Reactor (PFBR).
- PFBR has been fully designed and constructed indigenously by BHAVINI with significant contribution from more than 200 Indian industries including MSMEs.
- Once commissioned, India will only be the second country after Russia to have commercial operating Fast Breeder Reactor.

Fuels of PFBR

- The Fast Breeder Reactor (FBR) will initially use the Uranium-Plutonium Mixed Oxide (MOX) fuel.
- The Uranium-238 "blanket" surrounding the fuel core will undergo nuclear transmutation to produce more fuel, thus earning the name 'Breeder'.
- The use of Thorium-232, which in itself is not a fissile material, as a blanket is also envisaged in this stage.
- By transmutation, Thorium will create fissile Uranium-233 which will be used as fuel in the third stage.
- FBR is thus a stepping stone for the third stage of the program paving the way for the eventual full utilization of India's abundant thorium reserves.

Advantages of PFBR

- In terms of safety, the PFBR is an advanced third generation reactor with inherent passive safety features ensuring a prompt and safe shut down of the plant in the event of an emergency.
- Since it uses the spent fuel from the first stage, FBR also offers great advantage in terms of **significant reduction in nuclear waste generated**, thereby avoiding the need for large geological disposal facilities.
- Upon completion of the core loading, the first approach to criticality will be achieved, leading to generation of power subsequently.
- Notably, despite the advanced technology involved, both the capital cost and the per unit electricity cost is comparable to other nuclear and conventional power plants.

Challenges of FBRs

- FBRs are harder to handle than other reactor designs.
- Further, the civilian nuclear programme's nodal regulatory body, the Atomic Energy Regulatory Body (AERB), was set up by executive order and reports ultimately to the DAE secretary. In 2015, the International Atomic Energy Agency urged India to set up an independent statutory atomic regulator instead.
- Nuclear Safety Regulatory Authority (NSRA) Bill sought to replace the AERB with the NSRA. But it was criticised for allowing the Union government too much control over the NSRA's composition.
- The thorium fuel cycle produces caesium-137, actinium-227, radium-224, radium-228, and thorium-230, which are all radioactive in ways that complicate their handling and storage.

Why was the PFBR delayed?

- The PFBR in India has been associated with numerous delays, cost overruns, and broken promises, and has accrued many critics.
- The fast breeder test reactor (FBTR) at Kalpakkam, a testing ground for PFBR technologies was built by 1977 but sanctions against India's 'Smiling Buddha' nuclear test forced the use of a mixed carbide fuel over enriched uranium (which France was to deliver).
- The mixed carbide fuel lowered the power output and changed operating conditions.
- The Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam, designed the PFBR. Its original cost was Rs 3,492 crore and the original deadline, 2010.
- Even by 2019, its cost had also ballooned to Rs 6,800 crore.

India's Three-Stage Nuclear Power Programme

- India's three-stage nuclear power programme was formulated by Homi Bhabha in the 1950s.
- The ultimate focus of the programme is on enabling the thorium reserves of India to be utilized in meeting the country's energy requirements.
- However, at present thorium is not economically viable because global uranium prices are much lower.
- In the **first stage** of the programme, natural uranium fuelled pressurized heavy water reactors (PHWR) produce electricity while generating plutonium-239 as by-product.

	<ul style="list-style-type: none"> ● In the second stage, fast breeder reactors (FBRs) would use plutonium-239, recovered by reprocessing spent fuel from the first stage, and natural uranium. In FBRs, plutonium-239 undergoes fission to produce energy, while the uranium-238 present in the fuel transmutes to additional plutonium-239. ● A Stage III reactor or an Advanced nuclear power system involves a self-sustaining series of thorium-232-uranium-233 fuelled reactors.
Conclusion	The growth of the Indian nuclear power program is imperative to meet the twin goals of energy security and sustainable development. As a responsible nuclear power with advanced technology, India remains committed to expand peaceful applications of nuclear technology, both in power and non-power sector, while ensuring the security of nuclear and radiological materials.

Q.27) Recently Ministry of Tribal Affairs is planning to collaborate with the Indian Space Research Organisation (ISRO) to deploy V-SAT stations for around 80 tribal villages to bring Internet services there.’ In light of the above statement, analyse the role of ISRO in developmental activities especially rural and tribal area development. (250 words)

Topic- Space technology	
Introduction	Indian Space Research Organisation is no longer confined mainly to the launching of satellites, but it has been constantly enlarging its role in development activities. ISRO and Union Tribal Ministry would soon sign a Memorandum of Understanding to give pilot connectivity (services such as Internet, medical and educational connectivity) to these tribal-dominated villages.
Body	<ul style="list-style-type: none"> ● Weather Forecasting and Disaster Management ● Connectivity in rural areas ● Role in agriculture ● Village resource centre ● V-SAT stations ● Applications of VSAT services
Conclusion	As an emerging nation with both vast developmental needs and profound security concerns, India has had to balance many requirements in its rapid advance as a new space power. India's economic progress has made its space program more visible and active as the country aims for greater self-reliance in space technology. With a commitment to innovation and self-reliance,

ISRO has significantly contributed to India's socio-economic development.

UPSC Syllabus	Space technology
Why was this question asked?	Q. Discuss India's achievements in the field of Space Science and Technology. How the application of this technology has helped India in its socio-economic development? (UPSC Main 2016)
Introduction	Indian Space Research Organisation is no longer confined mainly to the launching of satellites, but it has been constantly enlarging its role in development activities. ISRO and Union Tribal Ministry would soon sign a Memorandum of Understanding to give pilot connectivity (services such as Internet, medical and educational connectivity) to these tribal-dominated villages.
Body	<p>Weather Forecasting and Disaster Management:</p> <ul style="list-style-type: none">• Accurate weather predictions are crucial for agricultural planning, disaster preparedness, and early warning systems for events like cyclones and floods.• ISRO's meteorological satellites, including INSAT and Kalpana, have bolstered India's weather forecasting capabilities.• ISRO's initiatives like the BHUVAN portal have been instrumental in minimising the loss of life and property during calamities. <p>Connectivity in rural areas</p> <ul style="list-style-type: none">• ISRO's satellite communication systems, such as INSAT and GSAT, have revolutionised India's telecommunication infrastructure.• They have enabled remote and rural areas to be connected, offering better access to information, education, and healthcare services. <p>Role in agriculture</p> <ul style="list-style-type: none">• Space technology has played a crucial role in agricultural development.• ISRO's satellite-based remote sensing and imaging systems, like RESOURCESAT and RISAT, provide valuable data on soil moisture, crop health, and crop yield estimation.• This information aids farmers in making informed decisions, optimising resource allocation, and mitigating the impact of natural disasters like droughts and floods.

Village resource centre:

- ISRO has embarked upon VRC programme to disseminate the portfolio of services emanating from the space systems as well as other Information Technology (IT) tools, directly down-the-line to the rural communities.
- With the involvement of stakeholders, VRCs will catalyse rural entrepreneurship; and facilitate e-Governance and other services of social relevance.
- ISRO is implementing VRC programme in partnership with reputed NGOs, Trusts and other agencies including the Governmental ones.

V-SAT stations

- The Ministry of Tribal Affairs is planning to collaborate with the Indian Space Research Organisation (ISRO) to deploy V-SAT stations on a pilot basis for around 80 tribal villages in Jharkhand, Madhya Pradesh, Odisha, and Maharashtra to bring Internet services there, according to a proposal unveiled.
- The collaboration with ISRO will see the government set up V-SAT (very small aperture terminal) stations for these 80 villages that are geographically remote and have difficult terrain, challenges that have kept them out of reach of connectivity for the longest time.
- This pilot project would be monitored so that it could be scaled up to other similar tribal villages in other States as well, adding the goal is also to help with e-governance in these remote areas.

Applications of VSAT services

- **Tele-education:** Focus is on imparting vocational training at local level - aimed at skill development and capacity building to catalyse livelihood support in rural areas; supplementary teaching to rural children; and non-formal and adult education.
- **Tele-healthcare:** The Telemedicine system at VRCs consists of customised medical software, with certain medical diagnostic instruments. With the help of local doctor/ paramedic, expert medical consultation and counseling are provided to the villagers from specialty hospitals. Healthcare awareness is also a major activity of VRCs.
- **Land and Water Resources Management:** Information on land and water resources extracted from satellite images is organised in Geographical Information System (GIS), and provided to the villagers through the VRC. The local farmers,

	availing the support of the skilled/ trained personnel managing VRCs, utilise this information for better management of their land resources.
Conclusion	As an emerging nation with both vast developmental needs and profound security concerns, India has had to balance many requirements in its rapid advance as a new space power. India's economic progress has made its space program more visible and active as the country aims for greater self-reliance in space technology. With a commitment to innovation and self-reliance, ISRO has significantly contributed to India's socio-economic development.

Q.28) 'Recently, India loaded the core of its long-delayed prototype fast breeder reactor (PFBR) vessel.' In light of the above statement, discuss various methods that are put in place to handle nuclear waste and challenges associated with it. Analyse the nuclear waste handling mechanism in India. (250 words)

Topic- Nuclear energy	
Introduction	Recently, India loaded the core of its long-delayed prototype fast breeder reactor (PFBR) vessel, bringing it to the cusp of stage II — powered by uranium and plutonium — of its three-stage nuclear programme. But the large-scale use of nuclear power is accompanied by a problem of waste management. There have been few nuclear accidents in the world that brings the focus on international safeguards on spent nuclear fuel that should be followed rigorously.
Body	<ul style="list-style-type: none"> ● What is nuclear waste? ● Handling of nuclear waste globally ● Other Waste treatment methods ● Reprocessing ● Challenges of nuclear waste ● Indian scenario
Conclusion	A major environmental concern related to nuclear power is the creation of radioactive wastes. These materials can remain radioactive and dangerous to human health for thousands of years. There are always safety concerns with regard to storage and reprocessing in case of any mishappening, following the Chernobyl accident in 1986. There is need to increase international co-operation and accelerate moves to harmonise global nuclear safety standards to ensure that all countries had confidence in the safety of their neighbours' nuclear installations.

