

General Studies Paper-III

Question 1. One of the most efficient ways to meet the rising need for energy is nuclear power. Critically Discuss. (150 Words)

Approach:

- Start your answer by writing about the increasing need for energy in India.
- Discuss the advantages of utilising nuclear power as one of the main sources for fulfilling energy needs.
- Discuss the challenges and issues associated with nuclear power use.
- Conclude suitably with a way forward.

Answer:

In the immediate past, the world was dealing with a power and energy crisis. While the factors that caused this emergency differ country to country, the upshot has been a clamour to reduce dependence on fossil fuels and increase production of renewable energy. India will overtake the European Union as the **world's third-largest energy consumer by 2030, according to the International Energy Agency (IEA)**. Thus, we need alternative sources of energy.

Advantages of Nuclear Energy

- **Emissions from Nuclear Power Generation:** Nuclear power is zero-emission. It has no greenhouse gases or air pollutants.
- **Land Usage:** According to US government data, a 1,000-megawatt nuclear plant requires 360 times less land than a similar-capacity wind farm and 75 times less land than solar plants.
- **Nuclear Over Renewables:**
 - **Renewables are Unstable Sources:** Solar and wind energy are intermittent and unstable. The power from these sources can only be generated when the sun shines or wind blows.
 - **Ecological Damage from Renewables:** Wind and solar projects can cause ecological damage to the relatively pristine areas where they are set up.
 - It is conservatively estimated that 500,000 birds are being killed every year by collision with wind turbines in the US.
 - **Nuclear as an Alternative:** In contrast to the intermittent nature of renewables like solar and wind, nuclear power can be used both to cover the electrical base load and for peak load operations.
 - Among the EU nations, Germany's household-sector electricity price is the highest in the EU: \$0.37 per kilowatt-hour (KwH) whereas in France, it's \$0.19.
- **Nuclear Energy and India:** India and USA have signed the Indo-US nuclear deal.
 - In September 2021, the government announced that India would triple its nuclear power capacity in the next 10 years.

Issues Associated with Nuclear Energy

- **Lack of Public Funding:** Nuclear power has never received the quantum of generous subsidy the fossil fuel received in the past and renewable is receiving currently.
 - In absence of public funding, nuclear power will find it tough to compete against natural gas and renewables in the future.

Note:



- **Factors Pulling Nuclear Out of Competition:** Increasingly poor economics of nuclear power across the world, skyrocketing construction costs, made worse by the post-Fukushima safety upgrades, and reliance on massive government subsidies are making nuclear power uncompetitive.
- **Grassroots Resistance:** Reluctance towards new nuclear power plants in India resulted in considerable delay in commissioning the Kudankulam plant and forced the shifting of Westinghouse's first planned project from Gujarat to Andhra Pradesh.
- **Acquisition of Land:** Land acquisition and selection of location for Nuclear Power Plant (NPP) is also a major problem in the country.
 - NPP's like Kudankulam in Tamil Nadu and Kovvada in Andhra Pradesh have met with several delays due to the land acquisition related challenges.

Way Forward

- **Utilising the Available Resources:** The estimated natural deposits of **Uranium** are about 70,000 tonnes and **Thorium** are about 3, 60,000 tonnes in the country.
 - India should invest ambitiously in projects that convert thorium to fissile uranium and produce power.
- **Addressing the Pre-Project Issues:** The government must address issues related to the pre-project activities such as land acquisition at new sites, clearances from various ministries especially from the environment ministry and finding timely foreign collaborators.
- **Addressing Safety Concerns:** Safety, which is a major concern, should be addressed on a priority basis.
 - In this regard, setting up a Nuclear Safety Regulatory Authority at the earliest would be helpful to the nuclear power programmes in the country.
- **Technological Support:** Reprocessing and enrichment capacity also require boost in India. For this India needs advanced technology to fully utilise the spent fuel and for enhancing its enrichment capacity.

Question 2. The Kashmir crisis is intertwined with Kashmir's development crisis. Comment. (150 words)

Approach:

- Start Your answer by contextualizing the Kashmir crisis with development deficit.
- Evaluate the role of development in protracting and intensifying the Kashmir conflict.
- Conclude by acknowledging other factors as well which are responsible for the crisis.

Answer:

Kashmir crisis has been one of the most contentious and divisive issues within India. The reason for this crisis is attributed to various factors including- the lack of development in the region which causes popular disgruntlement with the Government, radicalization, stone pelting and secessionist demands.

Positive Development in Kashmir:

- A look at recent data from the fourth round of the National Family Health Survey (NFHS), which was conducted in 2015-16, suggests that **Jammu and Kashmir fares better on development indicators when compared with all-India averages**, or with insurgency-affected states such as Assam, Nagaland, Manipur and Chhattisgarh.
- Kashmir fares better than many states on socio-economic indicators, but this could be largely attributed to the disproportionate spending by the central government. Between **2000-2016 Kashmir received 10% of the total funds given out to states** by the center even though it only represents 1% of the country's population.

Issues of Militancy due to Lack of development:

- However, the role of socio-economic factors cannot be dismissed altogether, in permeating the crisis in Kashmir. According to the 2011 census, the share of 0–14-year-old population was slightly higher in Jammu and Kashmir

Note:



(34%) than all India (31%). However, students suffer from lack of access to quality education due to curfews, protests and targeting of schools by the terrorists. Youths are indoctrinated and misguided towards stone pelting and other subversive activities.

- Apart from this, Kashmir also has an employment generation issue, which is again linked to low investment in the economy. According to the 2011 census, Jammu and Kashmir had a much smaller share of men workers (who are employed for more than six months in a year) in comparison to the rest of India and other conflict-ridden states.
- The 2015 Kashmir Mental Health Survey conducted by the international humanitarian organisation, Doctors Without Borders, found that **45% of adults in the Kashmir valley display major symptoms of mental distress**, with about one in five adults, or 19% of the adult population, displaying major symptoms of post-traumatic stress disorder (PTSD). The survey put the prevalence of depression in adults at 41%. In contrast, the National Mental Health Survey of India 2015-16 puts the weighted prevalence of depression at the all-India level in single digits.
- Undoubtedly, Jammu and Kashmir lag behind others in attracting investment, creating jobs, becoming a manufacturing or services hub, and ensuring the rights to its citizens. All these have cumulatively affected the prevalent social conditions and shaped Kashmiri perception towards the State machinery.
- Yet, a conflict such as that in Kashmir can rarely be pinned down to just one cause. Years of armed conflict, infiltration aided by Pakistan, and the heavily militarized environment has taken an emotional toll on the state's population. For the permanent cessation of this conflict, India needs to move forward with a humanitarian approach, creating better educational and economic prospects for local youth along with dealing sternly with cross border terrorism.

Question 3. "Self-reliance in defence manufacturing is a crucial component of effective defence capability and to maintain national sovereignty and achieve military superiority." Analyse the statement in the context of defence manufacturing in India. (150 Words)

Approach:

- Start your answer by giving a brief about status of defence manufacturing in India.
- Discuss challenges related to Indigenous Defence Manufacturing.
- Discuss the steps to be taken to promote self-reliance in defense.
- Conclude suitably.

Answer:

Self-reliance in defense manufacturing means increasing the indigenous content in the manufacturing of defense equipments and not depending on imports for meeting the defense needs.

Significance:

- The **superpower ambition, growing complexity of security challenges** in India's neighbourhood and economic power (India poised to become a \$5 trillion-dollar economy by 2025), to safeguard these interests, India requires strong defence capabilities.
- In pursuit of this, for most of the past decade, India has been one of the world's largest arms importers (accounting for about **12% of global arms imports**). However, with **60-70% import-dependence for weapons, spares and ammunition** create vulnerabilities during military crises.

Challenges of Indigenous Defence Manufacturing:

- **Too Much Delay:** In the past five years, the Indian government has approved over 200 defence acquisition proposals with the transfer of technology provision, valued around Rs 4 trillion, but most are still in relatively early stages of processing.

Note:



- **Public Sector Driven:** India has four companies (**Indian ordnance factories, Hindustan Aeronautics Limited (HAL), Bharat Electronics Limited (BEL) and Bharat Dynamics Limited (BDL)**) among the top 100 biggest arms producers of the world.
 - All four of these companies are public sector enterprises and account for the bulk of the domestic armament demand. Governments usually have tended to privilege Defence Public Sector Units (DPSUs) over the private sector, despite 'Make in India'.
- **Lack of Critical Technologies:** Poor design capability in critical technologies, inadequate investment in R&D and inability to manufacture major subsystems and components hamper the indigenous manufacturing. The relationship between the R&D establishment, production agencies (public or private) and the end-user is extremely weak.
- **Long Gestation Period:** The creation of a manufacturing base is capital and technology-intensive and has a long gestation period. For a factory to reach optimum levels of capacity utilisation, it could take anywhere between five to 10 to even 15 years and by the time a unit commences production, in the meanwhile the product loses its relevance.
- **Poor Manufacturing Environment:** Also, issues related to stringent labour laws, compliance burden and lack of skills, affects the development of indigenous manufacturing in defence.
 - Due to this, India hasn't been able to attract FDI in defence.
- **Lack of Coordination:** Overlapping jurisdiction of the Ministry of Defence and Ministry of Industrial Promotion impair India's capability of defence manufacturing.

Steps To Be Taken

- **Newly Appointed CDS:** The Chief of Defence Staff (CDS) could examine the defence acquisitions from a tri-service angle, this may avoid delays and speed up the defence procurement process.
- **Mandatory Transfer of Technology for Subsystems:** It is imperative that when India imports any weapon systems, there should be a plan for the ammunition and spares to be eventually manufactured in India so that we are not driven to seek urgent replenishments from abroad during crises. The same goes for repair, maintenance and overhaul facilities for the upgrading of the weapons platforms.
- **Modernising Ordnance Factories Board:** Over the decades, ordnance factories have been the backbone of indigenous supplies to India's armed forces, from weapons systems to spares, ammunition and auxiliaries. Their structure, work culture and the product range now need to be responsive to technology and quality demands of modern armed forces.
- **Overhauling of Existing Regulations and Practices:** A long-term integrated perspective plan of the requirements of the armed forces should give the industry a clear picture of future requirements.
 - The next Defence Procurement Procedure should incorporate guidelines to promote forward-looking strategic partnerships between Indian and foreign companies, with a view to achieving indigenisation over a period of time for even sophisticated platforms.
- **Promoting Defence Exports:** Investment, Indian or foreign, will be viable when the door to defence exports is promoted with a transparent policy.
- **Resolving Conflict of Interest:** The role of Defence Research and Development Organisation (DRDO) as the government's sole adviser, developer and evaluator of technologies creates a conflict of interest for entry of private players.
 - Thus, the role of DRDO should be revised, in order to give private industry a level playing field for developing defence technologies.

Defence Sector Reforms Under Atma Nirbhar Abhiyan

- **Revision of FDI Limit:** The FDI limit in defence manufacturing under automatic route is raised from 49% to 74%.
- **Project Management Unit (PMU):** The government is expected to begin time-bound defence procurement and faster decision making by setting up a Project Management Unit (for contract management purposes).

Note:



- **Reduction in Defence Import Bill:** The government will notify a list of weapons/platforms banned for imports and thus such items can only be purchased from the domestic market.
- Separate budget provision for domestic capital procurement.
- **Corporatisation of the Ordnance Factory Board:** It will include a public listing of some units, ensuring a more efficient interface of the manufacturer with the designer and end-user.

Self-reliance in defence manufacturing is a crucial component of effective defence capability and to maintain national sovereignty and achieve military superiority. The attainment of this will ensure strategic independence, cost-effective defence equipment and may lead to savings on defence import bills, which can subsequently finance the physical and social infrastructure.

Question 4. Explain how Fintech Revolution (FinTech) help to improve the delivery of financial services in India and discuss its challenges. (150 Words)

Approach:

- Start your answer by giving a brief about Fintech.
- Discuss key growth drivers of fintech in India opportunities related to FinTech.
- Discuss Associated challenges with fintech.
- Conclude your answer by giving a way forward.

Answer:

Fintech revolution

Recently, India has overtaken China as Asia's top financial technology (FinTech) market. Having emerged as the world's second-largest fin-tech hub (trailing only the US), India is experiencing the 'FinTech Boom'.

Fintech is used to describe new technology that seeks to improve and automate the delivery and use of financial services. **The key segments within the FinTech space include Digital Payments, Digital Lending, BankTech, InsurTech and RegTech, Cryptocurrency.** FinTech now includes different sectors and industries such as education, retail banking, fundraising and nonprofit, and investment management to name a few. FinTech is amongst the most thriving sectors at present in terms of both business growth and employment generation. Apart from this, FinTech can also help in the furtherance of the goal of financial inclusion.

Active Areas of FinTech Innovation

- Cryptocurrency and digital cash.
- Blockchain technology, that maintains records on a network of computers, but has no central ledger.
- Smart contracts, which utilize computer programs (often utilizing the blockchain) to automatically execute contracts between buyers and sellers.
- Open banking, a concept that leans on the blockchain and posits that third parties should have access to bank data to build applications that create a connected network of financial institutions and third-party providers.
- Insurtech, which seeks to use technology to simplify and streamline the insurance industry.
- Regtech, which seeks to help financial service firms meet industry compliance rules, especially those covering Anti-Money Laundering and Know Your Customer protocols which fight fraud.
- Cybersecurity, given the proliferation of cybercrime and the decentralized storage of data, cybersecurity and fintech are intertwined.

Key Growth Drivers of FinTech in India

- **Widespread identity formalisation (Aadhar):** 131.68 crore Aadhaar enrolments.

Note:



- **High smartphone penetration:** around 114 Cr. mobile subscribers.
- **India Stack:** Set of APIs for businesses and startups.
- Growing disposable income of Indians.
- Key government initiatives such as UPI and Digital India.
- **Wide middle-class expansion:** By 2030, India will add 140 mn middle-income and 21 mn high-income households which will drive the demand and growth in the Indian FinTech space.

Opportunities Related to FinTech

- **Driving Financial Inclusion in India:** A significant number of people in India remain outside the purview of the formal financial system. Use of financial technologies can help address the gaps in financial inclusion left by the traditional models of banking and finance.
- **Providing Financial Assistance to the MSMEs:** According to the IFC Report, the total addressable credit gap in the MSME segment is estimated to be \$ 397.5 billion. This is where FinTech comes into the picture and has the potential to solve the credit availability issues. With several FinTech start-ups offering easier and quicker access to credit.
- **Enhancing Customer Experience and Transparency:** FinTech start-ups offer convenience, personalisation, transparency, accessibility and ease of use – factors that empower customers to a great extent. The FinTech industry will develop unique and innovative models for assessing risks. Leveraging big data, machine learning, and alternative data to underwrite credit and develop credit scores for customers with a limited credit history will improve the penetration of financial services in India.

Associated Challenges

- **Cyber-Attacks:** Automation of processes and digitization of data makes fintech systems vulnerable to attacks from hackers. Recent instances of hacks at debit card companies and banks are illustrations of the ease with which hackers can gain access to systems and cause irreparable damage.
- **Data Privacy Issue:** The most important questions for consumers pertain to the responsibility for cyber-attacks as well as misuse of personal information and important financial data.
- **Difficulty in Regulation:** Regulation is also a problem in the emerging world of FinTech, especially cryptocurrencies. In most countries, they are unregulated and have become fertile ground for scams and frauds. Due to the diversity of offerings in FinTech, it is difficult to formulate a single and comprehensive approach to these problems.

Way Forward

- **Guarding Against Cybercriminals:** Currently, India majorly relies on import of offensive as well as defensive cybersecurity capabilities. Given the growing scale of adoption of technology, it is imperative for India to attain Atma-Nirbharta (Self-sufficiency) in this domain.
- **Educating Consumers:** Apart from establishing technological safeguards, educating and training customers to spread awareness about the benefits of fintech and guard against cyberattacks will also help in democratisation of FinTech.
- **Data Protection Law:** Established fintech sandboxes by RBI to evaluate the implications of technology in the sector is a step in the right direction. However, there is a requirement for a strong data protection framework in India. In this context, the personal data protection bill, 2019, must be passed after thorough debate and deliberation.
Fintech has the potential to transform other financial services like insurance, investment, remittances. However, regulation must help, not hinder its evolution.

Question 5. What are the causes of high Green House Gas (GHG) emissions from the agriculture sector and discuss the steps that can be taken to minimise the emissions. (150 Words)

Approach:

- Start your answer by giving the status of methane emission.

Note:



- Discuss reasons behind high Methane emissions from Agriculture.
- Discuss measures to reduce methane emissions from Agriculture.
- Conclude suitably.

Answer:

In the backdrop of the 2070 carbon neutrality target set by India at the CoP26 in Glasgow, the Union Budget for 2022-23 has listed “climate action” and “energy transition” as one of the four priorities for the Amrit Kaal.

Agriculture contributes 73% of the country’s methane emissions. Agricultural and allied activities such as rice cultivation, rearing of domestic animals and biomass burning account for 22%-46% of the global methane concentration.

Agricultural Emissions and Climate Smart Agriculture

Share of Agricultural Emissions

- As per the national GHG inventory, the agriculture sector emits 408 MMT (million metric ton) of CO₂ equivalent. Rice cultivation is the third highest source (17.5%) of GHG emissions in Indian agriculture after enteric fermentation (54.6%) and fertiliser use (19%).
- Paddy fields are anthropogenic sources of atmospheric nitrous oxide (N₂O) and methane (CH₄), which have been reckoned as 273 and 80-83 times more powerful than CO₂ in driving temperature increase in 20 years’ (as per IPCC AR6, 2021).
- The amount of CH₄ emitted from paddy fields of India is 3.396 teragram (1 teragram = 109 kilograms) per year or 71.32 MMT CO₂ equivalent.