UPSC Syllabus	Nuclear energy
Why was this question asked?	Q. With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy. (UPSC Main 2018)
Introduction	Recently, India loaded the core of its long-delayed prototype fast breeder reactor (PFBR) vessel, bringing it to the cusp of stage II — powered by uranium and plutonium — of its three-stage nuclear programme. But the large-scale use of nuclear power is accompanied by a problem of waste management. There have been few nuclear accidents in the world that brings the focus on international safeguards on spent nuclear fuel that should be followed rigorously.
Body	<p>What is nuclear waste?</p> <ul style="list-style-type: none"> ● In a fission reactor, neutrons bombard the nuclei of atoms of certain elements. ● When one such nucleus absorbs a neutron, it destabilises and breaks up, yielding some energy and the nuclei of different elements. ● For example, when the uranium-235 (U-235) nucleus absorbs a neutron, it can fission to barium-144, krypton-89, and three neutrons. ● If the ‘debris’ (barium-144 and krypton-89) constitute elements that can’t undergo fission, they become nuclear waste. ● Fuel that is loaded into a nuclear reactor will become irradiated and will eventually have to be unloaded. At this stage it is called spent fuel. <p>Handling of nuclear waste globally</p> <ul style="list-style-type: none"> ● Handling the spent fuel is the main challenge: it is hot and radioactive, and needs to be kept underwater for up to a few decades. ● All countries with longstanding nuclear power programmes have accumulated a considerable inventory of spent fuel. ● Once spent fuel has been cooled in the spent-fuel pool for at least a year, it can be moved to dry-cask storage, and is placed inside large steel cylinders and surrounded by an inert gas. ● The cylinders are sealed shut and placed inside larger steel or concrete chambers. <p>Other Waste treatment methods</p> <ul style="list-style-type: none"> ● Nuclear power plants have liquid waste treatment facilities.

- Small quantities of aqueous wastes containing short-lived radionuclides may be discharged into the environment.
- Japan is currently discharging, after treatment, such water from the Fukushima nuclear power plant into the Pacific Ocean.
- Other such waste, depending on their hazard, can be evaporated or “**chemically precipitated**” to yield a sludge to be treated and stored, “absorbed on solid matrices” or incinerated.

Reprocessing

- Reprocessing is another way to deal with the spent fuel.
- It involves technologies that separate fissile from non-fissile material in spent fuel.
- Here, the material is chemically treated to separate fissile material left behind from the non-fissile material.
- Because spent fuel is so hazardous, reprocessing facilities need specialised protections and personnel of their own.

Challenges of nuclear waste

- Nuclear waste is highly radioactive and needs to be stored in facilities reinforced to prevent leakage into and/or contamination of the local environment.
- Depending on radioactivity levels, the storage period can run up to a few millennia, meaning they have to be isolated from human contact for long periods of time.
- Liquid high-level waste contains “almost all of the fission products produced in the fuel”. It is vitrified to form a storable glass.
- Some experts have also rooted for geological disposal: the waste is sealed in “special containers”, and buried underground in granite or clay.
- Some studies have pointed to the risk of radioactive material becoming exposed to humans if the containers are disturbed, such as by nearby digging activity.
- Reprocessing facilities present the advantage of higher fuel efficiency but are also expensive.
- Importantly, reprocessing also yields weapons-usable (different from weapons-grade) plutonium.

Indian scenario

- According to a 2015 report of the International Panel on Fissile Materials (IPFM), India has reprocessing plants in Trombay, Tarapur, and Kalpakkam.
- The wastes generated at the nuclear power stations during the operation are of low and intermediate activity level and are

	<p>managed at the site itself and surrounding area “is monitored for radioactivity” as per government.</p> <ul style="list-style-type: none"> • The vast majority of the radioactivity in the waste from pressurised heavy-water reactors of stage I which cannot be used to fuel the PFBR as per scientists. Only uranium and plutonium can be used as fuel. • Because India reprocesses its spent fuel, these fission products will have to be stored, at least for a while, in the form of liquid waste, which poses accident hazards.
Conclusion	<p>A major environmental concern related to nuclear power is the creation of radioactive wastes. These materials can remain radioactive and dangerous to human health for thousands of years. There are always safety concerns with regard to storage and reprocessing in case of any mishap, following the Chernobyl accident in 1986. There is need to increase international co-operation and accelerate moves to harmonise global nuclear safety standards to ensure that all countries had confidence in the safety of their neighbours' nuclear installations.</p>

Q.29) “As per the recent research, assumption of a low prevalence of Cardiovascular disease (CVD) risk factors among those in extreme poverty is not true.” In light of the above statement, discuss the causes of cardiovascular diseases, specially among poor population. What are the steps taken by Indian government to tackle the CVD. (250 words)

Topic- Public Health	
Introduction	<p>Non- Communicable Diseases are estimated to account for 63 per cent of all deaths in the country of which cardiovascular diseases(CVD) lead with 27 per cent overall mortality cause followed by chronic respiratory diseases (11 per cent), cancers (nine per cent), diabetes (three per cent) and others (13 per cent), according to the World Health Organisation's NCD-India profile for 2018. It is crucial to evaluate governmental health schemes from time to time to ensure that they are addressing the target population affected by CVDs effectively.</p>
Body	<ul style="list-style-type: none"> • CVD Risk Factors • Research • Poverty and CVD Risk factors • Indian government initiatives • Way Ahead
Conclusion	<p>The conventional belief that Cardiovascular Disease (CVD) is low among</p>

the poor is no longer valid. The major risk factors of CVD like Diabetes, Hypertension, Smoking etc have a significant prevalence across all sections, regardless of income. Now governments need to put in place programmes to detect people with CVD risk factors that are targeted particularly at poorer people. Lastly, it is also important to understand why a particular health programme might or might not have worked, so it can be adjusted in order to improve effectiveness if needed.

UPSC Syllabus	Public Health
Why was this question asked?	Q. Can overuse and free availability of antibiotics without Doctor's prescription, be contributors to the emergence of drug-resistant diseases in India? What are the available mechanisms for monitoring and control? Critically discuss the various issues involved. [200 Words] [UPSC Main 2014]
Introduction	Non- Communicable Diseases are estimated to account for 63 per cent of all deaths in the country of which cardiovascular diseases(CVD) lead with 27 per cent overall mortality cause followed by chronic respiratory diseases (11 per cent), cancers (nine per cent), diabetes (three per cent) and others (13 per cent), according to the World Health Organisation's NCD-India profile for 2018. It is crucial to evaluate governmental health schemes from time to time to ensure that they are addressing the target population affected by CVDs effectively.
Body	<p>CVD Risk Factors</p> <ul style="list-style-type: none"> ● Cardiovascular disease (CVD) is a general term for disorders that affect the heart and blood vessels. CVD is the leading cause of death worldwide, with an estimated 17.9 million deaths from CVDs in 2019, representing 32% of all global deaths. 85% of these deaths are due to heart attack and stroke. ● The factors responsible for increase in Cardiovascular disease include diabetes and hypertension, unhealthy diet, lack of physical activity, harmful use of alcohol, overweight, obesity, tobacco use, etc. ● The link between stress and cardiovascular disease is not well understood. However, it is known that stress can influence many of the well-established risk factors for CVD. <p>Research</p> <ul style="list-style-type: none"> ● Recently Researchers pooled individual-level data from 105 nationally representative household surveys across 78 countries,

representing 85% of people living in extreme poverty globally, and sorted individuals by country-specific measures of household income or wealth to identify those in extreme poverty.

- To enable comparison with other income groups in low and middle-income countries (LMICs), researchers also examined the prevalence of CVD risk factors for the population with an income <\$3.20 and <\$5.50 per day, as well as those with an income >\$5.50 per day.
- CVD risk factors (hypertension, diabetes, smoking, obesity and dyslipidaemia) were present among adults in extreme poverty. Most were not treated for CVD-related conditions, particularly hypertension.
- Most were not treated for CVD-related conditions, particularly hypertension.

Poverty and CVD Risk factors

- Extreme poverty is generally defined by the international poverty line of \$1.90 per day.
- Prevalence of hypertension was similar between these poverty level groups and those with higher income levels as per analysis.
- Among those living in extreme poverty and who had hypertension, only 15.2% reported taking blood pressure (BP)-lowering medication and 5.7% had achieved hypertension control (BP<140mmHg/<90mmHg).
- Of those poor living with diabetes, 19.7% reported taking blood glucose-lowering medication.
- Among those living in extreme poverty who should be taking a statin for secondary prevention of CVD according to WHO guidelines, only 1.1% were on the drugs.
- In low-income countries, hypertension treatment and control, diabetes treatment and statin use were low across poverty levels.