Reasons behind high Methane emissions from Agriculture:

- The damage is largely a result of the various kinds of subsidies — on urea, canal irrigation and power for irrigation.
- The Minimum Support Prices (MSP) and procurement policies concentrated on a few states and largely on two crops, rice, and wheat, has led to their overproduction.
- As of 1 January 2022, the stocks of wheat and rice in the country’s central pool were four times higher than the buffer stocking requirement.
- Despite the record distribution of rice in the Public Distribution System (PDS) and exports in 2020-21, the rice stocks with the Food Corporation of India (FCI) are seven times the buffer norms for rice.
- This data not only reflects inefficient use of scarce capital, but also the large amount of greenhouse gases (GHG) embedded in these stocks.

Underlying Issues

- There is scientific evidence that intermittent flooding reduces water and methane emissions but increases nitrous oxide emissions.
- Thus, lowering methane emissions through controlled irrigation does not necessarily mean net low emissions.
- Also, India does not report N₂O emissions in its national GHG inventories.
- The present scope of GHG emissions in rice production does not include:
 - Emissions due to burning rice residues
 - Application of fertilisers
 - Production of fertilisers for rice
 - Energy operations like harvesting
 - Pumps
 - Processing
 - Transportation

Note:



Paddy fields require about 4,000 cubic metres of water per tonne of rice for irrigation. This high amount of water needed ends up blocking oxygen from getting to the soil, which creates the perfect conditions for bacteria that release methane.

Measures to reduce Methane emissions from Agriculture:

- **Climate-Smart Agriculture (CSA):** It is an integrated approach to managing landscapes (cropland, livestock, forests and fisheries) that addresses the interlinked challenges of food security and accelerating climate change. CSA aims to simultaneously achieve three outcomes: Increased Productivity, Enhanced Resilience and Reduced Emissions.
- **Revisiting Policies:** The Economic Survey 2021-22 points out that the country is over-exploiting its ground water resource, particularly in the northwest and some parts of south India which is primarily due to paddy cultivation on 44 million hectares. Although this has helped India achieve food security, it's time now to save groundwater and the environment. This calls for revisiting policies to subsidise power and fertilisers, MSP and procurement and reorient them towards minimising GHG emissions.
- **Efficient use of fertilizer:** to reduce the wastage of fertilizers and for its efficient use the method of fertigation can be used.
- **Adoption of zero-tillage:** No-till farming, in which farmers don't plow under their fields between crops, releases far smaller amounts of a potent greenhouse gas into the air than conventional farming.
- **Management of water used to irrigate paddy**
- **Encouraging Farmers:** Farmer groups and the private sector can be mobilised to develop carbon markets in agriculture, both at the national and international levels. Moreover, specific water, fertiliser and soil management practises can lead to triple win - reducing the climate impacts of rice cultivation while increasing productivity of this culturally important grain and increasing farmer profits.
- **Carbon Pricing:** According to the International Monetary Fund (IMF), the world needs a carbon tax of \$75 per tonne by 2030 to reduce emissions to a level consistent with a 2°C-warming target. Many countries have begun to implement carbon pricing. It is high time for India to announce indicative carbon pricing and create a vibrant carbon market to incentivise green growth in Amrit Kaal.
- **Increasing Farmer Awareness:** The right approach is to give the rice-producing-farmers the right advice and incentives at the right time so that they add only as much water or fertilisers as the rice plant needs. Rice farming shall be made more sustainable, without having a negative impact on farmers' livelihood.

What is needed going forward is the flow of sufficient financial resources to on-the-ground organisations that have the cultural competence and scientific capability to bring the right advice to farmers at the right times.

Question 6. Recently, the Parliamentary Standing Committee on Science and Technology, Environment, Forests, and Climate Change submitted its report on the proposed Wildlife (Protection), Amendment Bill, 2021". In this context discuss the main features of the Wild Life (Protection) Amendment Bill, 2021.

Approach:

- Start your answer by giving the brief about the standing committee report on the Bill.
- Discuss the key features of the bill and also discuss issues with the proposed amendment bill.
- Conclude suitably.

Answer:

The Wildlife (Protection) Act, 1972 provides a legal framework for the protection of various species of wild animals and plants, the management of their habitats, and the regulation and control of trade in wild animals, plants and products made from them.

The Act also lists schedules of plants and animals that are afforded various degrees of protection and monitoring by the government.

Note:



The Act has been amended several times, with the last amendment having been made in 2006.

The standing committee has found that some species were excluded from various schedules of wildlife and plants that have been proposed by the Environment Ministry and has recommended a revised listing of schedules to include these species.

Key features of the Bill

- **Implementing Provision of CITES:** The Bill seeks to implement provisions of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The Bill provides for the central government to designate a:
 - Management Authority, which grants export or import permits for trade of specimens.
 - Every person engaging in trade of a scheduled specimen must report the details of the transaction to the Management Authority.
 - As per CITES, the Management Authority may use an identification mark for a specimen.
 - The Bill prohibits any person from modifying or removing the identification mark of the specimen.
 - Additionally, every person possessing live specimens of scheduled animals must obtain a registration certificate from the Management Authority.
 - Scientific Authority, which gives advice on aspects related to impact on the survival of the specimens being traded.
- **Rationalizing Schedules:** Currently, the Act has six schedules for specially protected plants (one), specially protected animals (four), and vermin species (one). The Bill reduces the total number of schedules to four by:
 - Schedule I for species that will enjoy the highest level of protection,
 - Schedule II for species that will be subject to a lesser degree of protection and
 - Schedule III that covers plants.
 - It **removes the schedule for vermin species**. Vermin refers to small animals that carry diseases and destroy food.
 - It inserts a new schedule for specimens listed in the Appendices under CITES (scheduled specimens).
- **Invasive Alien Species:** The Bills empowers the central government to regulate or prohibit the import, trade, possession or proliferation of invasive alien species.
 - Invasive alien species refers to plant or animal species which are not native to India and whose introduction may adversely impact wild life or its habitat.
 - The central government may authorize an officer to seize and dispose the invasive species.
- **Control of Sanctuaries:** The Act entrusts the Chief Wild Life Warden to control, manage and maintain all sanctuaries in a state.
 - The Bill specifies that the actions of the Chief Warden must be in accordance with the management plans for the sanctuary. For sanctuaries falling under special areas, the management plan must be prepared after due consultation with the Gram Sabha concerned.
- **Conservation Reserves:** Under the Act, state governments may declare areas adjacent to national parks and sanctuaries as conservation reserves, for protecting flora and fauna, and their habitat. The Bill empowers the central government to also notify a conservation reserve.
- **Surrender of Captive Animals:** The Bill provides for any person to voluntarily surrender any captive animals or animal products to the Chief Wild Life Warden. No compensation will be paid to the person for surrendering such items. The surrendered items become property of the state government.
- **Penalties:** The Act prescribes imprisonment terms and fines for violating the provisions of the Act. The Bill increases these fines.

Issues with the Proposed Amendments:

- The amendment made to Section 43 of the WLPA permits elephants, a Schedule I animal, to be used for 'religious or any other purpose'. This move has been criticised by wildlife activists and animal experts. This would thereby

Note:



potentially increase the demand for illegal capture of wild elephants, followed by cruel training in kraals, which are small, dark wooden enclosures.

- The Wildlife Protection Amendment Bill, 2021 introduces a regulatory framework for 'invasive alien species' in the Indian environmental legislative regime. However, despite being a well-intended step, the scope of the provision remains narrow and inadequate for managing the menace of invasive species in the Indian ecology. In its current form, the restrictive understanding of the word 'alien' in the Bill excludes invasive native species from its purview.
- According to critics under the proposed amendments, the striped hyena and Indian fox, which come in the second schedule, could also be considered vermin. This reclassification has been done without any scientific study. The bill should introduce criteria to determine vermin so that endangered species are not adversely affected.

Nevertheless, the new proposed bill is advancement over the Wild Life (Protection) Act, 1972 and it will help to cover up the loopholes found in the old act.

Question 7. India has historically practised disaster management in a reactive manner. Do you believe that our current perspective on catastrophe management has to be changed? (150 Words)

Approach:

- Briefly describe 'disaster' and 'disaster management'.
- Discuss the disadvantages of a reactive approach to managing disasters.
- Then talk about how disaster management can be made more holistic.
- Conclude suitably.

Answer:

Disaster is a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. Primarily, disasters are triggered by natural hazards or are human-induced, or as a result from a combination of both. Whereas, Disaster Management can be defined as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters.

The disaster management approach in India traditionally focuses on relief and rehabilitation in post disaster scenario also known as a reactive approach.

Disadvantages of Reactive Approach to Disaster Management

The major disadvantages of a reactive approach to disaster management are:

- **Enhanced loss of lives and material:** Reactive approaches focus on relief and immediate rehabilitation and ignore preventive disaster reduction policies. Such an approach causes a higher amount of loss of lives and material.
- **Absence of adaptive approach to different types of disasters:** For different types of disasters, response measures may vary which are not possible to suitably incorporate in reactive approach to disaster management. Reactive approach is like 'one size fits all' approach to disaster management.
- **Absence of Early Warning Systems** in reactive approach causes delayed response to disaster. The provision of timely and reliable information, through identified institutions, allows the community and the government machinery to reduce the risk and be adequately prepared to face the hazard.

The current position in disaster management reflects a post-mortem type of approach and little attention has been paid to disaster risk reduction strategies that have the potential to save thousands of lives by adoption of simple preventive measures.

By following these preventive measures, we can shift our focus from the way we perceive disaster management in present times and handle it in a better way:

Note:



- Coherent disaster risk reduction strategies and a '**culture of prevention**' should be identified and suitably adopted to curb the growing phenomenon of disaster related loss of lives and property.
- Disaster management should include the '**systematic development** and application of policies, strategies and practices to minimize vulnerabilities, hazards and the unfolding disaster impacts throughout a society, in the broad context of sustainable development'. It should include appraisal of likelihood and intensity of hazards and analysis of vulnerabilities faced by the community.
- Crucial to all these efforts, however, is the existence of a '**safety culture**' in societies. Inputs like education, training and capacity building play a very significant role.
- The **traditional knowledge** available from the community should also be used along with knowledge acquired through research and past experiences.

It needs to be understood that such preparedness cannot be a 'one time' effort, but it is a continuous process. Disasters are no longer to be considered as occurrences that are to be managed through emergency response services. So, there is a need to foster a culture of prevention and identification of the key issues to be addressed, especially in the development process.

Disaster Management must embark upon a strategy aimed at holistic human development integrating the sustainable development goals, and policies and practices that harness people's strengths instead of vulnerabilities.

Question 8. Hydrogen is one of the cleanest fuels which can provide better alternatives to fossil fuels. In the light of the statement discuss the issues with utilisation of hydrogen technology as a fuel. (150 Words)

Approach:

- Start the answer by briefly discussing the context of using hydrogen as an alternate fuel.
- Discuss the pros and cons of hydrogen as a source of energy.
- Conclude suitably.

Answer:

Recently, the government has launched the **National Hydrogen Energy Mission (NHEM)** in Budget 2021. The NHEM proposes a roadmap for using hydrogen as an energy source and augmenting India's growing renewable capacity with the hydrogen economy.

Hydrogen is a clean source of energy and considered an alternative source of renewable energy. However, there are many challenges before leveraging it.

Pros of Hydrogen as a fuel

- **Renewable and Abundant:** It's the most abundant element in the universe, is lighter, energy-dense, and two-three times more efficient than burning petrol.
 - It may take some time to acquire it, but it is renewable, so no one would have to worry about wasting it like other sources of fuel.
- **No Catastrophic Emissions:** Another unique trait that separates hydrogen from other fuel sources is that it is non-toxic and non-polluting.
 - India's electricity is heavily coal dependent. Hydrogen will replace fossil fuels, address pollution, and oil-price rise.
 - It will benefit transportation (contributes 1/3rd of India's greenhouse-gas emissions), iron and steel, and chemicals sectors.

Cons of Hydrogen as a fuel

In spite of being a relatively cheaper source of energy for many, hydrogen also comes with its share of shortcomings as well.

Note:



- **Expensive to Extract:** Hydrogen only exists in chemical compounds like hydrocarbon and water. However, it can be separated using the method of electrolysis, which is quite expensive.
- **Lack of Infrastructure:** There is no infrastructure that is there to replace hydrogen as the prime source of fuel (e.g., petrol or diesel) for land vehicles.
- **Safety Issue:** Hydrogen is highly combustible. It is stored at very high (up to 700 bar) pressure, but the tank is outside the passenger bay. This makes the explosion risk very high.
 - Further, hydrogen is at a lower density than gasoline, it has to be kept at lower temperatures to maintain its liquid form and effectiveness as a fuel source.

India has set the goal to decarbonize by 2050. In this pursuit, it envisages installing 175 GW of renewable energy capacity by 2022. In this context, the National Hydrogen Energy Mission is a step in the right direction

Question 9. How effective are international organisations and partnerships at preventing the funding of terrorism around the world? (150 words)

Approach:

- In the introduction, briefly explain 'terror financing'.
- Explain the need to curb terror financing.
- Analyse the role of various international organisations and collaborations in controlling terror financing.
- Give a forward-looking conclusion.

Answer:

The terror financing involves providing finance or financial support to individual terrorists or non-state actors. Terrorists without funding cannot purchase weapons, equipment, supplies, or services. The source of terrorist funds may be licit or illicit, and is done through criminal activities, including drugs or arms trafficking, extortion, and kidnapping for ransom.

Significance of stopping Terror-Financing:

Terrorism financing not only threatens the internal security but can also undermine economic development and financial market stability. It is therefore of paramount importance to stem the flow of funds to terrorists as:

- Curbing and disrupting the flow of funds to terrorist outfits is one of the most effective ways to fight terrorism.
- The money trail can easily be traced through their transactions, withdrawals, which can not only prevent future attacks but also provide insights for further investigations.
- As terrorists and terrorist groups continue to raise money with use of various means, countries must make it a priority to understand the risks they face from terrorist financing and develop policy responses to all aspects of it.

There have been multiple bodies, collaborations which are working to provide a platform for the secure exchange of expertise and financial intelligence to combat money laundering and terrorist financing (ML/TF). They include the **Financial Action Task Force (FATF), Egmont Group of Financial Intelligence Units, Asia/Pacific Group on Money Laundering (APG), UNSC Resolution 2462** etc.

Role of these bodies and collaborations in handling terrorist financing:

- They support national and international efforts to counter terrorist financing and have emerged as a trusted gateway for sharing financial information domestically and internationally in accordance with global Anti Money Laundering and Counter Financing of Terrorism (AML/CFT) standards.
- They have helped in codifying international standards to combat money laundering and terrorist financing.
- They assess and monitor compliance with the FATF standards.
- They help in conducting studies related to money laundering and terrorist financing methods, trends and techniques and thus help in responding to new and emerging threats, such as proliferation financing used for promoting proliferation of nuclear, chemical and biological weapons.

Note:



However, there remain significant challenges in achieving the desired goals and many of the suggestions/recommendations remain on paper.

- First, **lack of a universal agreement** over what constitutes terrorism weakens efforts to formulate a concerted global response.
- Second, **multilateral action suffers from inadequate compliance** and enforcement of existing instruments.
- Third, **although counter radicalization and deradicalization initiatives** have gained some attention over the last five years, **progress is lacking**, particularly in states with limited resources and expertise.
- Fourth, **Counter-terrorism regime lacks a central global body** dedicated to terrorist prevention and response. The landscape for counter-terrorism activity thus lacks coherence.

All the nations should resolve to make the international financial system entirely hostile to terrorist financing. Concerted efforts and a comprehensive approach should be adopted to counter terrorism under the UN auspices on a firm international legal basis. Responsibilities of each and every stakeholder should be assigned to prevent financing of terrorist networks and terrorist actions from their territories.

Question 10. Recently, passed the Criminal Procedure (Identification) Act, 2022 seeks to replace the Identification of Prisoners Act of 1920. Discuss in this context the basic purpose and significance of the Criminal Procedure Identification Act? (150 Words)

Approach:

- Start your answer by giving a brief about the Criminal Procedure (Identification) Act, 2022.
- Give a brief about the Act.
- Discuss the Significance of the Act.
- Discuss the issues with the new Act.
- Conclude your answer by giving a way forward.

Answer:

Criminal Procedure (Identification) Act, 2022 replaced the **Identification of Prisoners Act, 1920**, a colonial era law, and **authorises police officers to take measurements of people convicted, arrested or facing trial in criminal cases.**

Basic Purpose Behind Criminal Procedure (Identification) Act, 2022

- It provides **Legal sanction to the police to take physical and biological samples of convicts** as well as those accused of crimes.
- The police as per section 53 or section 53A of the **Code of Criminal Procedure (CrPC), 1973**, can **collect Data.**

Significance of the Criminal Procedure (Identification) Act, 2022

- **Modern Techniques:**
 - The Act makes **provisions for the use of modern techniques to capture and record** appropriate body measurements.
 - The existing law allowed **taking only fingerprint and footprint impressions** of a limited category of convicted persons.
- **Help Investing Agencies:**
 - It **seeks to expand the 'ambit of persons'** whose measurements can be taken as this will **help the investigating agencies to gather sufficient legally admissible evidence** and establish the crime of the accused person.
- **Making Investigation More Efficient:**
 - It provides legal sanction for taking appropriate body measurements of persons who are required to give such measurements and will **make the investigation of crime more efficient and expeditious** and will also help in increasing the conviction rate.