Indian government initiatives

- The incidence of cancer in India is 13.92 lakhs, according to the the report of National Cancer Registry Program (2020), and among males, cancers of lung, mouth, oesophagus and stomach are the leading sites across most of registries. Breast cancer is the commonest cancer followed by cervical cancer among females.
- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) was launched in 2010 by Union government.
- It focuses on strengthening infrastructure, human resource

	<p>development, health promotion, early diagnosis, management and referral.</p> <ul style="list-style-type: none"> ● NPCDCS has now been renamed as the National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD) <p>Way Ahead</p> <ul style="list-style-type: none"> ● Governments need to put in place programmes to detect people with CVD risk factors that are targeted at poorer people. ● Education, awareness, and screening programmes should be held in those areas where the socio-economically deprived people live. ● It is then important that once detected, people are referred to care and that care is accessible to them in terms of geography, costs, and overcomes other cultural or educational barriers that people who are less well-off often need to overcome.
<p>Conclusion</p>	<p>The conventional belief that Cardiovascular Disease (CVD) is low among the poor is no longer valid. The major risk factors of CVD like Diabetes, Hypertension, Smoking etc have a significant prevalence across all sections, regardless of income. Now governments need to put in place programmes to detect people with CVD risk factors that are targeted particularly at poorer people. Lastly, it is also important to understand why a particular health programme might or might not have worked, so it can be adjusted in order to improve effectiveness if needed.</p>

Q.30) “Even though first National Policy on Rare Diseases was issued in 2021, but under Utilisation of budgetary allocations for rare diseases is a cause for concern.” In light of the above statement, discuss the condition of rare diseases in India and challenges faced by rare disease patients. (250 words)

Topic- Rare diseases in India	
<p>Introduction</p>	<p>Rare Disease Day was recently observed on the last day of February to raise awareness for rare diseases. Rare diseases, despite their name, are a significant health concern affecting millions worldwide. These diseases, often overlooked in mainstream news due to their low prevalence, can be devastating and life-threatening.</p>
<p>Body</p>	<ul style="list-style-type: none"> ● What is a rare disease? ● Rare Disease Day History ● Rare Disease situation in India ● National Policy on Rare Disease ● Challenges faced

	<ul style="list-style-type: none"> ● Screening for disease
Conclusion	There is a need to build urgency to start treatment of all eligible patients of rare diseases in India and build a continuum of care with sustainable funding support for conditions that necessitate long term care and treatment, classified by the National Policy as Group 3 diseases. Genetic testing for rare diseases in the public health set up can enhance early detection of Rare diseases.

UPSC Syllabus	Rare diseases in India
Why was this question asked?	What do you understand by nanotechnology and how is it helping in health sector? (UPSC Main 2020)
Introduction	Rare Disease Day was recently observed on the last day of February to raise awareness for rare diseases. Rare diseases, despite their name, are a significant health concern affecting millions worldwide. These diseases, often overlooked in mainstream news due to their low prevalence, can be devastating and life-threatening.
Body	<p>What is a rare disease?</p> <ul style="list-style-type: none"> ● A rare disease is one that is loosely defined as occurring infrequently in the population, and as such, what constitutes a rare disease varies from nation to nation. ● The World Health Organisation defines rare disease as an often debilitating lifelong disease or disorder with a prevalence of 1 or less, per 1000 population. ● India currently does not have a standard definition - but the Organisation of Rare Diseases - India, has suggested that a disease is to be defined as rare if it affects 1 in 5,000 people or less. <p>Rare Disease Day History</p> <ul style="list-style-type: none"> ● Rare Disease Day was first observed in 2008 by EURORDIS and the Council of National Alliances to raise awareness about rare diseases. ● It falls on the last day of February, but in leap years like 2024, it is observed on February 29th. ● This day aims to shed light on the challenges faced by individuals and families affected by rare disease. ● The theme for Rare Disease Day 2024 is "Share Your Colours,"

emphasizing the importance of collaboration and support for those with rare diseases.

Rare Disease situation in India

- In India, several rare diseases affect individuals, including Acanthocytosis Chorea, Achalasia Cardia, Acromesomelic Dysplasia, and more.
- These diseases can have severe impacts on individuals and their families, highlighting the need for increased awareness and support.
- In India, it is estimated that there are between 7000 - 8000 rare diseases, but less than 5% have therapies available to treat them.
- Rare diseases affect nearly 1/5th of India's population, educated extrapolations indicate.

National Policy on Rare Disease

- First National Policy on Rare Diseases was issued in March 2021, providing a comprehensive national approach to prevention and management of rare diseases.
- The policy factors in ways to lower the exorbitant cost of treatment, and boost indigenous research.
- The policy envisages the creation of a national hospital based registry of rare diseases, as it will provide rich epidemiological data to define the extent of the problem in India and decide optimal funding for research in rare diseases too.
- The Rare Diseases Policy also focuses on creation of Nidan Kendras for early screening and prevention, as well as plans to strengthen extant secondary and tertiary health facilities at Centres of Excellence.
- The Union Government in May 2022 had allocated ₹50 lakh per patient for the treatment of all rare diseases across the country.

Challenges faced

- Ministry of Health and Family Welfare disbursed to all the Centres of Excellence a sum of approximately ₹109 crore in the last three years.
- However, the total funds utilised so far is only approximately ₹53 crore.
- A whopping 51.3 % of the total funds allocated are still sitting pretty, while patients are losing lives with no access to treatment.
- There are now 12 Centres of Excellence, and of the 11 centres that data is available for, only three CoEs have utilised over 90 % of the funds allotted to them, and one Centre in the honourable

	mention, late 80 percentile mark.
Conclusion	There is a need to build urgency to start treatment of all eligible patients of rare diseases in India and build a continuum of care with sustainable funding support for conditions that necessitate long term care and treatment, classified by the National Policy as Group 3 diseases. Genetic testing for rare diseases in the public health set up can enhance early detection of Rare diseases.

Q.31) 'India accounts for 27 per cent of the total TB cases in the world, according to the Global TB Report 2023 by the World Health Organisation.' In light of the above statement, discuss the challenges hindering the eradication of Tuberculosis (TB) in India and propose measures to address them. (15 marks, 250 words)

Topic- Public Health	
Introduction	Tuberculosis (TB) remains a pressing public health challenge in India despite concerted efforts. Although several positive strides such as increased access to treatment and more accurate molecular diagnostics have been made by India towards the goal of eliminating tuberculosis by 2025, five years ahead of the global target, it continues to have the highest incidence of the bacterial infection.
Body	<ul style="list-style-type: none"> ● About TB ● TB Diagnosis and Access ● Lack of Access to Treatment and Drugs ● Nutritional Support ● Stigma-Free and Gender-Responsive Care ● Economic Support and High-Quality Care ● The Way Forward
Conclusion	India accounts for 27 per cent of the total TB cases in the world, according to the Global TB Report 2023 by the World Health Organisation. Despite the persistent challenges, concerted efforts and proactive measures can significantly contribute to the progress towards Tuberculosis eradication in India. By addressing systemic barriers and adopting a comprehensive approach to care, India can move closer to achieving its goal of eliminating TB by 2025.

UPSC Syllabus	Public Health
Why was this	Q. Despite progress in recent years, there is a need to augment cost,

question asked?	safety and coverage of treatment for rare diseases. Discuss in light of the National Policy for Rare diseases 2021. (UPSC GS - III 2022)
Introduction	Tuberculosis (TB) remains a pressing public health challenge in India despite concerted efforts. Although several positive strides such as increased access to treatment and more accurate molecular diagnostics have been made by India towards the goal of eliminating tuberculosis by 2025, five years ahead of the global target, it continues to have the highest incidence of the bacterial infection.
Body	<p>About TB</p> <ul style="list-style-type: none"> ● Tuberculosis (TB) is caused by a bacterium called Mycobacterium tuberculosis. ● The bacteria usually attack the lungs, but TB bacteria can attack any part of the body such as the kidney, spine, and brain. ● India has the highest burden of TB in the world, with an estimated 2.77 million cases in 2022, which is about 25% of global cases. <p>TB Diagnosis and Access</p> <ul style="list-style-type: none"> ● Access to accurate and affordable TB diagnosis remains a major challenge, particularly in remote and marginalized communities. ● Expanding diagnostic facilities and increasing the coverage of rapid molecular tests are crucial steps in addressing this issue. <p>Lack of Access to Treatment and Drugs</p> <ul style="list-style-type: none"> ● The lack of access to free, quality treatment and drugs poses a significant barrier to TB control efforts. ● Initiatives focusing on improving access to treatment, such as direct benefit transfer schemes and food-basket programs, are essential in addressing this challenge. <p>Nutritional Support</p> <ul style="list-style-type: none"> ● Undernutrition significantly impacts TB occurrence and treatment outcomes. ● Implementing nutritional support programs, coupled with regular nutrition assessment, is imperative to improve patient outcomes and reduce TB incidence. <p>Stigma-Free and Gender-Responsive Care</p> <ul style="list-style-type: none"> ● Addressing stigma associated with TB and providing gender-responsive care are essential in ensuring equitable access to TB services. ● Comprehensive strategies should focus on raising awareness and

	<p>promoting inclusivity in TB care delivery.</p> <p>Economic Support and High-Quality Care</p> <ul style="list-style-type: none"> ● Economic support mechanisms and the provision of high-quality care are essential in mitigating the socioeconomic impact of TB and improving treatment outcomes. ● Strengthening healthcare infrastructure and investing in healthcare workforce capacity are crucial steps in this regard. <p>The Way Forward</p> <ul style="list-style-type: none"> ● Collaborative efforts between the government, healthcare providers, and advocacy groups are paramount in overcoming the challenges posed by TB. ● A holistic approach focusing on improving diagnosis, treatment, and support services is essential to achieve the goal of TB eradication in India.
Conclusion	<p>India accounts for 27 per cent of the total TB cases in the world, according to the Global TB Report 2023 by the World Health Organisation. Despite the persistent challenges, concerted efforts and proactive measures can significantly contribute to the progress towards Tuberculosis eradication in India. By addressing systemic barriers and adopting a comprehensive approach to care, India can move closer to achieving its goal of eliminating TB by 2025.</p>

Q.32) Success of Gaganyaan mission can boost Indian Science and technology as a whole and help in reduction of foreign technology dependence for India. Discuss. (250 words)

Topic- Space technology	
Introduction	<p>India recently revealed the names of the four Air Force officers selected for the Gaganyaan Mission, the country's maiden attempt at sending humans into Space. It would have the first Indian astronauts in 40 years and the first ones to go on an Indian spacecraft. Just three countries – the United States, Russia and China – have executed human spaceflight missions till now. But Gaganyaan holds a much bigger significance for Indian science in general.</p>
Body	<ul style="list-style-type: none"> ● Background ● Importance of human space flight mission for India ● Benefits of space technology ● Science and technology Missions ● New policy initiatives
Conclusion	<p>India is emerging as a strong player in the global commercial market.</p>

However, scientists say the new initiatives may lose steam unless there is sustained attention and engagement and some basic issues in science education and research are addressed. The scientific community, in general, has been welcoming of new initiatives taken by government. However, it points out that these are just a small part of the structural reforms needed to significantly improve the quality and quantity of India's science output.