Note:



Issues with the Act:

- **Violation of Privacy:**
 - Seemingly technical, the legislative proposal **undermines the right to privacy** of not only persons convicted of crime but **also every ordinary Indian citizen**.
 - It has provisions to collect samples **even from protestors engaged in political protests**.
- **Ambiguous Provisions:**
 - Replacing the 1920 Identification of Prisoners Act, the proposed law considerably expands its scope and reach.
 - The phrase **'biological samples' is not described further, hence, it could involve bodily invasions such as drawing of blood and hair**, collection of DNA samples.
 - These are acts that **currently require the written sanction of a magistrate**.
- **Violation of Article 20:**
 - Enables coercive **drawing of samples and possibly involves a violation of Article 20(3)**, which protects the right against self-incrimination.
 - The Bill implied use of force in collection of biological information, could also lead to **narco analysis and brain mapping**.
- **Handling Data:**
 - The records will be preserved for 75 years, the other concerns **include the means by which the data collected will be preserved, shared, disseminated, and destroyed**.
 - Collection can also **result in mass surveillance**, with the database under this law **being combined with other databases** such as those of the **Crime and Criminal Tracking Network and Systems (CCTNS)**.
 - Crime and Criminal Tracking Network & Systems (CCTNS) is a plan scheme conceived in the light of experience of a non-plan scheme namely - Common Integrated Police Application (CIPA).
- **Unawareness among Detainees:**
 - Although it provides that **an arrested person (not accused of an offence against a woman or a child) may refuse the taking of samples**, not all detainees may know that they can indeed decline to let biological samples be taken.
 - And it may be easy for the police to ignore such refusal and later claim that they did get the detainee's consent.

Way Forward

- The concern over privacy and the safety of the data is undoubtedly significant. Such practices that involve the collection, storage and destruction of vital details of a personal nature ought to be introduced only after a strong **data protection law, with stringent punishment for breaches, is in place**.
- Depriving law enforcement agencies of the use of the latest technologies would be a grave disservice to victims of crimes, and the nation at large. Besides **better scrutiny and data protection law, measures need to be taken for better implementation** of the law as well.
- The need is to have **more experts to collect measurements from the scene of crime, more forensic labs, and equipment** to analyse them to identify possible accused involved in a criminal case.

Question 11. Recent findings show that the urban water security in Asian cities including Delhi is in decline. In this context discuss the issues with Water Security and give suggestions to improve it.(250 Words)

Approach:

- Start your answer by giving a brief about water security.
- Discuss issues with the water security.
- Give suggestions to improve water security.
- Conclude suitably.

Note:



Answer:

Water security is a term that refers to a **society's capacity to have enough water of sufficient quality for survival and to carry out different productive activities**. Therefore, a society with water security is in a position to reduce poverty and improve living standards.

The global mega cities like Tokyo, Shanghai, and Delhi are the symbol of the rise of the new Asian century as they are the three biggest in the world, engines of economic growth, producing billions in economic activity for their residents and the world.

But they have a serious problem i.e., there is not enough fresh water available per person for their daily needs.

Issues with Water Security:

- **Amount of Freshwater:** In Asia, there is half as much freshwater as there is globally. However, it supports more than 60% of the population of the world.
- **Low Water Efficiency:** Despite the comparatively large amount of water used in agriculture production, water efficiency is also among the lowest in the world, and low water productivity results in low crop yields.
- **Urban Pollution:** Water problems are common in many big cities. Degradation of the environment has been caused by population and economic growth due to industrial activities and discharge of industrial waste in water bodies. According to a report by the Central Pollution Control Board Indian cities are home to 36 per cent of India's population but account for 70 % of water pollution, Existing water resources just cannot meet the rising demand.
- **Climate change:** Due to climate change, extreme weather events like droughts and floods are becoming more frequent, which exacerbates the problem.

According to 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.

Suggestions to Improve Water Security:

- **Policy Intervention:** Practical interventions can help, like the integrated urban water security assessment framework. It can be used to assess the full spectrum of a city's urban water security by considering the driving forces that can impact it.
- **Leveraging Technology:** Researchers at Thailand's Asian Institute of Technology (AIT) have developed WATSAT, a web-based water security assessment tool that can evaluate where cities stand by measuring five distinct aspects of urban water security: water supply, sanitation, water productivity, water environment and water governance.
- **Local Solutions:** Cities that embrace new ways to manage water can improve the livelihoods of their populations and support continued growth. For example, Bangkok has adopted incentives for water management to include the treatment of wastewater at the household level before being released into public water sources.
- **Planning and implementation:** There are an urgent need for plans to stop water supply losses due to leaking pipes which will also increase productivity.

The drinking Water is scarce on this planet earth and population pressure and wasteful use of it has created its scarcity. Thus, there is a need for whole the mankind to come together and work for conservation and preservation for this scarce resource.

Question 12. Considering the increasing intensity of extreme climatic events and their related hazards there is an increasing focus on green financing at both international and national levels. Discuss. (250 words)

Approach:

- Start your answer by giving a brief about green financing.
- Discuss the need and status of climate finance.

Note:



- Discuss the green finance mechanisms both at the international level and at national level.
- Conclude suitably.

Answer:

Green financing is to **increase the level of financial flows (from banking, micro-credit, insurance and investment) from the public, private and not-for-profit sectors to sustainable development priorities.**

A key part of this is to better manage environmental and social risks, take up opportunities that bring both a decent rate of return and environmental benefit and deliver greater accountability.

Principles of Green Finance:

- **Polluter Pays:** The 'polluters pays' principle is the commonly accepted practice according to which those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment.
- **Common but Differentiated Responsibility and Respective Capability (CBDR-RC):** It acknowledges the different capabilities and differing responsibilities of individual countries in addressing climate change.
- **Underlying Principle:** Developed Countries historically have been the major environmental polluters.

Need for Green Finance:

- Climate finance is **needed for mitigation** because large-scale investments are required to significantly reduce emissions.
- Climate finance is equally **important for adaptation**, as significant financial resources are needed to adapt to the adverse effects and reduce the impacts of a changing climate.
- Climate Financing recognizes that the contribution of countries to climate change and their capacity to prevent it and cope with its consequences vary enormously.
- Hence, developed countries should also continue to take the lead in mobilizing climate finance through a variety of actions, including supporting country-driven strategies and taking into account the needs and priorities of developing country Parties.
- Climate finance is critical to tackle the issues posed by climate change and achieve the goal of limiting the rise in the earth's average temperature to below 2 degrees Celsius over pre-industrial levels, something the 2018 IPCC report has predicted.

Status of Climate Financing:

- **Expected Contributions from Developed Countries:** Required climate finance from developed countries is to transfer USD 1 trillion annually to developing countries to meet their climate targets.
- **Actual Contributions by Developed countries:** Through the **Cancun Agreements in 2010** developed countries committed to a goal of mobilising jointly USD 100 billion per year by 2020 to address the needs of developing countries.
 - However, the **Glasgow Climate Pact (COP26)** noted that the goal of developed country parties has not yet been met.
 - In this regard, the COP26 has requested the Standing Committee on Finance to the United Nations Framework Convention on Climate Change (UNFCCC) to prepare a report in 2022 on progress towards achieving the goal of mobilising USD 100 billion per year to address the needs of developing countries.

Global framework for Climate Financing:

- To facilitate the provision of climate finance, the UNFCCC has established the financial mechanisms to provide financial resources to developing country Parties.
 - **The Adaptation Fund under Kyoto Protocol:** It aims to finance concrete projects and programmes that help vulnerable communities in developing countries that are Parties to the Kyoto Protocol to adapt to climate change.

Note:



- **Green Climate Fund:** It is the financial mechanism of the UNFCCC, established in 2010.
 - India has been pushing for rich countries to meet their Paris Accord climate finance commitment of USD 100 billion per year.
- **Global Environment Fund (GEF):** GEF has served as an operating entity of the financial mechanism since the Convention came into force in 1994.
 - It is a private equity fund focused on seeking long term financial returns by investments in clean energy under climate change.
 - GEF also maintains two additional funds, the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF).

Climate Financing in India:

- **Financing From Domestic Resources:** India's climate actions have so far been largely financed by domestic resources.
 - According to India's Third Biennial Update Report 2021 to the UNFCCC between 2014 and 2019, while the Global Environment Facility and Green Climate Fund has provided grants to a total of only US USD 165.25 million, the corresponding domestic mobilisation amounts to USD1.374 billion.
- **Funds for Green Financing:** Green financing related to climate change is majorly mobilised from the National Clean Energy Fund (NCEF) and National Adaptation Fund (NAF).
 - The Government of India also provides funding through eight missions established under the National Action Plan for Climate Change.
 - It has established a Climate Change Finance Unit (CCFU) in the Ministry of Finance, which is the nodal agency for all climate change financing matters.
- **Perform Achieve and Trade (PAT) Scheme:** The government has undertaken the PAT scheme, targeting carbon emission reduction in 13 energy intensive sectors.
- **Encouraging Foreign Capital:** The Government has permitted Foreign Direct Investment (FDI) up to 100 percent under the automatic route in the renewable energy sector.
- **Encouraging Renewable energy:**
 - The Government has waived inter-state Transmission System (ISTS) charges for inter-State sale of solar and wind power for projects.
 - Making provisions for Renewable Purchase Obligation (RPO) and setting up Renewable Energy parks
 - Announcement of the National Hydrogen Mission.

Way Forward

- **Expanding Scope of Collaboration:** Multi-stakeholder partnerships should be promoted to include major actors in financial markets, banks, investors, micro-credit entities, insurance companies along with the public sector.
- **Holistic Framework:** Green financing could be promoted through:
 - Changes in countries' regulatory frameworks
 - Harmonising public financial incentives
 - Increases in green financing from different sectors
 - Alignment of public sector financing decision-making with the environmental dimension of the Sustainable Development Goals
 - Increases in investment in clean and green technologies
 - Financing for sustainable natural resource-based green economies and climate smart blue economy
 - Increase use of green bonds

Note:



Question 13. According to a study by the United Nations Trade and Development Body (UNCTAD), only about 7% of India's population owned Digital Currency in 2021 but it comes with both advantages and disadvantages. Discuss. (250 Words)

Approach:

- Start your answer by giving a brief about Digital currencies.
- Discuss the features of digital currencies.
- Discuss the advantages and disadvantages of digital currencies.
- Conclude suitably.

Answer:

Digital currency is a **form of currency that is available only in digital or electronic form. It is also called digital money, electronic money, electronic currency, or cybercash.** It does not have physical attributes and is available only in digital form.

The transactions involving digital currencies are made using computers or electronic wallets connected to the internet or designated networks. Whereas, physical currencies, such as banknotes and minted coins, are tangible, meaning they have definite physical attributes and characteristics.

Features of Digital Currency:

- Digital currencies can be centralized or decentralized.
 - Fiat currency, which exists in physical form, is a centralized system of production and distribution by a central bank and government agencies.
 - Prominent cryptocurrencies, such as Bitcoin and Ethereum, are examples of decentralized digital currency systems.
- Broadly, there are three different types of currencies: **cryptocurrency, Virtual currency, and Central Bank Digital Currencies.**

Advantages:

- **Fast Transaction time:** Because digital currencies generally exist within the same network and accomplish transfers without intermediaries, the amount of time required for transfers involving digital currencies is extremely fast.
- **Do not require Physical Manufacturing & Saves Cost:** Many requirements for physical currencies, such as the establishment of physical manufacturing facilities, are absent for digital currencies. Such currencies are also immune to physical defects or soiling that are present in physical currency.
- **Ease Implementation of Monetary and Fiscal Policy:** Under the current currency regime, the Central bank works through a series of intermediaries—banks and financial institutions—to circulate money into an economy. CBDCs can help circumvent this mechanism and enable a government agency to disburse payments directly to citizens.
- **Make Transaction Costs Cheaper:** Digital currencies enable direct interactions within a network. For example, a customer can pay a shopkeeper directly as long as they are situated in the same network.

Disadvantages:

- **Susceptible to Hacking:** Their digital provenance makes digital currencies susceptible to hacking. Hackers can steal digital currencies from online wallets or change the protocol for digital currencies, making them unusable.
- **Volatile Value:** Digital currencies used for trading can have wild price swings. For example, the decentralized nature of cryptocurrencies has resulted in a profusion of thinly capitalized digital currencies whose prices are prone to sudden changes based on investor whims.
- **Unregulated:** It helps to add stability and ensure that there is no undesirable conduct that the established financial

Note:



industry is extensively regulated. The majority of digital currencies are now exempt from this regulation, giving users independence but also making them more vulnerable to questionable behaviour.

- **Push to Criminal Activities:** Although the accessibility of digital currency provides advantages, there are drawbacks as well. The most concerning aspect of this greater access is that it can expose the currency to criminal elements attempting to abuse it. The use of digital currency for money laundering or funding illegal operations is what authorities are most worried about.
- **Uncertainty:** Digital currency is still new and very much in the early phases of growth, in contrast to traditional modes of payment that have endured and appear to have a bright future. The future is so unpredictable, and there is no assurance that the digital monies you already have will remain usable or retain value.

Way Forward

- **Upgradation of Equipment:** There should be an effort to upgrade the old technical instruments with new security features to save them from hacking.
- **Proper Regulation:** There should be a new comprehensive law and related rules and regulations to keep criminal laws in check.
- **Indigenization of Technology:** We should try to manufacture technical equipment domestically as much as possible to save our critical govt. Infrastructure from foreign govt. hacking.
- **International Cooperation:** The issue of digital currency is not a local issue which can be tackled by a single country and hence, it should be discussed internationally.

Question 14. Recently there has been a sudden increase in the popularity of Non-Fungible Tokens (NFT) due to widespread use. In this context discuss the working of Non-Fungible Tokens (NFT) and how they are different from cryptocurrency and the risks posed by them. (250 Words)

Approach:

- Start your answer by giving a brief about Non-Fungible Tokens (NFT).
- Discuss the working of Non-Fungible Tokens (NFT).
- Compare cryptocurrency and Non-Fungible Tokens (NFT).
- Discuss the risks associated with buying NFTs.
- Conclude suitably.

Answer:

Anything that can be converted into a digital form can be an NFT. Everything from drawings, photos, videos, GIFs, music, in-game items, selfies, and even a tweet can be turned into an NFT, which can then be traded online using cryptocurrency.

Working of NFT:

- If anyone converts their digital asset to an NFT, he/she will get proof of ownership, powered by Blockchain.
- There is a need for a cryptocurrency wallet and an NFT marketplace where one can buy and sell NFTs.
 - Some of the NFT marketplaces are OpenSea.io, Rarible, Foundation.
- NFTs are different from other digital forms in that they are backed by Blockchain technology.
- NFTs can have only one owner at a time.
- Apart from exclusive ownership, NFT owners can also digitally sign their artwork and store specific information in their NFTs metadata.
- This will be only viewable to the individual who bought the NFT.

Note:



NFT is different from a cryptocurrency in the following ways:

- Apart from NFTs and cryptocurrencies being built on Blockchain, both are different from each other.
- Cryptocurrency is a currency and is fungible, meaning that it is interchangeable.
 - For instance, if one holds one crypto-token, say one Ethereum, the next Ethereum that the one holds will also be of the same value.
- However, NFTs are non-fungible, which means the value of one NFT is not equal to another.
 - Nonfungible means NFTs aren't mutually interchangeable.
 - Every art is different from others, making it non-fungible, and unique.

Risks associated with buying NFTs:

- **Fraud Risks:** In the recent past, several incidents of NFT scams have been reported including the emergence of fake marketplaces, unverified sellers often impersonating real artists and selling copies of their artworks for half price.
- **Environmental Risks:** In order to validate transactions, crypto mining is done, which requires high powered computers that run at a very high capacity, affecting the environment ultimately.
- **Smart Contract Risks and Maintenance of NFTs:** The risk of smart contracts and NFT maintenance is a prominent one currently prevailing in the NFT market. There are several scenarios where hackers attack a DeFi (Decentralized Finance) network and steal a large amount of crypto.
- **Evaluation:** The main challenge faced in the NFT market is the uncertainty in determining the price of the NFT. Now, the price of any NFT will depend on the creativity, uniqueness, scarcity of the buyers and owners, and a lot more. There are considerable fluctuations in the prices of NFT because there is no fixed standard for any particular type of NFT.
- **Legal Challenges:** There is no legal definition of NFT known in the entire world. Different countries such as UK, Japan, and the EU are moving ahead with different approaches for classifying NFT. This makes it necessary to come up with an international body of non-fungible tokens for setting regulations and legalization in the entire world.
- **Intellectual Property Rights:** The ownership of any NFT is another important topic to consider. When you are attempting to purchase an NFT from the market, you should find out whether the seller actually owns that NFT or not. There are scenarios where people are posing as sellers while they only have replicas. Here, you will only receive the right to use that NFT but not the intellectual property rights.

Before we jump into anything just because of the hype, it is necessary to perform thorough research. When it comes to non-fungible tokens, it is much better if we understand all the risks and challenges first. This will even make it easy for you to buy and sell NFTs in the market by eliminating the risks.

Question 15. Explain the difference between the Gross Domestic Product (GDP) and the Gross Value Added (GVA). (250 Words)

Approach:

- Start your answer by giving a brief about GDP and GVA.
- Discuss the difference between the GDP And GVA.
- Conclude suitably.

Answer:***Gross Domestic Product (GDP)***

- Gross Domestic Product (GDP) gives the economic output from the consumers' side. It is the sum of private consumption, gross investment in the economy, government investment, government spending and net foreign trade (the difference between exports and imports).