UPSC Syllabus	Space Technology
Why was this question asked?	Q. Private players can bring in the innovation needed for developing space-based applications and services". In the light of this statement, highlight the role of private sector in India's space science and technology. (UPSC Mains 2022)
Introduction	India recently revealed the names of the four Air Force officers selected for the Gaganyaan Mission, the country's maiden attempt at sending humans into Space. It would have the first Indian astronauts in 40 years and the first ones to go on an Indian spacecraft. Just three countries – the United States, Russia and China – have executed human spaceflight missions till now. But Gaganyaan holds a much bigger significance for Indian science in general.
Body	<p>Background</p> <ul style="list-style-type: none"> • India has suffered in the past because of the technology denial policies of other countries, with access to technology often used as a blackmail measure. • Space agency struggled with the cryogenic technology that is critical for powering rockets for decades, also due to US sanctions in the 1990s and the Missile Technology Control Regime (MTCR). • It slowed down India's Space programme by almost two decades. • After India conducted its nuclear tests in 1998, even basic parts, like certain kinds of transistors and semiconductors, were denied due to economic sanctions. <p>Importance of human space flight mission for India</p> <ul style="list-style-type: none"> • More than 600 people from about 50 different countries have travelled to Space till now. However, for a country to execute a human spaceflight mission is still a novelty. • With the renewed interest in going back to the Moon, this time for resource extraction and building a colony, a big rush in

human spaceflight missions is expected in the coming decades. Countries are making almost a fresh start this time, using newer materials and technologies.

- Becoming an active participant in this new-age Space exploration would ensure access to rights, resources and new technologies.
- India could then build expertise and opportunities for these technologies' early adoption.
- Further, it wants to ensure that it gains access and control over novel technologies that might become critical for economic growth in the future.

Benefits of space technology

- India has used space technology in many ways to address issues in agriculture, disaster management, natural resource management, and urban planning.
- Space programmes in the past have also resulted in hundreds of important spin-off technologies, including some breakthrough interventions in the health and medicine sector like Magnetic Resonance Imaging (MRI), heart implants, and advanced water filtration.
- Sustaining a human spaceflight programme would also force the development of a science and technology ecosystem.
- This would help ensure that India never again ends up at the receiving end of technology denial regimes.

Science and technology Missions

- In the last couple of years, the government has announced separate missions on green hydrogen, **quantum computing**, and on artificial intelligence.
- The Union Government has approved a Rs 19,744 crore **National Green Hydrogen mission** that aims to make India a 'global hub' for using, producing and exporting green hydrogen.
- The Union Cabinet approved the **National Quantum Mission** (NQM) in a bid to aid scientific and industrial research and development in quantum technology.
- The mission involves a cost of Rs 6,003.65 crore from 2023-24 to 2030-31, and aims to put India among the top six leading nations involved in the research and development in quantum technologies.
- **IndiaAI Mission** - Union Cabinet approved the IndiaAI Mission with an outlay of Rs 10,372 crore for the next five years, under

which the government will allocate funds towards subsidising private companies looking to set up AI computing capacity in the country, among other things.

- **National Deep Tech Startup Policy** serves as a comprehensive framework to address the challenges faced by deep tech startups and provide definitive policy interventions to enhance the ecosystem.
- India has joined some of the biggest international scientific projects like the Laser Interferometer Gravitational-Wave Observatory (LIGO) and the Square Kilometer Array, which would involve building several facilities within the country.

New policy initiatives

- India fares pretty poorly on most research indicators and the available resources, both human and capital, might not be adequate for putting the country on the path to becoming a technology powerhouse.
- To correct the above situation, in the interim budget this year, the government announced the setting up of a Rs 1 lakh crore fund to provide long-term low-cost or zero-interest loans for research and development.
- It also promised to launch a new scheme for promoting deep-tech capabilities in the defence sector.
- The repeated requests to foreign companies to set up manufacturing facilities within India for chips and semiconductors, vital for all sorts of electronics, also serve the same purpose.
- The human spaceflight and advanced Space programmes add another dimension to this cause.

Conclusion

India is emerging as a strong player in the global commercial market. However, scientists say the new initiatives may lose steam unless there is sustained attention and engagement and some basic issues in science education and research are addressed. The scientific community, in general, has been welcoming of new initiatives taken by government. However, it points out that these are just a small part of the structural reforms needed to significantly improve the quality and quantity of India's science output.

Q.33) As a China-specific missile, the successful test of the Agni-5 MIRV missile represents a watershed moment for India’s nuclear deterrent.” In light of the above statement, discuss salient features of Agni-5 ballistic missile. How is it technically superior to other missiles presently available in the country? 250 words

Topic- Defence Technology	
Introduction	The Agni-5 ballistic missile test dubbed the “Divastra”, that was conducted by the Defence Research and Development Organisation (DRDO), is strategically consequential. With a range of over 5,000 kilometres, the Agni-5 is the longest-range missile India has tested so far. The potency of India’s nuclear deterrent is enhanced because this variant is integrated with Multiple Independently Targetable Re-entry Vehicles (MIRVs).
Body	<ul style="list-style-type: none"> ● Background ● Significance of MIRVs ● About Mission Divyastra test ● Countering China ● China factor ● Requirements of MIRV-capable ballistic missiles ● Issues in developing MIRV
Conclusion	Now that India has integrated the Agni-5 with multiple warheads, greater balance has been restored in the Sino-Indian nuclear deterrent relationship. The Agni-5 with MIRV capability bolsters India’s nuclear capabilities vis-à-vis China. It puts China on notice — that India is preparing itself to counter the advances Beijing has made with its missile and missile defence programmes. With the successful test of the Agni-5 MIRV missile, India has crossed a key benchmark in its march to become a highly credible nuclear and missile power.

UPSC Syllabus	Defence Technology
Why was this question asked?	Q. How is S-400 air defence system technically superior to any other system presently available in the world? (2021 10 Marks)
Introduction	The Agni-5 ballistic missile test dubbed the “Divastra”, that was conducted by the Defence Research and Development Organisation (DRDO), is strategically consequential. With a range of over 5,000 kilometres, the Agni-5 is the longest-range missile India has tested so far. The potency of India’s nuclear deterrent is enhanced because this variant is integrated with Multiple Independently Targetable Re-entry

Vehicles (MIRVs).

Body

Background

- The five designated nuclear weapons states — the United States, Russia, the People’s Republic of China, France and the United Kingdom — already possess MIRV capable projectiles which are integrated into their respective nuclear arsenals.
- The ‘Agni’ series of missiles constitute the backbone of India’s nuclear weapons delivery, and Agni V is the longest-range missile in the arsenal, with a reach of over 5,000 km.
- Agni V can reach most of China, especially with a smaller warhead, which would increase the range further.
- Multiple Independently Targetable Re-entry Vehicles (MIRVs) technology gives better leverage in this regard.

Significance of MIRVs

- MIRV system is equipped with indigenous avionics systems and high accuracy sensor packages that ensure the re-entry vehicles reach the target points with the desired accuracy.
- A MIRV is a ‘missile bus’ whose passengers are nuclear bombs and which facilitates a single booster to deliver them to different targets.
- MIRVs are a “force multiplier” because one MIRV-ed missile can strike several targets.
- A MIRV-ed missile enhances the redundancy as a single missile can perform the role of several.
- MIRVs are also useful for saturating and penetrating ballistic missile defences.
- It can help defeat ballistic missile defences, which is important since India’s adversaries are deploying sophisticated air defences.

About Mission Divyastra test

- The DRDO conducted the test from Dr A.P.J. Abdul Kalam Island in Odisha, with various telemetry and radar stations monitoring multiple re-entry vehicles.
- In 2003, India declared its nuclear doctrine based on a ‘no first use’ (NFU) policy and reserved the right to massive retaliation in case it was attacked first.
- India announced its decision to maintain a minimum credible deterrence and a nuclear triad – comprising aircraft, missiles, and submarines – to deliver these nuclear weapons which has since been completed with ballistic missile submarines of the

Arihant class conducting deterrence patrols.

Countering China

- India has joined a very select group of countries to develop an MIRV ballistic missile.
- China is building ballistic missile defences such as the **Hongqi (HQ-19) ground-based ballistic missile interceptors**, which have been tested, but their capacity to intercept Intermediate Range Ballistic Missiles (IRBMS) such as the Agni-5 is still suspect.
- The HQ-19s would eventually have the range to intercept the earlier variants of the Agni IRBM, especially when configured to carry only a single warhead.
- Ballistic missile defences paired to a growing Chinese nuclear arsenal would have significantly eroded India's nuclear striking power as it would bequeath to China a strong damage limitation capability, especially if the Chinese were to carry out a nuclear first strike against India.
- To be sure, more testing of the MIRV-capable Agni-5 will be required to render the Indian nuclear ballistic missile arsenal more credible as the end-user – the Indian armed services are unlikely to be satisfied with a single test.

Requirements of MIRV-capable ballistic missiles

- Building MIRV-capable ballistic missiles requires meeting technical **criteria**, such as
 1. nuclear warhead miniaturisation
 2. ensuring that the receptacle that carries the warhead or re-entry vehicle is of low weight or mass before its release from the Post Boost Vehicle (PBV)
 3. having the re-entry vehicles configured precisely to fit into the missile as well their separation from the PBV, which has to be manoeuvrable.
- **Guidance and accuracy are a necessity** as re-entry vehicles have to be spin stabilised during atmospheric re-entry.
- A MIRV-based missile can only strike multiple targets that are within its ambit or geographic footprint.
- With the recent Agni-5 test, India has met these demanding technical requirements.

Issues in developing MIRV

- First, inadequate nuclear testing by New Delhi compromised the extent to which it could miniaturise warheads and MIRV them to strike multiple targets.

	<ul style="list-style-type: none"> ● Second, the lack of sufficient testing also undermined the extent to which the re-entry vehicles could be designed to carry the warheads. ● Further, the yield of the nuclear warheads is likely to be limited due to the small number of atomic tests India has conducted.
Conclusion	<p>Now that India has integrated the Agni-5 with multiple warheads, greater balance has been restored in the Sino-Indian nuclear deterrent relationship. The Agni-5 with MIRV capability bolsters India's nuclear capabilities vis-à-vis China. It puts China on notice — that India is preparing itself to counter the advances Beijing has made with its missile and missile defence programmes. With the successful test of the Agni-5 MIRV missile, India has crossed a key benchmark in its march to become a highly credible nuclear and missile power.</p>

Q.34) Krishi Integrated Command and Control Centre (ICCC) was recently launched by the Union government to help in making informed decisions about agriculture. Discuss the objectives and benefits of this technological breakthrough. What are the challenges with modern technology in field of agriculture? (250 words)

Topic- E-technology in agriculture	
Introduction	<p>Indian Agriculture is a core sector for food security and sustainable development along with poverty alleviation. Indian farming sector is dominated by small and marginal farmers and increasing their productivity and incomes can make a major contribution to economic advancement while reducing hunger and poverty. Central Government has brought new initiatives in integrating electronic technology and farming. In this regard, Krishi Integrated Command and Control Centre (ICCC) was recently set up at Krishi Bhavan in New Delhi, to leverage technology for the advancement of agricultural practices.</p>
Body	<ul style="list-style-type: none"> ● About Krishi ICCC ● Objective of the ICCC ● Benefits ● Technological breakthrough ● Challenges faced by modern technology
Conclusion	<p>A holistic approach is needed to address the challenges faced by Indian agriculture to achieve inclusive growth and sustainable development. Going forward, the Krishi Integrated Command and Control Centre (ICCC) can create an ecosystem based on which individual farmer-level advisories can be generated through apps like Kisan e-mitra, a chatbot developed for PM-</p>

Kisan beneficiaries. The integrated visualisation of the data will enable quick and efficient decision-making for policy makers in the field of agriculture and farmer's welfare.

UPSC Syllabus	E-technology in agriculture
Why was this question asked?	Q. What are the present challenges before crop diversification? How do emerging technologies provide an opportunity for crop diversification. (UPSC Main 2021)
Introduction	Indian Agriculture is a core sector for food security and sustainable development along with poverty alleviation. Indian farming sector is dominated by small and marginal farmers and increasing their productivity and incomes can make a major contribution to economic advancement while reducing hunger and poverty. Central Government has brought new initiatives in integrating electronic technology and farming. In this regard, Krishi Integrated Command and Control Centre (ICCC) was recently set up at Krishi Bhavan in New Delhi, to leverage technology for the advancement of agricultural practices.
Body	<p>About Krishi ICCC</p> <ul style="list-style-type: none"> • Technologies can enable the transition of modern agriculture in the field. While some technologies have transformed the way we operate, there is a need for spreading technological advancements in agriculture, like artificial intelligence and machine vision. • Krishi Integrated Command and Control Centre (ICCC) is a tech-based solution involving multiple IT applications and platforms, which is designed to help in making informed decisions. • ICCC is located in the Ministry of Agriculture & Farmers' Welfare, which is responsible for legislation, policy formation, and implementation of initiatives in the agriculture sector. • The ICCC uses state of the art technologies such as artificial intelligence, remote sensing, and Geographic Information Systems (GIS). <p>Objective of the ICCC</p> <p>The Krishi Integrated Command and Control Centre (ICCC) will enable comprehensive monitoring of the farm sector by making available at one place</p> <ol style="list-style-type: none"> 1) geospatial information received from multiple sources,

- including remote sensing
- 2) plot-level data received through soil survey
 - 3) weather data from the India Meteorological Department (IMD)
 - 4) sowing data from Digital Crop Survey
 - 5) farmer- and farm-related data from Krishi MApper, an application for geo-fencing and geo-tagging of land
 - 6) market intelligence information from the Unified Portal for Agricultural Statistics (UPAg); and
 - 7) yield estimation data from the General Crop Estimation Survey (GCES).

Benefits

- Krishi Integrated Command and Control Centre (ICCC) collect and process large amounts of granular data — on temperatures, rainfall, wind speed, crop yields and production estimations — and presents it in graphical format.
- Through ICCC, information on crop yields, production, drought situation, cropping patterns (geographic region-wise and year-wise) in map, timeline, and drill-down views can be easily seen on screens at ICCC office.
- Relevant trends (periodic and non-periodic), outliers, and Key Performance Indicators (KPIs), and insights, alerts, and feedback on agriculture schemes, programmes, projects, and initiatives can be seen in the system.

Technological breakthrough

- Krishi Integrated Command and Control Centre (ICCC) uses platforms including the Krishi Decision Support System (DSS) to collect micro-level data, process it, and present the macro picture.
- The ICCC has a contact centre and a helpdesk facility, with the operator's handset capable of being converted into a call centre.
- If needed, farmer beneficiaries can interact directly with officials or the Minister through video conferencing facilities.
- The AI-/ machine learning-based system will identify a farmer through his/ her mobile number or Aadhaar, and match it with the farmer's field information obtain through land records, historical crop sowing information from the crop registry, weather data from IMD, etc.
- It will then generate a customised advisory in the local language of the farmer. For this, the system will use the Bhashini platform

that allows translation into several Indian languages.

Challenges faced by modern technology

- Resistance to agricultural mechanization, especially among smallholder farmers due to accessibility, cost, and maintenance issues, often acts as a detrimental factor.
- Climate/ weather prediction through artificial intelligence finds slow acceptance in a country like India where marginal farming, fragmented landholdings, and other reasons act as impediments.
- Biotechnology has helped boost cotton production in India over the past decade. Yet, except for Bt cotton, no other genetically modified (GM) edible crop is cultivated in India to date due to public resistance.

Conclusion

A holistic approach is needed to address the challenges faced by Indian agriculture to achieve inclusive growth and sustainable development. Going forward, the Krishi Integrated Command and Control Centre (ICCC) can create an ecosystem based on which individual farmer-level advisories can be generated through apps like Kisan e-mitra, a chatbot developed for PM-Kisan beneficiaries. The integrated visualisation of the data will enable quick and efficient decision-making for policy makers in the field of agriculture and farmer's welfare.

Indian Economy

Q.35) 13th Ministerial Conference of WTO, was recently concluded in Abu Dhabi with Abu Dhabi Ministerial Declaration. What are issues faced by global trade in recent times? Discuss issues that were raised by India in the conference, highlighting the successes of the conference? (250 words)

Topic- India and World Trade Organisation	
Introduction	World is facing significant interruptions in global shipping routes and supply chain in present times. The world's trade Ministers gathered in the U.A.E. on February 26 for a high-level WTO meeting with no clear prospects for breakthroughs, amid geopolitical tensions and disagreements.
Body	<ul style="list-style-type: none"> ● World Trade Organisation ● Problem faced by World's trade in recent times ● Public stockpiling of food grain ● Fisheries Subsidies Agreement at WTO ● Successes of the conference ● Way Ahead
Conclusion	The latest meeting of World Trade Organisation (WTO's) Trade Ministers concluded with little progress in important issues that affects global trade, including agriculture issues raised by India. India has strongly objected to the efforts of developed nations to include environmental or climate change issues at the World Trade Organisation (WTO). Going forward, India will have to redouble efforts to retain policy space for sensitive sectors, especially farms.

UPSC Syllabus	India and World Trade Organisation
Why was this question asked?	Food security bill is expected to eliminate hunger and malnutrition in India. Critically discuss various apprehensions in its effective implementation along with the concerns it has generated in WTO. (2013)
Introduction	World is facing significant interruptions in global shipping routes and supply chain in present times. The world's trade Ministers gathered in the U.A.E. on February 26 for a high-level WTO meeting with no clear prospects for breakthroughs, amid geopolitical tensions and disagreements.

Body

World Trade Organisation

- The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations.
- At its heart are the WTO agreements, negotiated and signed by the bulk of the world's trading nations and ratified in their parliaments.
- The WTO's top decision-making body is the Ministerial Conference.
- Ministerial conferences usually take place every two years.

Problem faced by World's trade in recent times

- The World Trade Organization and the global trading system are facing serious challenges in terms of unilateral measures and counter measures by some members, deadlock in important areas of negotiations
- Ukraine war, the Israel conflict and issues related to the Red Sea are among the factors which are impacting trade.
- Maritime transport is the backbone of international trade and is responsible for 80% of the global movement of goods.
- Attacks on shipping affecting the Suez Canal add to geopolitical tensions impacting shipping routes in the Black Sea, and severe drought due to climate change disrupting shipping in the Panama Canal.
- India, the United States, and 12 other members of the Indo-Pacific Economic Framework (IPEF) For Prosperity signed a supply chain resilience agreement that would reduce their dependence on China and mitigate risks of economic disruptions from supply chain shocks.
- Global supply chains face risks from government policies encouraging domestic industries and impeding cross-border goods and capital flows.
- For some time, recalibration in supply chain has been going on to reduce dependence on China.

Public stockpiling of food grain

- Developed countries have raised flags over India's food security programmes, such as buying rice and wheat from farmers at a government-administered price for distribution through public ration shops.
- India has pitched for changes in the formula to calculate the food

subsidy cap and inclusion of programmes implemented after 2013 under the ambit of the 'Peace Clause'.

- The WTO members at the Bali ministerial meeting in December 2013 had agreed to put in place a mechanism popularly called the 'Peace Clause' and committed to negotiating an agreement for a permanent solution.

Fisheries Subsidies Agreement at WTO

- The fisheries subsidies agreement was agreed upon by the WTO in 12th Trade Ministerial meeting
- It prohibits subsidies for Illegal, Unreported and Unregulated (IUU) fishing and overfished stocks.
- It also restricts subsidies for fishing on the high seas, outside the jurisdiction of coastal countries and Regional Fisheries Management Organization
- India still has to ratify the agreement, which requires the approval of two-thirds of the WTO's 164 members to become operational.
- As per India, there are several ambiguities on the proposals that were on the table.
- Some of the subsidies that certain countries give to their resource-poor fishermen were sought to be excluded.
- India has been steadfastly demanding that developing countries be given a longer transition period of 25 years to put an end to OCOF subsidies within their EEZ.

Successes of the conference

- The 13th World Trade Organisation (WTO) Ministerial Conference (MC13) of the World Trade Organisation (WTO) has concluded with the acceptance of the Abu Dhabi Ministerial Declaration.
- **India** with help of South Africa and other nations was **able to block a China-led Investment Facilitation for Development Agreement(IFDA)** from being integrated into the WTO as a plurilateral agreement.
- IFDA aimed to create legally binding provisions for facilitating investment flows, and it requires states to augment regulatory transparency and predictability of investment measures.
- India, South Africa and others opposed it because it was a joint statement initiative and did not have a ministerial mandate.
- **On e-commerce, members agreed to extend the moratorium on customs duties** on electronic transmissions for another two years, meaning that trade in purely digital products and services

	<p>will remain tariff-free until MC14 in Cameroon.</p> <ul style="list-style-type: none"> ● Members agreed to implement Special and Preferential Treatment on Sanitary and Phytosanitary measures (SPS) and Technical Barriers to Trade (TBT), which supports producers in least developed countries (LDCs) in gaining better access to global supply chains. ● An agreement to fulfil the MC12 mandate to achieve a fully and well-functioning Dispute Settlement system by the end 2024 was signed. ● MC13 saw the accession of two new WTO Members, with Comoros and Timor-Leste becoming the 165th and 166th members of the body – and the first new Members since 2016. <p>Way Ahead</p> <ul style="list-style-type: none"> ● The WTO itself must do much more to stay relevant in an increasingly polarised world ● India is pushing for forging consensus with like-minded countries at the World Trade Organization (WTO) to prevent entry of non-trade issues such as environment and sustainability into the trade negotiations. ● However, there is a need for structural reform in the WTO functioning as a multilateral trading system, like decision-making within the organization based on rational and non-partisan principles ● There is a need to make WTO more effective in protecting the interests of small nations against stronger countries.
Conclusion	<p>The latest meeting of World Trade Organisation (WTO's) Trade Ministers concluded with little progress in important issues that affects global trade, including agriculture issues raised by India. India has strongly objected to the efforts of developed nations to include environmental or climate change issues at the World Trade Organisation (WTO). Going forward, India will have to redouble efforts to retain policy space for sensitive sectors, especially farms.</p>

Q.36) 'There is need for enhance urban employment opportunities for women.' Discuss scope and challenges of launching a national urban employment program for women similar to MGNEGA. (250 words).

Topic- Urban Women employment

Introduction Reducing gender gaps and increasing women's empowerment are part of the Sustainable Development Goals. Notwithstanding ethical and constitutional

	imperatives, there is also evidence suggesting that increasing women's employment rates can be an engine for economic growth. To cater to urban women, national Women's Urban Employment Guarantee Act (WUEGA) is need of hour.
Body	<ul style="list-style-type: none"> ● Background ● Data ● Need of national program ● Components ● Women-led initiatives ● Implementation of scheme
Conclusion	Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has been pivotal in providing financial autonomy to women in rural areas. However, urban realities are different. A larger share of unemployed women in urban areas are seeking employment compared to rural areas. The benefits of Urban Employment Program for women far outweigh fiscal conservativeness. It is time to move from income as insurance to assurance of income, especially for women.

UPSC Syllabus	Urban Women employment
Why was this question asked?	Q. 'Empowering women is the key to control the population growth.' Discuss. (UPSC Main 2019)
Introduction	Reducing gender gaps and increasing women's empowerment are part of the Sustainable Development Goals. Notwithstanding ethical and constitutional imperatives, there is also evidence suggesting that increasing women's employment rates can be an engine for economic growth. To cater to urban women, national Women's Urban Employment Guarantee Act (WUEGA) is need of hour.
Body	<p>Background</p> <ul style="list-style-type: none"> ● Despite functioning at a fraction of its intended capacity, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has been pivotal in providing financial autonomy to women in rural areas. ● More than half the MGNREGA workforce are women. However, urban realities are different. Social norms, lack of safety, and hostile transportation options are some of the factors

inhibiting urban women to enter the workforce.

Data

- The Periodic Labour Force Survey (PLFS) pegs women's employment rate in urban areas at 22.9% in the last quarter of 2023.
- There are clear signs of high unmet demand for employment among urban women.
- First, the unemployment rate in urban areas, which is a measure of how many would like employment (irrespective of whether they are actively seeking it or not), is 9% compared to 4% in rural areas.
- A much larger share of unemployed women in urban areas are seeking employment compared to rural areas.
- Further, nearly 25% of urban women have completed higher secondary education compared to 5% in rural areas. The low urban employment rates among women also points to wastage of much potential.

Need of national program

- To address overall urban unemployment, some States have an urban employment programme. While these are not restricted to women, early evidence suggests a higher participation rate for women.
- National Women's Urban Employment Guarantee Act (WUEGA) is envisioned where women form at least 50% (ideally 100%) of the programme management staff.
- Involving women and local communities can also potentially strengthen the constitutional mandate of decentralisation.

Components

- Each worksite would have essential worksite facilities including childcare facilities.
- Work must be available within a 5-km radius and public transportation must be free for women.
- A detailed list of possible urban works such as plantation and harvesting reeds on floating wetlands already exist; these should be supplemented based on local needs and wider consultation.
- Incentives such as automatic inclusion in welfare boards can be created; these could act as agencies to provide maternity entitlements, pensions, and serve as resources for emergency funds.

- Given the low levels of apprentice intake in India, apprenticeships embedded within an urban employment guarantee for women can neatly dovetail with the larger mandate of apprenticeships of making women more job-ready.
- Additionally, it can be a means to empower local communities acting as a single window for grievance registration.
- A social audit unit of WUEGA with at least 50% women staff can be conceived for independent monitoring of the programme.
- Social audits would require an array of skill sets and this could be an important avenue for women who have completed Class 12 to join part time or full time and improve their job readiness.

Women-led initiatives

- In Karnataka, for instance, women handle end-to-end waste management in gram panchayats of selected districts including collection and driving of the 'Swacch' vehicles. Not only has the initiative been a success, it has also enabled several women to acquire driving licenses.
- As per the PLFS, an estimate of the number of women in urban areas in the age group of 15-59 who are out of the workforce is 10.18 crore.
- If we add those who are self-employed and in casual labour, we get about 11.65 crore.

Implementation of scheme

- Such a scheme has to be rolled out in a phased manner with periodic assessments on uptake and the nature of the shelf of works.
- Depending on its positives and challenges, this can pave the way for an urban employment programme for all, not just women.

Conclusion

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has been pivotal in providing financial autonomy to women in rural areas. However, urban realities are different. A larger share of unemployed women in urban areas are seeking employment compared to rural areas. The benefits of Urban Employment Program for women far outweigh fiscal conservativeness. It is time to move from income as insurance to assurance of income, especially for women.

Q.37) 'To boost its shipping industry, India plans to set up a Maritime Development Fund to help manufacture green vessels and ports.' In light of the above statement, discuss the challenges faced by Shipping industry in India. What are the various initiatives taken by Indian government to develop maritime infrastructure, especially Maritime Development Fund. (250 words)

Topic- Infrastructure	
Introduction	The financing of projects in the maritime sector, particularly for buying ships, is a challenge primarily due to lack of long-term capital at competitive rates. Globally tax incentives are being provided for ship leasing management activities. India's proposed Maritime Development Fund – that looks at providing long term, low cost financial support and push towards indigenous ship-building – is likely to be ready by the end of this year.
Body	<ul style="list-style-type: none"> ● Present situation of Shipping industry in India ● Need of Fund ● Sagarmala Program ● Maritime India Vision 2030 ● About Maritime Development Fund ● Challenges in shipping industry ● Way Ahead
Conclusion	As maritime trade is important for economic growth, the government is contemplating the establishment of a Maritime Development Fund (MDF) to offer low-cost, long-term financial support to the shipping sector. Removal of restrictions on foreign portfolio investors (FPI) can bring investments in ship leasing companies. Similarly, lifting restrictions on investment in ship leasing by insurance companies can also be planned by government for development of shipping industry and costal development.

UPSC Syllabus	Infrastructure
Why was this question asked?	Why is Public Private Partnership (PPP) required in infrastructural projects? Examine the role of PPP model in the redevelopment of Railway Stations in India. [150 Words] [10 Marks] [UPSC Main 2022]
Introduction	The financing of projects in the maritime sector, particularly for buying ships, is a challenge primarily due to lack of long-term capital at competitive rates. Globally tax incentives are being provided for ship leasing management activities. India's proposed Maritime Development Fund – that looks at providing long term, low cost financial support and push towards indigenous ship-building – is likely to be ready by the end

of this year.

Body

Present situation of Shipping industry in India

- Right now, India spends close to \$75 billion annually on leasing ships from outside.
- India owns about 2 per cent of the world's total tonnage and has some 1500-odd ships under its flag.
- Indian shipping companies struggle to grow tonnage due to difficulties in accessing required finance, as there is a mismatch in tenure of loan offered (5 to 10 years) versus life of vessel (generally 30-odd or more years).
- Lack of infrastructure status limit potential avenues for long-term low-cost funds for shipping making it less attractive sector.

Need of Fund

- The Maritime Development Fund will help in building local ship-building industry, so that entire value chain can be developed in the country – that include ship-building, flagging, ownership financing, leasing, among others
- Even if the entire value chain of shipping industry does not develop in India, at least Maritime Development Fund will work towards having upto 5 per cent of world's tonnage.
- Maritime Development Fund would also promote cruise tourism and other activities like mechanization and capacity expansion of existing ports through PPP, etc.
- Globally tax incentives are being provided for ship leasing that include having concessional rate of 0 per cent and 8.25 per cent for ship leasing management activities. It is proposed to evaluate similar tax benefits to be extended to domestic ship - lessors and ship management companies.

Sagarmala Program

- The Sagarmala Programme is an initiative by the Shipping Ministry to utilise India's 7,500 km of coastline and advantageous location in the Indian Ocean Region.
- It is a port-led development initiative that aims to enhance infrastructural growth, which will improve logistical competitiveness, increase industrialisation and job creation, and ultimately support the growth of the coastal economy as a whole.
- The Sagarmala Pariyojna can provide more than a million people with assistance and full-time employment near ports and beaches.

Maritime India Vision 2030

- The Maritime India Vision 2030 is an extension of the Sagarmala programme, introducing a series of policy initiatives and development projects.
- The development project will see an investment of Rs. 3.4 Lakh Crore to increase cargo volumes to 2600 million tonnes. This will lead to job creation and generate approximately 20,000 crore in revenue for state-owned major ports.
- The funding for the Maritime India Vision 2030 will be overseen by a dedicated Maritime Development Fund (MDF).

About Maritime Development Fund

- Maritime India Vision 2030, outlines a raft of policy initiatives and development projects involving an investment of ₹3.5 lakh crore to double cargo volumes to 2,600 million tonnes (mt), which will help create over 2 million additional jobs (direct and indirect) and unlock additional annual revenue of about ₹20,000 crore for state-owned major ports.
- Maritime Development Fund is proposed to start with a corpus of ₹25,000 crore spread over a seven-year-period.
- Multiple funding mechanisms— Debt, Equity, VGF and buyer credit support will be part of the fund mandate.
- Setting up a ₹25,000-crore Maritime Development Fund (MDF) and a pan-India port regulatory authority are among the highlights of the Maritime India Vision 2030, a ten-year blueprint for the maritime sector.

Challenges in shipping industry

- Despite introduction of 100 percent foreign direct investment (FDI) in shipping, tonnage tax regime and various incentives like a so-called right of first refusal (RoFR) for Indian cargoes and coastal cargo reservations, there has been no appreciable increase in Indian-flagged tonnage.
- The financing of projects in the maritime sector, particularly for buying ships, is a challenge primarily due to lack of long-term capital at competitive rates.
- There are issues such as lack of domain expertise in existing domestic financial institutions, stringent terms of domestic loans for small and new shipping companies and higher collateral requirements by domestic banks/financial institutions which restrict financing in the maritime sector.
- Indian lenders often insist on real estate collateral for processing

shipping loans.

- Indian fleet owners suffer from high interest rates compared to other countries (16 percent in rupee terms or LIBOR+600 bps in US dollar terms compared to LIBOR+100 bps in US dollar terms for foreign shipping companies) and low debt tenures (6-7 years versus 10-12 years for foreign shipping companies) in relation to the life of vessels, resulting in a lack of level playing field as foreign shipping companies compete directly with Indian ships for India's export-import (EXIM) and coastal cargoes.
- Shipping sector is also not considered as an 'infrastructure' sector despite having long useful lives of 15-25 years.

Way Ahead

- Contours of the Maritime Development Fund fund, and guidelines towards spending the same, is currently under-discussion and it will have participation from industry stakeholders, financial institutions and Ministries..
- The government, had previously set up several sectoral Financial Institutions (FIs) such as PFC Ltd, REC Ltd, IRFC Ltd, HUDCO Ltd and NHB to cater to the large and specific financing requirements of infrastructure sectors such as power, railways and housing, which led to their well-rounded development.
- Keeping the key financing requirements of maritime sector and examples of sector specific financing institutions in India into consideration, a dedicated maritime sector focused institution - Maritime Development Fund - is proposed.

Conclusion

As maritime trade is important for economic growth, the government is contemplating the establishment of a Maritime Development Fund (MDF) to offer low-cost, long-term financial support to the shipping sector. Removal of restrictions on foreign portfolio investors (FPI) can bring investments in ship leasing companies. Similarly, lifting restrictions on investment in ship leasing by insurance companies can also be planned by government for development of shipping industry and costal development.

Q.38) India signed a Trade and Economic Partnership Agreement (TEPA) with a bloc of four European countries, formally known as the European Free Trade Association (EFTA). Critically analyse the benefits of the deal for India amid inclusion of non-trade issues in the deal. (250 words)

Topic- Free Trade Agreements of India	
Introduction	India recently signed a trade agreement with the four-nation European Free Trade Association (EFTA), an intergovernmental grouping of Iceland, Liechtenstein, Norway and Switzerland. The deal brings in \$100 billion in investment over 15 years, with the EFTA looking at joint ventures that will help India diversify imports away from China. India and the EFTA also agreed to largely keep "sensitive" farm products and gold imports out of the pact.
Body	<ul style="list-style-type: none"> ● Background ● Importance of the deal ● Commercial benefits to India ● Limitations ● Status of India's free trade pact negotiations
Conclusion	The EFTA deal assumes greater symbolic significance than the size of trade flows involved. It signals that India's apparent aversion to such trade pacts since 2014, capped by its walkout from the Regional Comprehensive Economic Partnership in 2019, is likely a thing of the past. A country that has often been criticised for its high import tariffs and protectionist approach, now seems willing and able to walk the talk on free trade when many nations are turning protectionist.

UPSC Syllabus	Free Trade Agreements of India
Why was this question asked?	Q. How would the recent phenomena of protectionism and currency manipulations in world trade affect macroeconomic stability of India? (UPSC Main 2018)
Introduction	India recently signed a trade agreement with the four-nation European Free Trade Association (EFTA), an intergovernmental grouping of Iceland, Liechtenstein, Norway and Switzerland. The deal brings in \$100 billion in investment over 15 years, with the EFTA looking at joint ventures that will help India diversify imports away from China. India and the EFTA also agreed to largely keep "sensitive" farm products and gold imports out of the pact.

Body

Background

- India is EFTA's fifth-largest trading partner after the EU, the United States, the UK and China
- India signed a Trade and Economic Partnership Agreement (TEPA) with a bloc of four European countries — Iceland, Liechtenstein, Norway and Switzerland, formally known as the European Free Trade Association (EFTA).
- The pact has been in the works since 2008 but slipped off India's to-do list after the UPA government's exit.
- The EFTA pact, is expected to be ratified by the end of 2024.
- The two-way trade between India and EFTA was \$18.65 billion in 2022-23, compared to \$27.23 billion in the previous fiscal year, with a trade deficit of \$14.8 billion. Switzerland is currently India's largest trading partner in the EFTA bloc, followed by Norway.

Importance of the deal

- For India, the speed with which the EFTA deal has been dusted off and sealed within months of resuming negotiations is creditable.
- It constitutes the second major trade pact in recent years since the deal with the United Arab Emirates, and the first such arrangement with a western nations' grouping.

Commercial benefits to India

- The funds from the EFTA region include Norway's \$1.6 trillion sovereign wealth fund, the world's largest such 'pension' fund, which posted a record profit of \$213 billion in 2023 on the back of strong returns on its investments in technology stocks.
- India could see investment flow into the pharma, chemical sectors, food processing and engineering sectors.
- In market access terms, the deal offers more room for Indian services firms, with easier visa rules, so that they can also tap other European markets using these countries as a base.
- Professionals (architects, accountants and nurses), can also expect more opportunities.
- Most goods exports already get duty-free treatment in Switzerland, India's largest EFTA trade partner, so the lynchpin in this deal is the in-built goal to nudge \$100 billion of fresh foreign direct investment into India and create a million jobs over 15 years.

- Indian consumers can expect cheaper wines and chocolates, while producers may access cheaper machinery.

Limitations

- It is first time that India has agreed to include non-trade issues such as labour, human rights, environment and gender in an economic agreement.
- Think tank Global Trade Research Initiative (GTRI) said that exporting agricultural produce to Switzerland remains challenging due to the complex web of tariffs, quality standards, and approval requirements.
- Switzerland's policy of tariff-free entry for all industrial goods from any country, with effect from January 1, would affect benefits to Indian companies

Status of India's free trade pact negotiations

- An interim deal with Australia that kicked in late 2022, is yet to be followed through to a comprehensive agreement.
- Parleys for a deal with the Gulf Cooperation Council, mooted since 2004, are yet to take off.
- A deal with Canada has been waylaid by political frictions.
- Talks are on with the European Union (EU) and the United Kingdom, with the latter likely in the last mile.

Conclusion

The EFTA deal assumes greater symbolic significance than the size of trade flows involved. It signals that India's apparent aversion to such trade pacts since 2014, capped by its walkout from the Regional Comprehensive Economic Partnership in 2019, is likely a thing of the past. A country that has often been criticised for its high import tariffs and protectionist approach, now seems willing and able to walk the talk on free trade when many nations are turning protectionist.

Internal Security

Q.39) “The Sela Tunnel, which was “dedicated to the nation”, is a key border infrastructure project as it aids faster military movement to the Line of Actual Control (LAC).’ In Light of the above statement, discuss the importance of border infrastructure and challenges associated. What steps have been taken by Union government to secure borders in recent times? (250 words)

Topic- Border Infrastructure	
Introduction	Effective land border management requires infrastructure development as well as technology utilization. Guarding of the Indian borders is undertaken by the various border guarding forces, which are deployed along different borders. To bring more effective border management, construction of new tunnels like Sela tunnel is of paramount important as they will not only provide a faster and more efficient transport route in the region but is of strategic importance to the country.
Body	<ul style="list-style-type: none">● Importance of Border Infrastructure● Border Road Organisation (BRO)● Challenges related to border area management and development● Government Initiatives to Secure Borders● Way Forward
Conclusion	Border regions are vulnerable to human trafficking and illegal migration, necessitating robust border management measures. India is creating several high-altitude infrastructures to ensure better connectivity to areas close to the Line of Control (LoC) and Line of Actual Control (LAC). Good infrastructure at borders is essential for security as it will help the Indian Army quick mobilisation of resources, formation and logistics in case of a winter emergency.

UPSC Syllabus	Border Infrastructure
Why was this question asked?	Border management is a complex task due to difficult terrain and hostile relations with some countries. Elucidate the challenges and strategies for effective border management. (UPSC Main 2016)
Introduction	Effective land border management requires infrastructure development as well as technology utilization. Guarding of the Indian borders is undertaken by the various border guarding forces, which are deployed

along different borders. To bring more effective border management, construction of new tunnels like Sela tunnel is of paramount important as they will not only provide a faster and more efficient transport route in the region but is of strategic importance to the country.

Body

Importance of Border Infrastructure

- India's borders face inadequate infrastructure despite border wars, with multiple military, para-military, and police forces operating in discord and lack of coordination.
- India is grappling with persistent territorial and boundary disputes with China and Pakistan, as well as porous borders along challenging terrain.
- Smugglers, drug traffickers, and terrorists often take advantage of poor surveillance and infrastructure at borders.

Border Road Organisation (BRO)

- Founded in 1960, the organisation plays a major role in providing defence infrastructure including roads, bridges, highways, airports, tunnels, buildings and other such structures.
- The roads built by BRO play a pivotal role in **national security**. By providing all-weather access to border posts and military installations, the organization ensures the swift and efficient movement of troops and equipment, bolstering defense readiness.
- The roads also serve as essential lifelines during **disaster response** and relief operations, enabling the timely delivery of aid to affected areas.
- BRO's projects extend beyond security concerns to **socio-economic development**. By improving accessibility to markets, healthcare, education, and other essential services, these roads uplift the lives of local communities, especially those residing in remote areas.
- This, in turn, contributes to **balanced regional growth** and overall national progress.

Challenges related to border area management and development

- **Challenging Geographical Terrain:** India's international border spans across various terrains such as marshy lands, salt pans, deserts, valleys, rivers, and forests.
- **Limited Infrastructure:** Limited financial resources may hinder the implementation and maintenance of advanced technologies.

- **Border Disputes:** Ongoing territorial disputes with neighbouring countries affecting border management efforts.
- **Environmental Factors:** Large infrastructure projects in ecologically sensitive areas may cause biodiversity damage, and highway projects within 100 km of India's "Line of Control" are exempt from environmental clearances.
- **Cross-border Criminal Activities:** Illicit activities like organized crime, drug trafficking, and arms smuggling posing challenges to border management.

Government Initiatives to Secure Borders

- **Vibrant Villages Programme:** Border villages with sparse population, limited connectivity and infrastructure will be covered under the new Vibrant Villages Programme, announced in the Budget 2022-23. The move has been taken to counter the Chinese 'model villages' close to the LAC.
- **Border Infrastructure and Management (BIM):** It is a Central Sector Umbrella Scheme which aims to provide better roads, electricity, and communication infrastructure along the border areas.
- **The Border Area Development Programme (BADP):** BADP was initiated in the border areas of the western region during the Seventh Five Year Plan (1985-90). The programme aims to meet the special development needs of the people living in remote and inaccessible areas situated near the international border.
- **Smart Fencing in India (CIBMS):** Comprehensive Integrated Border Management System involves the deployment of advanced surveillance technologies such as thermal imagers, infra-red and laser alarms, aerostats, ground sensors, radars, sonar systems, fiber-optic sensors and a real-time command-and-control system to secure borders.

Way Forward

- Local communities should be actively involved in border management, acting as observers and listeners for the forces, to enhance border surveillance.
- The current inventory of equipment and accessories is being continuously upgraded in line with the new project to ensure optimal utilization.
- Union government should enhance the ability of border security forces to effectively patrol and monitor the border region through technology upgradation.

Conclusion

Border regions are vulnerable to human trafficking and illegal migration, necessitating robust border management measures. India is creating several high-altitude infrastructures to ensure better connectivity to areas close to the Line of Control (LoC) and Line of Actual Control (LAC). Good infrastructure at borders is essential for security as it will help the Indian Army quick mobilisation of resources, formation and logistics in case of a winter emergency.



Post- Independence History

Q.40) “The focus of White Revolution 2.0 would clearly have to be on lowering the cost of producing milk at the farm-gate, as opposed to increasing procurement prices year after year.” In light of the above statement, what are the challenges faced by Dairy farmers? Discuss the potential of White Revolution 2.0 and issues concerned with it. (250 words)

Topic- White Revolution 2.0	
Introduction	India has set itself an ambitious target of raising its milk output by around 100 million metric tonnes by 2033–2034 by creating an additional 2 lakh primary dairy cooperatives. But it cannot be achieved until cost of producing milk at the farm-gate is kept minimum and inadequate marketing facilities is addressed.
Body	<ul style="list-style-type: none">● What is White Revolution?● Problem faced by Dairy Farmers● Potential of White Revolution 2.0● Challenges of White Revolution 2.0● Way Ahead
Conclusion	White Revolution 2.0 can be achieved by bringing scientific breeding and reducing the input cost. The policymakers in states and at the Centre must take note of White Revolution 2.0 and give all possible support to make India a globally significant player in milk production as well as exports and quality by-products.

UPSC Syllabus	White Revolution 2.0
Why was this question asked?	Livestock rearing has a big potential for providing non-farm employment and income in rural areas. Discuss suggesting suitable measures to promote this sector in India. (2015)
Introduction	India has set itself an ambitious target of raising its milk output by around 100 million metric tonnes by 2033–2034 by creating an additional 2 lakh primary dairy cooperatives. But it cannot be achieved until cost of producing milk at the farm-gate is kept minimum and inadequate marketing facilities is addressed.
Body	What is White Revolution? <ul style="list-style-type: none">● White Revolution or Operation Flood, launched on 13 January 1970, was the world's largest dairy development program and a

landmark project of India's National Dairy Development Board (NDDB).

- It transformed India from a milk-deficient nation into the world's largest milk producer, surpassing the United States in 1998 with about 22.29 percent of global output in 2018.
- Within 30 years, it doubled the milk available per person in India and made dairy farming India's largest self-sustainable rural employment generator.

Problems faced by Dairy Farmers

- Around 70-74 per cent of the dairy market is unorganised (unbranded, traditional vendors) and the remaining is organised (cooperatives + private dairies).
- Cost of fodder, feed and raw materials/ingredients have increased significantly, dairies have had to hike procurement prices paid to farmers and, in turn, pass-through the same to consumers.
- Low milk prices: Small dairy households face low prices of milk.
- Shortage of feed and fodder: There is an excessive number of unproductive animals that compete with productive dairy animals for feed and fodder.
- Poor quality feed and fodder: This can lead to low milk productivity.
- Poor healthcare facilities: This can include poor animal health-care facilities, poor extension services, and improper treatment services.
- High cost of medicine: This includes the high cost of concentrate and other feeds.
- High cost of veterinary medicines: This includes the high cost of high yielding breeds of animals.
- Poor quality control: The dairy sector needs to maintain strict hygiene standards throughout the supply chain to ensure consistent quality of dairy products.

Potential of White Revolution 2.0

- White revolution 2.0 can strengthen the scope of vertical integration between cattle feed industries, dairy machinery firms, producer cooperatives unions, state marketing federations, advertising and marketing firms, logistics and distribution agencies.
- The dairy industry in India is unique. With six lakh villages housing about 90 crore people, dairying is not just a large economic activity but also an integral part of our social and

cultural heritage

- Can help small farmers to reduce dependence on crop sales
- Can increase source of income of farmers in low yielding areas like Marathwada, Bundelkhand etc
- India is surrounded by countries and regions that are milk-deficient, such as the Middle East, South Asia and Southeast Asia. There is ample scope for export of value-added milk products.

Challenges of White Revolution 2.0

- The Indian cows and buffaloes are generally low yielding and non-descript because of the lack of healthy cattle-feed and fodder, tropical heat and diseases.
- Despite lack of water and gradually declining arable land, dairy farming is on the rise.
- Free trade agreements, or FTAs, for instance, will allow EU government-subsidised products to be imported from Europe with little entry barriers. This will pose a big challenge to cow-farmers.
- Due to unhygienic production, handling conditions and high temperatures, the quality of milk is adversely affected.
- Because of inadequate marketing facilities, most of the marketable surplus is sold in the form of ghee which is the least remunerative of all milk products.

Way Ahead

- Embryo transfer (ET) technology enables production of several calves from a single HGM cow.
- Improved Veterinary facility specially in artificial insemination of cattle
- There is intervention required to bring down feeding costs of animals. This should be done by farmers cultivating high-yielding protein-rich green fodder grasses and reducing reliance on expensive compound cattle feed and oil-meal concentrates.
- Reduction of taxes on ghee and milk fat has been a long-standing demand of the dairy industry and will ultimately benefit milk producers, increase rural incomes, spur demand and hasten economic recovery.
- Contract/corporate dairying and emerging global dairy trade are required to rope in dairy supply chains stakeholders in order to expand their outreach and “on-the-go” product positioning into the target segment.
- Digital technology-enabled dairy firms need to identify their

	compatible partners and competitors for co-creation through product-process innovation via relationship/value-based marketing.
Conclusion	White Revolution 2.0 can be achieved by bringing scientific breeding and reducing the input cost. The policymakers in states and at the Centre must take note of White Revolution 2.0 and give all possible support to make India a globally significant player in milk production as well as exports and quality by-products.