Note:



- $GDP = \text{private consumption} + \text{gross investment} + \text{government investment} + \text{government spending} + (\text{exports} - \text{imports})$

Gross Value Added (GVA)

- Gross Value Added (GVA) is a measure of total output and income in the economy. It provides the rupee value for the number of goods and services produced in an economy after deducting the cost of inputs and raw materials that have gone into the production of those goods and services.
- It also gives sector-specific picture like what is the growth in an area, industry or sector of an economy.
- At the macro level, from a national accounting perspective, GVA is the sum of a country's GDP and net of subsidies and taxes in the economy.
 - $\text{Gross Value Added} = \text{GDP} + \text{subsidies on products} - \text{taxes on products}$

In 2015, the Central Statistics Office (CSO) did away with GDP at factor cost and adopted the international practice of GDP at market price and the Gross Value Addition (GVA) measure to better estimate economic activity.

Comparison Between GVA and GDP

- While GVA gives a picture of the state of economic activity from the producers' side or supply side, the GDP gives the picture from the consumers' side or demand perspective.
 - Both measures need not match because of the difference in treatment of net taxes.
- GVA is considered a better gauge of the economy. GDP fails to gauge real economic scenario because of a sharp increase in the output, only due to higher tax collections which could be on account of better compliance or coverage, rather than the real output situation.
- A sector-wise breakdown provided by the GVA measure helps policymakers decide which sectors need incentives or stimulus and accordingly formulate sector-specific policies.
 - But GDP is a key measure when it comes to making cross-country analysis and comparing the incomes of different economies.
- From a global data standards and uniformity perspective, GVA is an integral and necessary parameter in measuring a nation's economic performance. Any country which seeks to attract capital and investment from overseas does need to conform to the global best practices in national income accounting.

Question 16. Do you think that the James Webb Telescope will revolutionize space exploration and how it is different from Hubble space Telescope? (250 words)

Approach:

- Start your answer by giving a brief about the James Webb Telescope.
- Discuss the significance of James Webb Telescope in Space Exploration.
- Discuss the difference between Hubble space Telescope and James Webb Telescope.
- Conclude suitably.

Answer:

James Webb Telescope is the result of an international collaboration between NASA, the European Space Agency (ESA) and the Canadian Space Agency which was launched in December 2021.

It is currently at a point in space known as the Sun-Earth L2 Lagrange point, approximately 1.5 million km beyond Earth's orbit around the Sun.

It's the largest, most powerful infrared space telescope ever built. It's the successor to Hubble Telescope.

Note:



Significance of James Webb Telescope in Space Exploration:

- It can see backwards in time to just after the Big Bang by looking for galaxies that are so far away that the light has taken many billions of years to get from those galaxies to our telescopes
- It will examine every phase of cosmic history from the Big Bang to the formation of galaxies, stars, and planets to the evolution of our own Solar System.
- The goals for the Webb can be grouped into four themes.
 - The first is to look back around 13.5 billion years to see the first stars and galaxies forming out of the darkness of the early universe.
 - Second, to compare the faintest, earliest galaxies to today's grand spirals and understand how galaxies assemble over billions of years.
 - Third, to see where stars and planetary systems are being born.
 - Fourth, to observe the atmospheres of extrasolar planets (beyond our solar system), and perhaps find the building blocks of life elsewhere in the universe.

Difference between Hubble & James Webb Telescope

- **Wavelength:**
 - The James Webb Space Telescope would be observing infrared radiations most primarily covering between 0.6 to 28 microns.
 - Hubble's work involved watching the ultraviolet and the visible spectrum of light. It observes the range of 0.8 to 2.5 microns.
- **Orbits:**
 - Webb Telescope would not be orbiting the Earth. It would be orbiting the sun from 1.5 million kilometres away from the Earth.
 - Hubble orbits the Earth at an altitude of 575 kilometres from it.
- **Vision:**
 - As per NASA, Hubble can see the smallest and the newest of all galaxies.
 - Webb would be able to see the Newborn galaxies as well.
 - Webb's near and mid-infrared instruments would be helpful in studying the first formed galaxies and exoplanets.

Question 17. What do you mean by disruptive technology? Explain the benefits and challenges posed by disruptive technology. (250 Words)

Approach:

- Start your answer by giving a brief about disruptive technology.
- Discuss the benefits of disruptive technology.
- Discuss the challenges with disruptive technology.
- Conclude your answer by giving a way forward.

Answer:

Disruptive technology is an innovation that significantly alters the way that consumers, industries, or businesses operate. It displaces a well-established product or technology, creating a new industry or market.

New technology can either be sustaining or disruptive. While sustaining technology depends on incremental improvements in the already existing technology, disruptive technology is a completely new one.

Disruptive technologies evolved with time, a few years back the automobile, electricity service, and television were disruptive technologies.

Note:



However, the time is changing and so are they. Some of the examples which are included in disruptive technologies that are being used currently involve: Blockchain technology, Artificial Intelligence (AI) etc.

Benefits of Disruptive Technology

- **Innovation in Regular Activities:** One of the key features of disruptive technology is its ability to offer consumers new and notable benefits. When this type of technology enters the marketplace, it changes the entire industry.
- **Improves and Modifies Techniques:** To provide solutions to the problems of the consumers, modern methods need to be adopted. Disruptive innovation modifies how a company evaluates its processes and how to adapt according to them, helps in the provision of better services, and brings about a modification in the industry.
- **Growth of Startup Companies:** Disruptive technology provides opportunities for startup companies to gain a significant foothold in existing industries.
 - This provides a unique chance for small startups to experience rapid growth and potentially outperform larger, more well-established companies.
- **Business Expansion:** When an established business willingly embraces disruptive technology, it enjoys prime opportunities for growth within its current industry or within a new industry created by the technology. This results in the economic growth of the country also.
 - Companies that can smoothly incorporate disruptive technology in their existing line of products and services can help existing customers transition into using the disruptive technology while also capturing new buyers with their entry into the fresh market.
- **Leveraging India's IT Power:** The Indian software industry is well-established and plans to increase connectivity are well underway as part of 'Digital India'.
 - This would allow for the creation of additive manufacturing facilities in small towns and foster industrial development outside of major cities.

Challenges Regarding Disruptive Technology

- **Ongoing Challenges:** Developing countries like India are starting from a difficult position, because they are already grappling with the challenges of low human capital, ineffective institutions, and a difficult business environment.
- **Trust and Ethical Questions:** Disruptive Technology per se is not the problem, but there are ethical issues surrounding privacy, ownership and transparency which are related to these technologies that can become a cause of concern.
- **Challenges in Adaptability:** Disruptive innovations take time to prove in the complex market conditions and a significant time period is also consumed in penetrating the market. Disruptive innovations also have to be adaptive to the market environment.
- **Untested & Time Consuming:** New technology is typically untested and unrefined during its early stages and development can continue for years.
 - Any innovative idea depending upon its utility and ability to meet the market needs has to undergo a gestation period. It takes a significant period for any innovative idea or a product or service to get established in the market.
- **Redundancy of Prevalent Old Technology:** New ideas or business models have got a tendency to disrupt the existing and established ideas/products/services/business models and this creates fierce competition in the market.
 - This is very challenging for any new idea as the existing and established business may take any course to prevent them from being thrown out of the market.

Way Forward

- **Favorable Environment:** A policy framework for the next generation of technology and innovation should focus on creating an enabling environment for disruptive technologies to positively impact the economy, society, and environment, and reduce inequalities.

Note:



- **Holistic Approach:** Whole-of-economy or most-of-society approach should be followed, technology alone will not guarantee success. Policymakers must also account for local contexts and conditions so that they can create social, political and economic ecosystems in which technology creates jobs and drives inclusive growth.
- **Promotion of R&D Sector:** There is a need to encourage the formation of product design centers so that the products are built to suit the Indian environment and consumers.
- **Need for Government Support:** There is a need for government support to provide incentives for distributed manufacturing in smaller towns, and for the IT industry to work on creating platforms and marketplaces that connect consumer demands, product designers and manufacturers in a seamless way.
- **International Cooperation:** Given that various governments have only recently established these types of disruptive technologies like AI, and in some cases are still formulating them, international cooperation is still very much a work in progress. in the setting of standards at the multilateral level.

Question 18. A better solution than privatisation may be to provide public sector banks the ability to self-regulate and operate independently of politics. Justify. (250 Words)

Approach:

- Start the answer by mentioning the context of the need for privatization of banks.
- Mention the rationale of Privatisation of Banks followed by the arguments against it.
- Conclude Suitably.

Answer:

In the recent years, the Indian banking sector has witnessed multiple Public Sector Banks (PSBs) getting scammed and faced huge losses due to high Non-Performing Assets (NPAs). This has prompted the debate for privatization of Public Sector Banks. However, there are many pros and cons related to it.

Rationale of Privatisation of Banks

- **Bulk of NPAs:** The banking system is overburdened with the non-performing assets (NPAs) and the majority of which lies in the public sector banks.
- **Problem of Dual Control:** PSBs are dually controlled by RBI and Finance Ministry. Due to this, RBI does not have all the powers over PSBs that it has over private sector banks.
- **Political Interference:** The government still has a major say in board appointments, this creates an issue of politicization and interference in the normal functioning of Banks.
- **Draining of Profits:** Private banks are profit-driven whereas the business of PSBs is disrupted by government schemes like farm loan waivers etc.

Arguments Against Privatisation of Banks

- **Democratization of Banking:** Banks in India were nationalized for the first time in 1969. Before which they had been lending 67% of their funds to industry and virtually nothing to agriculture.
 - Thus, nationalizing banks helped in the democratization of banking services of the masses.
- **Undermining Social Welfare:** Public banks open branches, ATMs, banking facilities, etc even in the non-profitable rural areas of India or the poorer sides where the possibility of getting big deposits or making money is less.
 - However, Private banks are not inclined to do so and they may prefer opening such facilities mostly in megacities or urban areas.
- **International Precedent:** Most East Asian success stories have been underpinned by financial systems effectively controlled by governments.
 - On the other hand, where banking is largely in the hands of the private sector, have had to rescue private banks from bankruptcy.

Note:



Even though private sector banks have better balance sheets than PSBs, it is very important to consider that Privatization alone would not solve all of the problems faced by the sector. A better solution than privatization may well be giving PSBs autonomy to reform themselves and function free of political interference.

Question 19. By coordinating the development and execution of infrastructure projects, the Gati Shakti initiative, or National Master Plan for Multi-Modal Connectivity, aims to reduce the cost of logistics. Explain (250 Words)

Approach:

- Start your answer by giving a brief about the Gati Shakti scheme.
- Discuss the basic features of Gati Shakti scheme.
- Discuss the need for integrated infrastructure development and discuss the associated concerns.
- Conclude your answer by giving a way forward.

Answer:

Gati Shakti scheme aims to ensure integrated planning and implementation of infrastructure projects in the next four years, with a focus on expediting works on the ground, saving costs and creating jobs.

Basic features of Gati Shakti Scheme:

- The Gati Shakti scheme will subsume the Rs 110 lakh crore National Infrastructure Pipeline that was launched in 2019.
- Besides cutting logistics costs, the scheme is also aimed at increasing cargo handling capacity and reducing the turnaround time at ports to boost trade.
- It also aims to have 11 industrial corridors and two new defence corridors - one in Tamil Nadu and other in Uttar Pradesh. Extending 4G connectivity to all villages is another aim. Adding 17,000 kms to the gas pipeline network is being planned.
- It will help in fulfilling the ambitious targets set by the government for 2024-25, including expanding the length of the national highway network to 2 lakh kms, creation of more than 200 new airports, heliports and water aerodromes.
- It intends to bring together 16 infrastructure related Ministries. This will help in removing long-standing issues such as disjointed planning, lack of standardisation, problems with clearances, and timely creation and utilisation of infrastructure capacities.
- It involves the creation of a common umbrella platform through which infrastructure projects can be planned and implemented in an efficacious manner by way of coordination between various ministries/departments on a real-time basis.

Significance of Gati Shakti Scheme:

- The scheme will help mapping the existing and proposed connectivity projects.
- Also, there will be immense clarity on how different regions and industrial hubs in the country are linked, particularly for last mile connectivity.
- A holistic and integrated transport connectivity strategy will greatly support Make in India and integrate different modes of transport.
- It will help India become the business capital of the world.

Need for Integrated Infrastructure Development:

- There exists a wide gap between macro planning and micro implementation due to the lack of coordination and advanced information sharing as departments think and work in silos.
- According to a study, the logistical cost in India is about 13% of GDP, which is higher than developed countries.
 - Due to this high logistical cost, the competitiveness of India's exports is greatly reduced.

Note:



- It is globally accepted that the creation of quality infrastructure for Sustainable Development is a proven way, which gives rise to many economic activities and creates employment on a large scale.
- The scheme is in synergy with the National Monetisation Pipeline (NMP).
 - The NMP has been announced to provide a clear framework for monetisation and give potential investors a ready list of assets to generate investment interest.

Associated Concerns:

- **Low Credit Off-take:** Although the government had taken up 'strong' banking sector reforms and the Insolvency and Bankruptcy Code had yielded about Rs. 2.4 lakh crore of recoveries on bad loans, there are concerns about declining credit offtake trends.
 - Banks give credit off-takes to help businesses acquire financing for future projects through the promise of future income and proof of an existing market.
- **Lack of Demand:** In the post-Covid-19 scenario, there is a lack of private demand and investment demand.
- **Structural Problems:** Due to land acquisition delays and litigation issues, the rate of implementation of projects is very slow on global standards.
 - Getting approvals is very difficult in terms of land access, environmental clearances; also impending litigation in court delays the infrastructure projects.

PM Gati Shakti is a step in the right direction. However, it needs to address structural and macroeconomic stability concerns, emanating from high public expenditure. Thus, it is imperative that this initiative is underpinned by a stable and predictable regulatory and institutional framework.

Question 20. How might the idea of digital health contribute to the democratisation of healthcare? Discuss. (250 words)

Approach:

- Start your answer by giving a brief about digital healthcare.
- Discuss the benefits of Digital Health Services.
- Discuss the associated challenges with Digital Health Services.
- Conclude suitably.

Answer:

In the last few years, it's been extremely encouraging to see how integrating technology and new innovative tools can improve public service delivery. For example, the development of India Stack and the JAM (Jan Dhan, Aadhaar, and Mobile) trinity.

Similarly, the Covid-19 pandemic re-emphasized the need to reimagine the health system in the digital space. The recent launch of the National Digital Health Mission highlights the use of digital technology in the health sector.

Further, as the cost of treating chronic conditions is increasing and doctor shortages are imminent worldwide, digital health can provide much-needed transformation in pursuit of realizing the goal of the health of all.

In order to realize the vision for universal health coverage, the Government of India launched the National Digital Health Mission (NDHM) in 2020.

Benefits of Digital Health Services

- **Tackling the Spread of a Pandemic:** Once data is recorded and available for analysis, it can help the systems determine both prevalence and genomic data to provide information on disease transmission and geospatial coverage.
 - Innovative use of digital tools such as deep learning and cloud emergency response algorithms has significantly aided emergency room workers during the pandemic to reduce response time.

Note:



- **Patient-Friendly Health:** The deployment of artificial intelligence tools for all aspects of the health system, including triaging, diagnostics, among others, will substantially reduce delays, and, therefore, the costs associated with healthcare.
 - Digital transformation of healthcare is at the core of addressing issues such as resource limitations, a varied population mix, and an urgent need to increase medical reach.
- **Preventive Care:** Emerging technologies not only expedite the development of new drugs but also introduce a completely new class of therapies, such as digital therapeutics (DTx).
 - DTx are software-based solutions that can treat disease or disorder which are linked to lifestyle issues.
 - Thus, digital health has a growing impact on the delivery of care and provides the opportunity to tackle the next frontier in healthcare by shifting the focus from treatment to prevention.
- **Helps in Clinical Trials:** Digital health can harness the power of data that can aid in the analysis of samples and images to diagnose as well as drive better clinical decision-making.

Associated Challenges

- **Risk of Online Fraud:** The lack of access to care and diminishing trust towards the healthcare system can make patients turning to inefficient therapies and online medical quackery.
- **Issue of Health Literacy:** Despite the use of digital technologies, the development of health status is also dependent on health literacy.
 - Those with lower health literacy levels are generally in a worse state of health, visit the doctor more often, use fewer prevention techniques, and on the whole, are more costly for the healthcare system.
- **Addressing Out-of-pocket Expenditure:** Before the transition from traditional health care to digital healthcare, there is a need to protect the poor from the uncertainties of doctor hunting, receiving irrational treatment from unqualified medical practitioners, provide drugs and address the inability to pay for high-end diagnostics.
 - Unless the costs of outpatient treatment are catered, out-of-pocket expenditure will continue before a patient needs hospitalization.
- **Misuse of Data:** Before embracing digital healthcare, there is a need for certain checks and balances to ensure there is no misuse of the data.
 - In this context, the government should expedite enacting the Personal Data Protection Bill, 2019, which will ensure that consent for use of data can only be sought with the defined purposes.

Way forward

- **Privacy Policy:** The Govt. Should come up with a strict policy on the the protection of privacy of data, theft and fraud.
- **Digital Literacy:** There should be efforts to generate awareness among people to make them digitally literate so that they can have easy access to telemedicine.
- **Guidelines for Data Collection:** There should be strict guidelines for safe handling of data and its storage to prevent its theft.

The concept of digital health is the cultural transformation of how disruptive technologies that provide digital and objective data accessible to both caregivers and patients leads to an equal level doctor-patient relationship with shared decision-making and the democratization of care.



Note:

