APPOLO STUDY CENTRE

Time: 3 hours   **Total marks: 250**

SECTION A   **10 x 10 = 100**

Answer all the questions. Answer not exceeding 150 words each

1. **What is meant by Treaty on the Prohibition of Nuclear Weapons (TPNW)? What are its salient features? What is India's position in Treaty on the Prohibition of Nuclear Weapons (TPNW)?**

    அணு ஆயுதத் தடை ஒப்பந்தம் (TPNW) என்றால் என்ன? அதன் முக்கிய அம்சங்கள் என்ன? அணு ஆயுதத் தடை ஒப்பந்தத்தில் (TPNW) இந்தியாவின் நிலை என்ன?

    Treaty on the Prohibition of Nuclear weapons Enters into Force

    - On 22nd January, 2021, the Treaty on the Prohibition of Nuclear Weapons (TPNW) came into force, 90 days after the deposit of the 50* (Honduras) instrument of ratification.

    - Currently, there are 86 signatories and 52 stales parties. On January 22, the Kingdom of Cambodia ratified the treaty.

    About Treaty on the Prohibition of Nuclear Weapons (TPNW)

    - Also known as the Nuclear Weapon Ban Treaty, it is the first legally binding international agreement to comprehensively prohibit nuclear weapons wins the ultimate goal being their total elimination. 4 It was adopted on 7 July 2017 and opened for signature on 20 September, 2017.

    Need
    - Nuclear weapons - unlike chemical weapons, biological weapons, landmines and cluster munitions - are not prohibited in a comprehensive and universal manner.
    - Even the Non-Proliferation Treaty (NPT) of 1968 and nuclear-weapon-free zone contains only partial prohibitions.

    Salient Features

    - It prohibits States Parties from developing, testing, producing, manufacturing, acquiring, possessing, or stockpiling' nuclear weapons or other nuclear explosive devices.

- ❖ Signatories are barred from transferring or receiving nuclear weapons and other nuclear explosive devices control ova-such weapons, or any assistance with activities prohibited under the Treaty.
- ❖ States are also prohibited from using or threatening to use nuclear weapons and other nuclear explosive devices.
- ❖ States Parties cannot allow the stationing, installation, or deployment of nuclear weapons and other nuclear explosive devices in their territory.
- ❖ Non-nuclear-weapon states are required to have, at a minimum, a comprehensive safeguards agreement with the International Atomic Energy Agency (IAEA)"without prejudice" to any future additional agreements.

Significance

- ❖ The Treaty is the first multilateral legally-binding instrument of the international humanitarian law to mitigate the catastrophic consequences of using and testing the nuclear weapons.

Opposition from the Nuclear-Armed States

- ❖ The nine states known to have military nuclear programmes have not signed the TPMW. Nor have Member States of the North Atlantic Treaty Organization (NATO), which in 2016 re-confirmed its commitment to nuclear deterrence. This raises doubts about the impact of this new instrument and its ability to create normative values.
- ❖ The opponents of the treaty make two core arguments.
- ❖ First, it risks undermining me NPT, which is considered the, "cornerstone" of the nuclear weapon's legal architecture, by giving states the option to "forum shop," or choose between the two treaties.
- ❖ Second, the treaty cannot have any normative impact in any event because it has been negotiated without input from the nuclear possessor states and will not be ratified by any of them.
- ❖ Opponents have maintained that the TPNW is divisive and risks further entrenchment of divisions present in extant international non-proliferation and disarmament fora that may hinder further progress.

Arguments for the Treaty from Proponent States

- ❖ Supporters of TPNW argue that it will close a "legal gap" that exists regarding nuclear weapons, which are not expressly outlawed by the NPT.
- ❖ It reinforces the NPT and its Article VI requirement for nuclear disarmament and that it can reduce the salience of nuclear weapons and help prompt more urgent action to reduce nuclear risk and promote disarmament.

India's Stand

- ❖ India has not yet signed or ratified the NPTW. India said that it does not support the treaty and shall not be bound by any of the obligations that may arise from it.
- ❖ India remains committed to the policy of No First Use (NFU) against nuclear weapon states and non-use against non-nuclear-weapon states.

- ❖ India has consistently voted against an annual UN General Assembly resolution since 2018 that welcomes the adoption of the treaty and calls upon all states to sign, ratify, or accede to it "at the earliest possible date".
- ❖ India believes that the treaty does not constitute or contribute to the development of customary international law, nor does it set any new standards or norms.
- ❖ According to India, a nuclear-weapon-free world can be achieved through a step-by-step process underwritten by a universal commitment, and an agreed global and non--discriminatory multilateral framework, as outlined in the country's working paper titled 'Nuclear Disarmament', submitted to the UN General Assembly and the Conference on Disarmament.
- ❖ In this regard, India maintained that it recognises the 'Geneva-based Conference on Disarmament'-(CD) as the single multilateral disarmament negotiation forum & it is not convinced of the potential of the current treaty to address the disarmament issue.

Conclusion

- ❖ Without the support of the nuclear armed states, it may not be possible to promote nuclear disarmament Beyond nuclear-armed states, even those states such as Japan mat are under the extended U.S. nuclear umbrella may be somewhat reluctant to support the TPNW. While prestige may remain a factor in countries' decision to pursue nuclear weapons, security considerations may not entirely be absent.
- ❖ These considerations should not be allowed to prevent progress on nuclear disarmament, of course, but treating such concerns as serious may help move the conversation in a more helpful direction than simply preaching or castigating such states.

2. **Write a short note on Regional Comprehensive Economic Partnership (RCEP) 2020. What are the factors that prompted India's Exit from the Regional Comprehensive Economic Partnership (RCEP)?**
   பிராந்திய விரிவான பொருளாதார பங்களிப்பு (RCEP) 2020 பற்றி ஒரு சிறுகுறிப்பு வரைக. பிராந்திய விரிவான பொருளாதார பங்களிப்பிலிருந்து (RCEP) இந்தியா வெளியேறத் தூண்டிய காரணிகள் யாவை?

- Recently, India decided to opt-out of the 16-nation Regional Comprehensive Economic Partnership (RCEP) trade deal. India held that it will not become part of RCEP until "significant outstanding issues" are resolved.

- The RCEP negotiations were kick-started during the 21st ASEAN Summit in Cambodia in November 2012 and all participating countries sought to finalise and sign a deal by 2020.

RCEP

- The Regional Comprehensive Economic Partnership (RCEP) is a trade deal that was being negotiated between 16 countries.
- They include the 10 Association of Southeast Asian Nations (ASEAN) members (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam) and the six countries with which the bloc has free trade agreements (FTAs) — India, Australia, China, Korea, Japan, and New Zealand.

- The RCEP is billed to be the "largest" regional trading agreement. The countries involved account for almost half of the world's population, contribute over a quarter of world exports, and makeup around 30% of the global Gross Domestic Product.

Reasons for India's Withdrawal

Unfavourable Balance of Trade

- Though trade has increased post-FTA with South Korea, ASEAN countries and Japan, imports have risen faster than exports from India.
- According to a paper published by NITI Aayog, India has a bilateral trade deficit with most of the member countries of RCEP.

Dumping of Chinese Goods

- India has already signed FTAs with all the countries of RCEP except China.
- This is the major concern for India, as after signing RCEP cheaper products from China would have flooded the Indian market.

Non-acceptance of Auto-trigger Mechanism

- In order to deal with the imminent rise in imports, India had been seeking an auto-trigger mechanism.
- Auto-trigger Mechanism would have allowed India to raise tariffs on products in instances where imports cross a certain threshold.
- However, other countries in the RCEP were against this proposal.

Protection of Domestic Industry

- India had also reportedly expressed apprehensions on lowering and eliminating tariffs on several products like dairy, steel etc.
- For instance, the dairy industry was expected to face stiff competition from Australia and New Zealand.
- Currently, India's average bound tariff for dairy products is on average 35%.
- The RCEP binds countries to reduce that current level of tariffs to zero within the next 15 years.

Lack of Consensus on Rules of Origin

- India was concerned about a "possible circumvention" of rules of origin.
- Rules of origin are the criteria used to determine the national source of a product.
- Current provisions in the deal reportedly do not prevent countries from routing, through other countries, products on which India would maintain higher tariffs.

Implications of India's Exit of RCEP

- Exiting RCEP, India can still keep a check on China's dumping of goods in India. However, from needles to the turbine, Chinese goods are all over the Indian market.
- Refraining from RCEP will provide protection to the Indian domestic industry from cheap imports.

- RCEP is a China-backed trade deal, signing it without India will further strengthen China's economic power. It will affect India's neighbourhood as China already tries to influence the region through its deep pockets.
- India envisages becoming a manufacturing hub. However, staying out of the RCEP reduces opportunities for trading with these countries, which together account for roughly a third of global trade.
  - Manufacturing today requires greater integration with global supply chains.
  - Signing the agreement would have signalled an embrace of freer trade, which could have aided in the shift of companies out of China to India.
- India's exit of RCEP may also affect India's Act East policy.
- India should have used this as an opportunity to push through contentious but necessary reforms that would boost competitiveness.

Conclusion

- India needs to work on reforms and frame policies to prepare the economy for facing global competition. This can be done by:
  - Easing land acquisition
  - Reforming Labor laws
  - Bridging Infrastructure deficit

3. **What is the Theme and Agenda of the Fifteenth G20 leader's Summit, 2020. Highlight on its declaration adopted in its summit at Riyadh, 2020.**
G-20 தலைவர்களின் பதினைந்தாவது உச்சிமாநாடு 2020-இன் மையக்கருத்து மற்றும் நிகழ்ச்சி நிரல் என்ன? 2020 ஆம் ஆண்டு ரியாத்தில் நடைபெற்ற இந்த உச்சிமாநாட்டில் ஏற்றுக்கொள்ளப்பட்ட பிரகடனம் குறித்த சிறப்புகளை எழுதவும்.

Fifteenth G20 Summit 2020, Saudi Hosts the Conference

- The 2020 G20 Riyadh Summit was the fifteenth meeting of Group of Twenty (G20). It was scheduled to take place in Riyadh, the Capital City of Saudi Arabia on 21-20 November, 2020. However due to COVID-19, it was held virtually. The Indian side was represented by Prime Minister Narendra Modi.
- The summit under Saudi Arabia Presidency centred on the Theme, 'Realising opportunities of the 21st Century for All.
- **Agenda of the Summit'**: Overcoming the pandemic, economic recovery and restoring jobs, and building an inclusive, sustainable and resilient future.
- The three key agenda items addressed under this theme are : 'Empowering people' by creating the conditions in which all people—especially women and youth— can live, work and thrive', safeguarding the planet, but fostering collective efforts to protect our global commons', and 'Shaping New Frontiers, by adopting long-term and bold strategies to share benefits of innovation and technological advancement.'

G20 Riyadh Declaration Adopted

- During the summit the leaders adopted the G20 Riyadh Declaration to address common global challenges which consist of the following overarching points covering all sectors :

- ❖ Rising to the challenge together.

- ❖ Building a Resilient and Long-lasting Recovery
- ❖ Ensuring an Inclusive Recovery that tackles inequalities
- ❖ Ensuring a sustainable future.

- The Declaration also mentioned that Italy will hold the G20 Presidency in 2021 and the meeting will be held in Italy; Indonesia will take over the G20 Presidency in 2022 and the meeting will be held in Indonesia; India will take over the Presidency in 2023 & the meeting will be held in India; and Brazil will take over the G20 Presidency in 2024 & the meeting will be held in Brazil.

4. **Enumerate the key take away of India – Bangladesh virtual summit 2020**.
இந்தியா - வங்கதேச மெய்நிகர் உச்சிமாநாடு 2020-இன் முக்கிய அம்சங்களை வரிசைப்படுத்துக.

Signing of Bilateral Documents and Inauguration of Projects:

- Sealed seven agreements to expand cooperation in diverse areas viz. hydrocarbons, elephant conservation, sanitation, and agriculture, and restored a cross-border rail link which was in operation till 1965.
- Inaugurated a digital exhibition on Mahatma Gandhi and Bangladesh's founder, Sheikh Mujibur Rehman.

Cooperation in Health Sector:

- Reiterating the highest priority India attaches to Bangladesh under India's Neighbourhood First policy, India assured that vaccines for Covid-19 would be made available to Bangladesh as and when produced in India.
- India also offered collaboration in therapeutics and partnership in vaccine production.
- Bangladesh appreciated India's conducting capacity building courses for medical professionals in Bangla language.

Cultural Cooperation:

- Jointly unveiled a commemorative postal stamp issued by the Government of India on the occasion of birth centenary of Bangabandhu Sheikh Mujibur Rahman.
- India thanked Bangladesh for issuing a stamp in honour of Mahatma Gandhi on the occasion of his 150th birth anniversary celebrations.
- Bangladesh requested India to consider Bangladesh's proposal to name the historic road from Mujib Nagar to Nodia on Bangladesh-India border as "Shadhinota Shorok" commemorating the historic significance of the road during Bangladesh's Liberation War.

Border Management and Security Cooperation:

- Agreed to hold an early meeting of the Joint Boundary Conference to prepare a new set of strip maps with a view to finalizing the delineation of the boundaries.
- It was agreed to carry out necessary work to convert the International Boundary along Kuhsiyara river into a fixed boundary.

- Kuhsiyara river (known as Barak River in India) is one of the trans boundary rivers between India-Bangladesh.
- Bangladesh reiterated the request for 1.3 km Innocent Passage through river route along River Padma (main channel of Ganga in Bangladesh) near Rajshahi district (Bangladesh). India assured to consider the request.
- Stressed on the full implementation of the on-going Coordinated Border Management Plan.
- Expressed satisfaction on efforts against smuggling of arms, narcotics and fake currency and to prevent trafficking, particularly of women and children.
- Directed officials to expeditiously conclude the Memorandum of Understanding (MoU) in the area of disaster management cooperation as both countries are prone to frequent natural disasters.
- Bangladesh requested for early implementation of India's commitment to remove remaining restrictions on entry/exit from land ports in India for Bangladeshis travelling on valid documents in a phased manner.

Trade Partnership for Growth:

- Bangladesh has appreciated the Duty-Free and Quota Free access given to Bangladeshi exports to India under South Asian Free Trade Area (SAFTA) since 2011.
- Emphasized on addressing issues of non-tariff barriers and trade facilitation including port restrictions, procedural bottlenecks and quarantine restrictions so that both countries can take full advantage of SAFTA flexibility.
- Directed the officials to expeditiously conclude the ongoing joint study on the prospects of entering into a bilateral Comprehensive Economic Partnership Agreement (CEPA).
- Welcomed the first meeting of the India-Bangladesh Textile Industry Forum and directed the officials to conclude the ongoing negotiations on various MoUs on increased linkages and collaboration in the textile sector.

Connectivity for Prosperity:

- Jointly inaugurated the newly restored railway link between Haldibari (India) and Chilahati (Bangladesh) and noted that this rail link will further strengthen trade and people to people ties between the two sides.
- Welcomed the signing of the second addendum to the Protocol on Inland Water Transit and Trade (PIWTT).
- Agreed to an early operationalization of the Bangladesh-Bhutan-India-Nepal (BBIN) initiative Motor Vehicles Agreement through the expeditious signing of the Enabling MoU for Bangladesh, India and Nepal to commence the movement of goods and passengers, with provision for Bhutan to join at a later date.
- Bangladesh expressed keen interest in the ongoing India Myanmar Thailand trilateral highway project and sought the support of India for enabling Bangladesh to connect with this project.
- Satisfaction on commencement of a temporary Air Travel Bubble to facilitate the urgent requirements of travellers on both sides.

Cooperation in Water Resources, Power and Energy:

- Bangladesh highlighted the need for early signing of an interim agreement for sharing of the Teesta waters, as agreed upon by both the governments in 2011.
- Underscored the need for early conclusion of Framework of Interim Agreement on sharing of waters of six joint rivers, namely, Manu, Muhuri, Khowai, Gumti, Dharla and Dudhkumar.
- Recalled the positive contribution of the Joint Rivers Commission (JRC) and looked forward to the next round of Secretarial level JRC meeting at the earliest.
- Agreed to expedite implementation of projects including India-Bangladesh Friendship Pipeline, Maitree Super Thermal Power Project as well as other projects.
- Welcomed the signing of the Framework of Understanding on Cooperation in the Hydrocarbon Sector which would further augment energy linkages by streamlining investments, technology transfer, joint studies, training and promoting hydrocarbon connectivity.
- Agreed to enhance cooperation in energy efficiency and clean energy, including in biofuels.

Forcibly Displaced Persons from the Rakhine State of Myanmar (Rohingya):

- India appreciated the generosity of Bangladesh in sheltering and providing humanitarian assistance to the 1.1 million forcibly displaced persons from the Rakhine State of Myanmar, in the Rohingya Crisis.
- Partners in the Region and the World:
- India thanked Bangladesh for supporting India in its election to the United Nations Security Council.
- Both countries agreed to continue working together towards achieving early reforms of the UN Security Council, combating climate change, attainment of the Sustainable Development Goals (SDGs) and protection of the rights of migrants.
- Highlighted that regional organisations such as the South Asian Association for Regional Cooperation (SAARC) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) have an important role to play.
- Bangladesh thanked India for convening the SAARC leaders Video Conference in March 2020 and for creation of the SAARC Emergency Response Fund to counter effects of the global pandemic in the South Asian region.
- Bangladesh will assume chairmanship of the Indian Ocean Rim Association (IORA) in 2021 and requested the support of India for working towards greater maritime safety and security.
- Bangladesh appreciated the work of the New Development Bank and thanked India for inviting Bangladesh to join the institution.

5. **Examine the objectives and Impact of National Supercomputing Mission in India.**
   இந்தியாவில் தேசிய மீக்கணினி செயல்திட்டத்தின் (தேசிய சூப்பர் கணினி இயக்கம்) நோக்கங்கள் மற்றும் தாக்கத்தை ஆராய்க.

Introduction
- National Supercomputing Mission is an important initiative by the Government of India to boost indigenous efforts at improving supercomputing capability for socio-economic development of the nation.
- The mission is jointly steered by the Ministry of Electronics and IT and Department of Science & Technology.

Body
Objectives of the Mission

- **Strengthening Institutional Capacity:** The Mission aims to empower the national academic and R&D institutions spread over the country by installing a vast supercomputing grid comprising of more than 70 high-performance computing facilities.
- **Pooling supercomputing resources**: These supercomputers will also be networked on the national supercomputing grid over the National Knowledge Network (NKN), Academic and R&D institutions, as well as key user departments/ministries, would participate by using these facilities and develop applications of national relevance.
- **Capacity Building:** The Mission includes the development of highly professional High-Performance Computing (HPC) aware human resource for meeting challenges of development of these applications.

Significance

- It will provide significant qualitative and quantitative improvement in R&D and higher education in the disciplines of Science & Technology.
- The mission will bring India into the select league of advanced countries such as the US, Japan, China and the European Union (EU) which share top supercomputing machines in the world.
- Supercomputing facilities will enable India to build capabilities in areas such as designing vehicles, aeroplanes, massive structures like high rise buildings and bridges, infrastructure, the discovery of new life-saving drugs, discovery and extraction of new energy sources including oil, natural gas etc.
- It will enable more accurate weather forecast as well as real time tracking of natural phenomenon, timely warning of cyclones etc.
- It would be an enabler for the Digital India vision of the Government by making available huge data storage space and linking systems together.
- The mission envisages manufacturing of supercomputing systems in India contributing to Make in India and generating employment.

Challenges

- There has been a continuous delay in implementing programme·
  - India lacks highly skilled workforce for supercomputer development.
  - India needs to work on policies to attract talent from all over the world as well as retaining the indigenously available talent through financial and other incentives.

- o India is facing a funding crunch for the mission.
- o While India's stronghold is in the field of software development, it has to depend on imports to procure the hardware components required for building supercomputers

Conclusion

- National Supercomputing Mission is a timely effort to ensure India does not lag in new area as Industry 4.0 transforms the way of doing work, equipping Indian R&D establishment to develop and master newer technological applications to resolve developmental challenges India is facing.

6. **Write a brief note on** (5 X 2 = 10)
சிறுகுறிப்பு வரைக

(a) Cyclone Amphan
அம்பன் புயல்

Amphan is a super tropical cyclone that originated from the Bay of Bengal in May 2020. It is considered the first super cyclonic storm in the Bay of Bengal since the 1999 Odisha cyclone. It is a part of the North Indian Ocean Cyclone Season. The Indian states of West Bengal and Odisha, and the country of Bangladesh were hit by Amphan as a 'very severe cyclonic storm.'

Facts about Cyclone Amphan

- Thailand has given the name of the cyclone – Amphan, which is pronounced as 'UM-PUN'.
- Amphan formed over the Bay of Bengal as a tropical cyclone and later intensified into a 'Very Severe Cyclonic Storm' (VSCS) to 'Extreme Severe Cyclonic Storm (ESCS)'.
- It is made landfall between Digha (West Bengal) and Hathiya islands (Bangladesh) on May 20.
- The regions of East Midnapore, North and South 24 Parganas, Howrah, Hooghly, and West Midnapore were affected by the heavy rainfall.
- North Odisha Coast faced the maximum impact after Amphan makes landfall with the wind speed of 110-120 mph.
- The range of wind speed of Amphan reached up to 230-265 mph before it weakens in intensity.
- Doppler Weather Radar (DWR) at Visakhapatnam (Andhra Pradesh) was used to track the cyclone Amphan.
- After the Phailin cyclone that had hit the Bengal-Odisha coast in 2013, Amphan is said to be the strongest tropical cyclone to hit the coast.
- The trajectory of Amphan was towards West Bengal and Bangladesh and it made landfall as a severe storm at:
  - o West Bengal – Sagar Island
  - o Bangladesh – Hatiya Island
- National Disaster Response Force (NDRF) is a specialized authority constituted under the Disaster Management Act 2005. It was monitoring Amphan with the parallel monitoring by:

- National Crisis Monitoring Committee (Constituted by the Government of India, to meet the exigencies of natural calamities.)
  - Cabinet Committee on Security (CCS)
  - Indian Meteorological Committee (IMD)
- The other Indian States those were impacted by Amphan were:
  - Kerala – Heavy rainfall; Yellow Alert has been issued

(b) Cyclone Nisarga

நிசர்கா புயல்

- A fast-moving depression in the Arabian Sea is predicted to be intensified into a severe cyclone named 'Nisarga'.
- The name 'Nisarga' has been suggested by Bangladesh.

Key Points

- As per the India Meteorological Department, the impact of the cyclone is likely to be felt in Maharashtra and Gujarat.
- There is a concern about the impact of the cyclonic storm on the battle against Covid-19, as the rain and flooding may set back social distancing and other necessary measures at evacuation centres, and even at some Covid-19 facilities located in low-lying areas.
- Few days back, super cyclone Amphan - one of the strongest cyclones the country has seen in the last few decades - hit West Bengal, Odisha and Bangladesh.
- Cyclone Nisarga is expected to be weaker than Cyclone Amphan in strength and intensity.
- However in case of both the cyclones, the exceptional warm ocean temperatures seem to be behind the intense storms.

Cyclones in Arabian Sea:

- While cyclones have always been more frequent in Bay of Bengal, they have been less frequent off of India's western coast — a trend that has been gradually changing, according to scientists.
- Further, cyclones formed in the Bay of Bengal are stronger than those on the Arabian Sea side. The relatively cold waters of the Arabian Sea discourage the kind of very strong cyclones that are formed on the Bay of Bengal side.
- The year 2019 was slightly unusual as the Arabian Sea saw the most frequent and intense cyclonic activity in more than 100 years. Five cyclones originated in the area in 2019 — Vayu, Hikka, Kyarr, Maha and Pavan – when normally only one or two are formed.
- The Arabian Sea saw more cyclonic storms than the Bay of Bengal during 2019. The Bay of Bengal reported less than normal number of cyclones. The three cyclones formed were — Cyclones Pabuk, Fani, Bulbul.
- Post-monsoon cyclones have been seen in Arabian Sea. However, pre-monsoon cyclones, such as Nisarga, have so far been rare.

7. **What are the objectives of National Fisheries Policy 2020? Highlight its major challenges.**
தேசிய மீன்வளக் கொள்கை 2020-இன் நோக்கங்கள் என்ன? அதன் முக்கிய சவால்களை எடுத்துரைக்க.

Objectives of the Policy

❖ Harness the capture and culture fisheries potential of the country.

❖ A robust management and regulatory framework with necessary legal backing for effective fisheries resource management will be required through an Ecosystem Approach of Fisheries (EAF) management.

❖ It is aimed at modernizing, rationalizing and diversifying fishing practices in oceans and seas with sustainability of resources as the core philosophy.

❖ It is focused on conserving and managing native fish genetic stocks and associated habitats and ecosystem.

❖ It aims to promote community partnerships, private participation and effective cooperative movement in fisheries sector.

❖ It will ensure food and nutritional security by increasing the per capita availability of safe, affordable and quality fish.

Major Challenges

❖ The policy seems to be export-oriented, production-driven and based on capital investments. This might lead to small fishers being denied to their rights of access to commons.

❖ The policy does not talk about women, classes and castes associated with the fisheries sector in India.

❖ The policy seems to be silent on protecting the fishing communities according to the National Fish workers Forum (NFF), which is a trade union of small-scale fishers.

❖ Integrating all the sectors of fishing into one is not a good idea as the marine fishing is quite different from inland fishing.

❖ Some of the strategies included in the sector require capital-intensive technologies and can also be ecologically hazardous.

❖ Regarding inland fisheries, idea of leasing out these water bodies to private entrepreneurs will lead to traditional fishers being adversely affected. They will lose their rights to these water bodies and become contract labourers.

❖ Another criticism is that the language of the draft policy is about resource exploitation rather than management. It focuses more on the technological and economic dimensions and ignores the other important dimensions of the fisheries sector, ecological, social, ethical and institutional.

8. **Write a brief note on the Aims and objectives of Climate Ambition Summit 2020.**

காலநிலை லட்சிய உச்சிமாநாடு 2020-இன் இலக்குகள் மற்றும் நோக்கங்கள் குறித்து சிறுகுறிப்பு வரைக.

On December 12, 2020, the virtual Climate Ambition Summit 2020 was held to provide a platform for government and non-governmental leaders to demonstrate their commitment to the Paris Agreement and the multilateral process. It was co-hosted by the United Kingdom (UK), the United Nations (UN) and France, in partnership with Chile and Italy.

❖ The date also marked the 5th anniversary of the Paris Agreement.

❖ This summit is also regarded as a 'sprint to Glasgow' as the 26th session of the Conference of Parties (COP26) to the UN Framework Convention on Climate Change (UNFCCC) is scheduled to take place during November 1-12, 2021 in Glasgow, Scotland. It will be hosted by the UK in partnership with Italy.

Aim of the Summit

The aim of the summit was to make a call for much greater climate action and ambition.

India also succeeded in expanding her forest cover and safeguard its biodiversity. India is also leading two major initiatives viz., International Solar Alliance (ISA) and Coalition for Disaster Resilient Infrastructure (DRI).

Main Topics of Discussion at the Summit

1. New more ambitious nationally determined contributions (NDCs).
2. Long term net-zero emission strategies.
3. Climate finance commitments to support the most vulnerable, and
4. Ambitious adaptation plans and policies.

Green Hydrogen: Fuel of the Hour

In the budget 2021, finance minister proposed to launch a 'Hydrogen Energy Mission' in 2021-22 for generating hydrogen from green power sources.

Green Hydrogen Fuel

❖ Hydrogen generated from water using renewable clean electricity (solar, wind or water) is called green hydrogen. This implies greenhouse gases like Carbon-dioxide are not a by-product at any stage making it a clean burning fuel.

❖ Electricity and pure water is provided to an electrolyser and green hydrogen and oxygen are produced.

Challenges

- ❖ Processes involved in generation of green hydrogen are energy intensive. It requires very large amounts of cheap renewable electricity because a fair amount is lost in electrolysis. Electrolyser efficiencies range from around 60 percent to 80 percent.

- ❖ It is expensive to produce green hydrogen. Its generation cost falls in the range $2.5-4.5 per kg.

- ❖ Low density of hydrogen makes it difficult to store and transport it without a pipeline. Its storage requires compression to 700 times atmospheric pressure, refrigeration to 253 degrees Celsius.

- ❖ It can embrittle metal, it escapes through the tiniest leaks and is highly flammable.

Significance

- ❖ Hydrogen is a 100 % sustainable energy source which has limitless supply. In fact, Green Hydrogen energy production does not emit polluting gases like carbon dioxide in the production processes.

- ❖ It can be mixed with the natural gas, up to a maximum of 20 %. It can also be transported through the same pipes and in the same infrastructure as natural gas. This also implies economic use of money invested in development.

- ❖ Transport and mobility is a key use of Green Hydrogen, be it in heavy transportation, or aviation and maritime transport.

- ❖ This gas can also be used to provide water to the crew members in space stations.

- ❖ Solar and wind energy experience fluctuation based on local weather and global climate. Green Hydrogen as a fuel can serve as a buffer and shield against these fluctuations.

- ❖ It can help in reducing dependence on fossil fuels.

- ❖ It can also potentially replace coal and coking coal in steel production as well as coal and gas in the production of petrochemicals such as methanol.

- ❖ Certain forecasts say Hydrogen will be the choice of fuel across one fourth of the energy domain by 2030.

Initiatives in India

- ❖ In India, National Thermal Power Corporation (NTPC) is considering setting up a green hydrogen production facility in Andhra Pradesh.

- ❖ The ministry of Road Transport and Highways has issued a notification proposing amendments to the Central Motor Vehicles Rules (1989) to incorporate safety standards for hydrogen fuel cell technology vehicles.

- ❖ Reliance industries has declared it will become carbon neutral by 2035, by replacing transportation fuels with Hydrogen and clean electricity.

- ❖ India is one of the participants, among 16 nations or group-ings, in the Mission Innovation Renewable and Clean Hydrogen Challenge. Mission Innovation (MI) is a global initiative of 24 countries and the European Commission (on behalf of the European Union) working to accelerate clean energy innovation

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Types of hydrogen

- ❖ Though hydrogen is a colourless gas, it has been codified based on the generation technologies as follows:

- ❖ Grey /Brown /Black Hydrogen: Produced by fossil fuels mostly natural gas /methane.

- ❖ Blue Hydrogen - Produced from fossil fuels and uses carbon capture and storage technologies.

- ❖ Turquoise Hydrogen: Produced when natural gas is broken down with the help of methane pyrolysis into hydrogen and solid carbon.

- ❖ Yellow (or purple) Hydrogen: Produced using nuclear energy.

Conclusion

- ❖ Green Hydrogen is an upcoming technology, which can function as a viable alternative for an ever-expanding population dependent mainly on non-renewable energy.

- ❖ It is vital for India to meet its Nationally Determined Contributions and ensure regional and national energy security, access and availability.

- ❖ It can help in decarbonising the economy and in reducing emissions and climate change threats.

9. **Answer the following questions.**
   பின்வரும் வினாக்களுக்கு விடையளி.
   a. **The shadow of a pole with the height of 8 m is 6m. If the shadow of another pole measured at the same time is 30 m, find the height of the pole?**
   8 மீ நீளமுள்ள கம்பத்தின் நிழலின் நீளம் 6 மீ. அதே நேரத்தில், 30 மீ நிழல் ஏற்படுத்தும் மற்றொரு கம்பத்தின் நீளம் எவ்வளவு?

   b. **Convert to base 5.**
   624_{10} ஐ ஐந்தடிமான எண்ணாக மாற்று.

10. **The barrel of a fountain-pen cylindrical in shape, is 7 cm long and 5 mm in diameter. A full barrel of ink in the pen will be used for writing 330 words on an average. How many words can be written using a bottle of ink containing one fourth of a litre?**

7 செ.மீ நீளமுள்ள ஓர் உருளை வடிவ மை குடுவையின் விட்டம் 5 மி.மீ ஆகும். மை முழுமையாகவுள்ள உருளையைக் கொண்டு சராசரியாக 330 வார்த்தைகள் எழுதலாம். ஒரு லிட்டரில் நான்கில் ஒரு பங்கு மை ஒரு பாட்டிலில் உள்ளது எனில், அதனைப் பயன்படுத்தி எத்தனை வார்த்தைகள் எழுதலாம்?

SECTION – B   **10 x 15 = 150**

Answer all the questions. Answer not exceeding 250 words each

11. **Critically analyse the impact of Basic Exchange and Cooperation Agreement (BECA) signed between India and USA. How does India benefit from it?**
    இந்தியாவிற்கும் அமெரிக்காவிற்கும் இடையில் கையெழுத்திடப்பட்ட அடிப்படை பரிவர்த்தனை மற்றும் ஒத்துழைப்பு ஒப்பந்தத்தின் (BECA) தாக்கத்தை விமர்சன ரீதியாக பகுப்பாய்வு செய்க. இதன் மூலம் இந்தியா எவ்வாறு பயனடைகிறது?

    - Recently, the Indo-United States (US) 2+2 talks were conducted. The most striking outcome from these talks was the formal signing of the Basic Exchange and Cooperation Agreement for Geospatial Intelligence (BECA).
    - BECA is the last of four foundational defence agreements between the two countries that allow a much higher level of military cooperation in technology, interoperability, and defence manufacturing.
    - The signing of the BECA marks the end of the prolonged phase of mutual trust-building and sets the stage for more expansive security cooperation.

    BECA

    - The Basic Exchange and Cooperation Agreement largely pertains to geospatial intelligence, and sharing information on maps and satellite images for defence.
    - BECA will provide Indian military systems with a high-quality GPS to navigate and missiles with real-time intelligence to precisely target the adversary.
    - It will give access to topographical and aeronautical data and products that will aid navigation and targeting.

Other Foundational Agreements
The BECA follows three other agreements:

- The General Security of Military Information Agreement (GSOMIA) was signed by the government of Atal Bihari Vajpayee back in 2002.
- It aims to protect the military information shared by the US.
- The Logistics Exchange Memorandum of Agreement (LEMOA) was signed a full 14 years later in 2016.
- It aims to provide mutual logistics support around the world.
- The Communication Compatibility and Security Agreement (COMCASA) was signed in 2018
- It aims to facilitate communication between the weapons platforms of the two armed forces.

Significance of Signing of BECA

- Converging Indo-Pacific Strategies: Signing of BECA will fast-forward the integration of the Indo-Pacific strategies of their two countries.
- Further, this is in sync with increasing formalization of QUAD, which can be seen in the recent joining of Australia in the Malabar naval exercises.
- India will be able to keep a close watch on the movements of Chinese warships in the Indian Ocean.
- Moreover, its signing comes at a time when India is locked in one of its most hostile standoffs with China along their disputed border in the Himalayan region.

- **Deep Military Implications:** While LEMOA means one partner trusts the other enough to expose its valuable assets, COMCASA means one is confident that it can rely on encrypted systems to connect the two militaries, and BECA means it can share highly classified information in real time without fear of being compromised.
    - All this signals the level of trust that has developed between the two countries and their militaries, faced with an increasingly aggressive China.
    - BECA allows more intensive engagement between the armed forces —from interoperability to intelligence-sharing and joint defence research to production of weapons.
    - **Multi-Polar World Order**: Substantive and institutionalised cooperation between the two defence establishments will serve the long-term interests of a rising India and an America that is restructuring its global security burden.

Associated Issues

- **India's Aversion to Alliance System:** Signing of these four foundational agreements would mean India getting strategically more close to US.
- From the perspective of the US, in order to counter China, it would want India to be getting close to an alliance system.
- However, one aspect which remains unchanged is the Indian strategic establishment's aversion to the term alliance.
- From the heyday of non-alignment to the present day possibilities of multi-alignment, this idea that alliances are inherently bad has been a constant in India's mainstream strategic thinking.

- **Dependence on Russia:** India is one of the world's biggest defence equipment buyers, but around 60-70% of its inventory is supplied by Russia.
- Further, the US wants India to move away from Russian equipment and platforms, as it feels this may expose its technology and information to Russia.
- **Compromising Strategic Autonomy:** Many foreign policy experts in India are of the view that, by synchronising its systems with those of the US, it will enable the US to enter its decision-making loop.
- It is something that no sovereign country would like.
- **Divergence of Foreign Policy Interest:** There is divergence on foregien policy interests between US and India, especially relating to Pakistan, Afghanistan and Iran.
- On account of Indian Ocean issues, the US would want India's cooperation in the South China Sea, but India's primary naval challenge is in the western and north-western Indian Ocean.

Way Forward

- **Expanding Scope of Convergence**: If both the US and India want India to become a genuine strategic balancer to China, they need to leapfrog economic and technological cooperation.
- Thus, the US and India are now in talks of an "innovation partnership" that must develop along with all the military-to-military bonhomie taking place.
- **Maintaining Strategic Autonomy**: India must clarify to the US that, it can sign the civil nuclear pact, it can sign foundational defence agreements, it can converge on the Indo-Pacific but it won't lead to an alliance relationship.
- Further, India should realise agreements are a scrap of paper, unless they are backed by a mutuality of interest at the given time. Therefore, must continue its efforts of strategic hedging with our global powers.

Conclusion

- Signing of BECA will allow India and the US to act together and get into a better position to shape the regional and global environment in favour of peace and stability. However, both countries must not glamourize this signing as these agreements are not an end in themselves they are a means to a larger end – security and prosperity of its citizens.

12. **Describe the important Provision of Citizenship (Amendment) Act 2019. List out the major concerns and loopholes of the Act.**
    குடியுரிமை வழங்கல் (திருத்தம்) சட்டம் 2019-இன் முக்கியத்துவத்தை விவரிக்க. இச்சட்டம் குறித்த பிரச்சனைகள் மற்றும் குறைபாடுகளை பட்டியலிடுக.

Introduction

- Recently, the Parliament passed the Citizenship (Amendment) Bill 2019 which received the President's assent to become an Act.
- The Citizenship (Amendment) Act, 2019 seeks to amend the Citizenship Act, 1955.
- The Citizenship Act,1955 provides various ways in which citizenship may be acquired. It provides for citizenship by birth, descent, registration, naturalisation and by incorporation of the territory into India.

- In addition, it regulates the registration of Overseas Citizen of India Cardholders (OCIs) and their rights. An OCI is entitled to some benefits such as a multiple-entry, multipurpose lifelong visa to visit India.
- An illegal migrant is prohibited from acquiring Indian citizenship. An illegal immigrant is a foreigner who either enters India illegally, i.e., without valid travel documents, like a visa and passport, or enters India legally, but stays beyond the time period permitted in their travel documents. An illegal migrant can be prosecuted in India and deported or imprisoned.
- In September 2015 and July 2016, the government exempted certain groups of illegal migrants from being imprisoned or deported. These are illegal migrants who came into India from Afghanistan, Bangladesh, or Pakistan on or before December 31, 2014, and belong to the Hindu, Sikh, Buddhist, Jain, Parsi, or Christian religious communities.

Key Provisions of the Amendment Act

- The Bill amends the Act to provide that the Hindus, Sikhs, Buddhists, Jains, Parsis and Christians from Afghanistan, Bangladesh and Pakistan, who entered India on or before December 31, 2014, will not be treated as illegal migrants.
- In order to get this benefit, they must have also been exempted from the Foreigners Act, 1946 and the Passport (Entry into India) Act, 1920 by the central government.
- The 1920 Act mandates foreigners to carry passport, while the1946 Act regulates the entry and departure of foreigners in India.
- Citizenship by registration or naturalisation: The Act allows a person to apply for citizenship by registration or naturalisation if the person meets certain qualifications.
- For instance, if a person resides in India for a year and if one of his parents is a former Indian citizen, he may apply for citizenship by registration.
- To obtain citizenship by naturalisation, one of the qualifications is that the person must have resided in India or have been in the service of the central government for at least 11 years before applying for citizenship.
- The Bill creates an exception for Hindus, Sikhs, Buddhists, Jains, Parsis and Christians from Afghanistan, Bangladesh and Pakistan, with regard to this qualification. For these groups of persons, the 11 years' requirement will be reduced to five years.
- On acquiring citizenship: (i) such persons will be deemed to be citizens of India from the date of their entry into India, and (ii) all legal proceedings against them in respect of their illegal migration or citizenship will be closed.

Applicability of the Amended Act

- These provisions on citizenship for illegal migrants will not apply to the tribal areas of Assam, Meghalaya, Mizoram, and Tripura, included in the Sixth Schedule to the Constitution. These tribal areas include Karbi Anglong (in Assam), Garo Hills (in Meghalaya), Chakma District (in Mizoram), and Tripura Tribal Areas District.
- Further, it will not apply to the "Inner Line" areas notified under the Bengal Eastern Frontier Regulation, 1873. In these areas, visits by Indians are regulated through the Inner Line Permit.
- Currently, this permit system is applicable to Arunachal Pradesh, Mizoram, and Nagaland. Manipur has also been brought under the Inner Line Permit (ILP) regime

through a Gazette Notification on the same day the bill was passed in the parliament.

- Cancellation of registration of OCIs: The Act provides that the central government may cancel the registration of OCIs on certain grounds. These include: (i) if the OCI has registered through fraud, or (ii) if, within five years of registration, the OCI has been sentenced to imprisonment for two years or more, or (iii) if it becomes necessary in the interest of sovereignty and security of India.
- The Bill adds one more ground for cancelling the registration, that is if the OCI has violated the provisions of the Act or of any other law as notified by the central government. The orders for cancellation of OCI should not be passed till the OCI cardholder is given an opportunity to be heard.

Concerns against the Amendment Act

Issues in the North-East:
- It contradicts the Assam Accord of 1985, which states that illegal migrants, irrespective of religion, heading in from Bangladesh after March 25, 1971, would be deported.
- Critics further argue that the extensive exercise of updating the National Register of Citizens (NRC) will become Null and Void due to this Amendment act.
- There are an estimated 20 million illegal Bangladeshi migrants in Assam and they have inalienably altered the demography of the state, besides putting a severe strain on the state's resources and economy.
- Critics argue that it is violative of Article 14 of the Constitution (which guarantees the right to equality and applicable to both the citizens and foreigners) and the principle of secularism enshrined in the preamble of the constitution.
- India has several other refugees that include Tamils from Sri Lanka and Hindu Rohingya from Myanmar. They are not covered under the Act.
- It will be difficult for the government to differentiate between illegal migrants and those persecuted.
- The Bill throws the light on the religious oppression that has happened and is happening in these three countries and thus, may worsen our bilateral ties with them.
- It provides wide discretion to the government to cancel OCI registrations for both major offences like murder, as well as minor offences like parking in a no-parking zone or jumping a red light.

Government's Stand

- The government has clarified that Pakistan, Afghanistan and Bangladesh are Islamic republics where Muslims are in majority hence they cannot be treated as persecuted minorities.
- According to the government, this Bill aims at granting rather than taking away someone's citizenship.
- It has assured that the government will examine the application from any other community on a case to case basis.
- This Bill will come as a big boon to all those people who have been the victims of Partition and the subsequent conversion of the three countries into theocratic Islamic republics.

- Government has cited that the partition of India on religious lines and subsequent failure of the Nehru-Liaqat pact of 1950 in protecting the rights and dignity of the minorities in Pakistan and Bangladesh as the reasons for bringing this Bill.
- After Independence, not once but twice, India conceded that the minorities in its neighbourhood are its responsibility. First, immediately after Partition and again during the Indira-Mujib Pact in 1972 when India had agreed to absorb over 1.2 million refugees. It is a historical fact that on both occasions, it was only the Hindus, Sikhs, Buddhists and Christians who had come over to Indian side.
- Regarding questions of not including minorities from Sri Lanka, Myanmar, etc., the Government clarified that the process of awarding citizenship to refugees has been undertaken by different governments in the past on case to case basis from time to time, on "reasonable qualifications to Article 14". This time the case of refugees fleeing religious persecution from these three countries has been considered through this Bill.
- In January 2019, Government had notified the High-Level Committee (HLC) for implementation of Clause 6 of Assam Accord and urged the Committee to submit its report at the earliest to the Central Government for effective steps to be taken to fulfil the provisions of the Accord.
- The government thus has assured the people of Assam that their linguistic, cultural and social identity would be preserved.

Conclusion

- The onus is now on the Supreme Court, being the Guardian of the Constitution, to interpret the provisions of the Act and test its Constitutionality that whether the "classification" done in the Act is "reasonable" or not if tested against Article 14.
- India has a civilization duty to protect those who are prosecuted in its neighbourhood. But, the methods must be in accordance with the spirit of the Constitution.
- Further, the people of the North-East should be engaged more constructively to convince them that the linguistic, cultural and social identity of the people of the region would be preserved.

13. **Discuss the usage of Tamil language computing in various domains of internet application and Information Technology.**
இணைய பயன்பாடு மற்றும் தகவல் தொழில்நுட்பத்தின் பல்வேறு களங்களில் தமிழ் மொழி கணினிக்குறியாக்கத்தின் பயன்பாடு பற்றி விவாதிக்க.

Tamil in Internet

- In 2017 a study conducted by KPMG a Singapore based organization along with google, reported that, Tamil topped the list, among the most widely used languages in India, where 42% are using the Internet in Tamil
- 68% Internet users consider local language digital content to be more reliable than English
- Currently Tamil (42%) has the highest Internet adoption levels followed by Hindi and Kannada among the Indian language users.
- As per study, by 2021, 74% of people in India will access internet using Tamil and it will be in the top usage of Internet in India.

Search Engines in Tamil

- The "Search Engines" are used to search any information from the cyber space. Although there are many search engines, but only a few of them are frequently in use. In the top ten search engines, Google, Bing and Yahoo take first three places respectively. Google and Bing provide searching facilities in Tamil, which means you can search everything through Tamil. The Google search engine gives you an inbuilt Tamil virtual keyboard.

e – Governance:

- Getting Government services through internet is known as e-Governance. Govt. of Tamilnadu has been giving its services through Internet. One can communicate with Govt. of Tamilnadu from any corner of the World. One can get important announcements, government orders, and government welfare schemes from the web portal of Govt. of. Tamilnadu.

e-Library

- E-Libraries are portal or website of collection of e-books. Tamil e-Library services provide thousands of Tamil Books as ebooks mostly at free of cost. It is the most useful service to Tamil people who live far away from their home land.

Tamil Typing and Interface software

- Tamil is mostly used to type documents in word processors and search information on the internet. Typing Tamil using Tamil interface software is a familiar one among the different methods of typing. This is the simplest method of typing Tamil in both Computer and Smart phones.

Familiar Tamil Keyboard Interface:

- NHM Writer, E-Kalappai and Lippikar – are familiar Tamil keyboard interfaces software that is used for Tamil typing which works on Tamil Unicode, using phonetics.
- Sellinam and Ponmadal – are familiar Tamil keyboard layouts that works on Android operating system in Smart phone using phonetics.

Tamil Office Automation Applications

- Famous Office automation software like Microsoft Office, Open Office etc., provides complete Tamil interface facility. These softwares are downloadable and installed in your computer. After installation, your office automation software environment will completely change to Tamil. Menu bars, names of icons, dialog boxes will be shown in Tamil. Moreover, you can save files with Tamil names and create folders with Tamil names.
- Apart from that Tamil Libra Office, Tamil Open Office, Azhagi Unicode Editor, Ponmozhi, Menthamiz, Kamban, Vani are office automation software working exclusively for Tamil. You can use these applications to work completely in Tamil.

Tamil Translation Applications

- Thamizpori (தமிழ்பொறி) is a Tamil tranlation application having more than 30000 Tamil words equalent to English words. Using this application, we can translate small english sentences into Tamil. Google also gives an online translation facility, using this online facility we can translate from Tamil to any other language and vice versa.

Tamil Programming Language

- Programming languages to develop software in computers and smart phones are available only in English. Now, efforts are taken to develop programming languages in Tamil. Based on Python programming language, the first Tamil programming language "Ezhil" (எழில்) is designed. With the help of this programming language, you can write simple programs in Tamil.

Tamil Information Interchange Coding Systems

TSCII (Tamil Script Code for Information Interchange)

- Computers handle data and information as binary system. Every data should be converted into binary when it is fed into a computer system. You have learnt about all these things in the first unit of this text book. Computers use ASCII encoding system to handle data and information. The ASCII encoding system is applicable only for handling English language.
- Therefore, TSCII (Tamil Script Code for Information Interchange) is the first coding system to handle our Tamil language in an analysis of an encoding scheme that is easily handled in electronic devices, including non-English computers. This encoding scheme was registered in IANA (Internet Assigned Numbers Authority) a unit of ICANN.

ISCII (Indian Script Code for Information Interchange)

- This is one of the encoding schemes specially designed for Indian languages including Tamil. It was unified with Unicode.

Unicode:

- Unicode is an encoding system, designed to handle various world languages, including Tamil. Its first version 1.0.0 was introduced in October 1991. When Unicode was introduced it could handle nearly 23 languages including Tamil. Among the various encoding scheme, Unicode is the best suitable to handle Tamil.

Tamil Operating System

- An operating system is needed to access electronic systems such as computer and smart phone. Microsoft Windows is very popular operating system for personal computers. Linux is another popular open source operating system. Operating systems are used to access a computer easily. An operating system should be easy to

work and its environment should be in an understandable form. Thus, all operating systems used in computers and smart phones are offered in Tamil environment.

- Windows Tamil Environment interface should be downloaded and installed from the internet. It displays all window elements such as Taskbar, desktop elements, names of icons, commands in Tamil.

Organisation and projects to develop Tamil

Tamil Virtual Academy:

- With the objectives of spreading Tamil to the entire world through internet, Tamil Virtual University was established on 17th February 2001 by the Govt. of Tamilnadu. Now, this organisation functions with the name of "Tamil Virtual Academy". It offers different courses in Tamil language, Culture, heritage etc., from kindergarten to under graduation level.

Website: http://www.tamilvu.org/index.php

Tamil Language Council, Singapore

- With the objectives of promoting the awareness and greater use of Tamil among the Singaporeans, in 2001 the council of Tamil Language was formed by the ministry of Information Communications and Arts, Govt. of Singapore. The council is called as "வளர்தமிழ்இயக்கம்".
Website: http://tamil.org.sg/ta

Madurai Project

- Project Madurai is an open and voluntary initiative to collect and publish free electronic editions of ancient tamil literary classics. This means either typing-in or scanning old books and archiving the text is one of the most readily accessible formats for use on all popular computer platforms.
- Since its launch in 1998, Project Madurai etexts released are in Tamil script form as per TSCII encoding. Since 2004 we have started releasing etexts in Tamil unicode as well.

Web Site: http://www.projectmadurai.org/

Tamil Wikipedia:

- Wikipedia is a open source encyclopedia where any person can write an article about any subject. There are more than One lakh articles in Tamil Wikipedia.

Web Site: https://ta.wikipedia.org/

- In order to make Tamil as a living language, it is the duty of every Tamilian to actively use Tamil in the development of technology.

14. **Explain Block chain Technology. What are the salient features of Draft National Strategy on Block Chain? Highlight Ministry of Electronics and Information Technology initiatives on Block Chain?**

பிளாக் சங்கிலி தொழில்நுட்பத்தை விளக்குக. பிளாக் செயின் தேசிய வியூக வரைவின் முக்கிய அம்சங்கள் யாவை? பிளாக் செயின் தொழில்நுட்பத்தின் மீதான மின்னணு மற்றும் தகவல் தொழில்நுட்ப அமைச்சகத்தின் முன்னெடுப்புகள் குறித்த சிறப்புகளை விவரிக்க.

- Blockchain seems complicated, and it definitely can be, but its core concept is really quite simple. A blockchain is a type of database. To be able to understand blockchain, it helps to first understand what a database actually is.

- A database is a collection of information that is stored electronically on a computer system. Information, or data, in databases is typically structured in table format to allow for easier searching and filtering for specific information. What is the difference between someone using a spreadsheet to store information rather than a database?

- Spreadsheets are designed for one person, or a small group of people, to store and access limited amounts of information. In contrast, a database is designed to house significantly larger amounts of information that can be accessed, filtered, and manipulated quickly and easily by any number of users at once.

- Large databases achieve this by housing data on servers that are made of powerful computers. These servers can sometimes be built using hundreds or thousands of computers in order to have the computational power and storage capacity necessary for many users to access the database simultaneously. While a spreadsheet or database may be accessible to any number of people, it is often owned by a business and managed by an appointed individual that has complete control over how it works and the data within it.

- Recently, the Ministry of Electronics and Information Technology (MeitY) has prepared a draft framework for the use of blockchain technology in government services. It intends to use it in the areas of property record keeping, digital certificates, power distribution, health records as well as supply chain management.

Salient Features

- ❖ All the applications of blockchain technology are likely to be explored by the government under the leadership of the IT ministry.

- ❖ The draft, called the National Strategy on Blockchain, is also likely to explore the possibility of use of the technology for vaccine and medical supplies logistics management for future purposes.

- ❖ Virtual and digital currencies such as bitcoin, however, have been kept out of the ambit of this framework and are unlikely to be included in the near future as digitisation of the banking and currency system has picked up only of late and they still have non-repudiation requirements through in-person verification. Therefore, this is a challenge to implement technological solutions for such requirements especially for crypto-currencies.

- ❖ Since the blockchain technology operates on a distributed ledger system which is owned by everyone, participants can read, write, or make changes to the ledger.

- ❖ In order to make the technology better suited to the needs of the government and that of India, the national framework has therefore suggested that blockchain could be set up in one of the four architectures.

- ❖ Public and Permission less: A public and permission less architecture would mean that anyone can join, read, write and commit changes to the blockchain, would be hosted on publicly available servers but would have low scalability.

- ❖ Public but with Permissions: A public architecture with permissions would allow only authorised persons to write and commit changes to the architecture.

- ❖ Private and Permission less: A private and permission less architecture would mean that though only authorised persons would be allowed to make changes to the distributed ledger, there would be no bar on the number of number of participants that can operate on the technology.

- ❖ Private and with Permissions: A private and with permission architecture would mean that though only authorised persons can join and read and only network manager can write and commit.

Blockchain Technology

- ❖ Blockchain Technology is a distributed ledger technology suitable for decentralized and transactional data shared across a large network of untrusted entities.

- ❖ This technology allows new type of distributed software architecture capable of finding concurrence on their shared states without need to establish online twist with any central entity/participant.

- ❖ All the transactions shared across entities along with the timestamp are maintained as records and placed in blocks, these blocks are further linked as Blockchain and stored in a distributed manner across various nodes of the network. '

- ❖ Copy of each transaction along with its hash is stored in the ledger shared across' all participants of the network.

- ❖ Salient properties of the Blockchain technology ate pseudonymity, cryptographic guarantees, immutability, shared read & write, accountability, transparency and" distributed ownership. This technology eliminates the requirement of central entity/ third party to validate the transactions over' the peer-to-peer network transactions are validated by considering the history of transactions stored at, each node of the network and the Consensus of the participants, as shown in figure below.

Importance of Blockchain Technology

- ❖ Blockchain uses a unique data structure where verification data related to the transactional records is cryptographically secured against tampering and stored in

blocks. Each block contains details of transactions, hash of the previous block, timestamp etc.

❖ Blocks are linked with each other, leading to a Blockchain. Linkage across Blocks is also cryptographically secured and this is Stored at every node in the network. This makes it a unique solution to the problem of trust in the digital world, leading towards decentralized trust.

❖ Anything of value can be tracked and traded on a Blockchain network, reducing risk and cutting costs for all involved. Contracts can be automated through Smart Contracts.

Government Initiatives

• Ministry of Electronics and Information Technology (MeitY) has identified Blockchain Technology as one of the important research areas having application potential in different domains such as Governance, Banking & Finance, Cyber Security and so on.

❖ Blockchain Technology based solution for property registration has been successfully developed and is piloted at Shamshabad District, Telangana.

❖ C-DAC's mission in Blockchain Technology in categorized in the following top-level components:

❖ Unified Blockchain Framework: Unified Blockchain Platform for cross domain applications addressing the performance, scalability, interoperability, security and privacy challenges.

❖ Blockchain Services: eSign integrated with ©lock-chain based Proof-of-Existence (PoE).

❖ Blockchain Applications for different domains: Block-chain for Track and Trace, Blockchain for Electronic Health Record (EHR), Blockchain based Digital Evidence Management System, Security for IoT Deployment, Blockchain for Self-Sovereign Identity, Blockchain Technology for APEDA TraceNet, Blockchain Technology for Government e-Marketplace (GeM) Platform, Blockchain Technology for Voting and Blockchain based Property Record Management System.

❖ Reserve Bank of India (RBI) is exploring on applying Blockchain Technology in banking domain.

15. **What do you understand by Carbon Tax? Analyse the impact and challenges of Carbon Tax on India.**
கார்பன் வரி குறித்த உங்களது புரிதல் என்ன? இந்தியா மீதான கார்பன் வரியின் தாக்கம் மற்றும் சவால்களை ஆய்க.

❖ The phrase 'put a price on carbon' has now become well known with momentum growing among countries and businesses to put a price on carbon pollution as a means of bringing down emissions and drive investment into cleaner options.

- ❖ There are several paths governments can take to price carbon, all leading to the same result. They begin to capture what are known as the external costs of carbon emissions -costs that the public pays for in other ways, such as damage to crops and health care costs from heat waves and droughts or to property from flooding and sea level rise - and tie them to their sources through a price on carbon.

- ❖ A price on carbon helps shift the burden for the damage back to those who are responsible for it, and who can reduce it. Instead of dictating who should reduce emissions where and how, a carbon price gives an economic signal and polluters decide for themselves whether to discontinue their polluting activity, reduce emissions, or continue polluting and pay for it. In this way, the overall environmental goal is achieved in the most flexible and least-cost way to society. The carbon price also stimulates clean technology and market innovation, fuelling new, low-carbon drivers of economic growth.

There are two main types of carbon pricing

i) Emissions Trading Systems (ETS)
ii) Carbon Taxes

Emissions Trading Systems (ETS)

- ❖ ETS sometimes referred to as a cap-and-trade system - caps the total level of greenhouse gas emissions and allows those industries with low emissions to sell their extra allowances to larger emitters. By creating supply and demand for emissions allowances, an ETS establishes a market price for greenhouse gas emissions. The cap helps ensure that the required emission reductions will take place to keep the emitters (in aggregate) within their pre-allocated carbon budget.

Carbon Tax

- ❖ A carbon tax is a fee on the carbon content of fossil fuels. Though levied "upstream" where the coal, oil or gas is extracted or imported, it charges fossil fuel users for the climate damage their fuel use causes by releasing heat-trapping carbon dioxide into the atmosphere.

- ❖ Carbon taxes, levied on coal, oil products, and natural gas in proportion to their carbon content, can be collected from fuel suppliers. They in turn will pass on the tax in the form of higher prices for electricity, gasoline, heating oil, and so on, as well as for the products and services that depend on them. This provides incentives for producers and consumers alike to reduce energy use and shift to lower-carbon fuels or renewable energy sources through investment or behaviour.

- ❖ A carbon tax directly sets a price on carbon by defining a tax rate on greenhouse gas emissions or - more commonly - on the carbon content of fossil fuels. It is different from an ETS in that the emission reduction outcome of a carbon tax is not pre-defined but the carbon price is.

Need for Carbon Tax

❖ To Address Climate Change: While addressing climate change by reducing greenhouse gases, carbon taxes can also generate more immediate environmental and health benefits, particularly by reducing deaths that result from local air pollution.

❖ Revenue Generation: They can also raise significant revenue for governments, revenue they can use to counteract economic harm caused by higher fuel prices. For example, governments could use carbon tax revenue to ease the burden of taxation on workers by lowering personal income and payroll taxes.

❖ To Fund Productive Investments: Carbon tax revenue could also fund productive investments to help achieve the United Nations Sustainable Development Goals, including reducing hunger, poverty, inequality, and environmental degradation.

Mechanisms in India

❖ Although India does not have an explicit carbon tax till date, it has an implicit or de facto carbon tax in the form of a coal cess since 2010. The reason for preferring a coal cess over a direct carbon tax is not explicitly stated in the policy documents of Government of India (GoI).

❖ It is not likely that the implicit carbon tax through cesses and excise duties on fossil fuels will produce better results in terms of reduction in carbon emissions and changes in GDP than an explicit carbon tax. Indeed, the reverse is likely to be true. The real reason for the adoption of an indirect carbon tax in the form of cesses and excise duties seems to be the ease in their collection.

❖ If coal cess is a de facto carbon tax, then quantitatively speaking, coal cess should be translatable into an equivalent carbon tax. Economic Survey 2014 converts the specific coal cess into equivalent carbon tax (using standard carbon emission factors and net calorific values of coal). In 2015, GoI revised its coal cess from Rs 50 per ton to Rs 100 per ton. Presently, it is Rs 400 per tonne.

❖ Coal cess penalizes the carbon emitted from coal, but spares that from other fossil fuels—e.g. oil and natural gas. Thus, an indirect carbon tax cannot induce efficient fuel-switching away from fossil fuels towards cleaner sources of energy. The transition to a direct carbon tax linked to declared carbon emission targets is the next step in the evolution of an emission control policy in India.

Impact of Carbon Tax on India

In India, the impact of introducing carbon taxes, can be viewed from multiple dimensions:

❖ Impact on Revenue: Taxing fossil fuels is one of the larger contributors to exchequers globally and India is no exception. A shift to clean energy would mean significant loss of revenue for Governments.

- ❖ Impact on Innovation: Carbon taxes accelerate the development of innovative business models around clean energy like solar powered automobiles, solar drones, zero energy buildings, super grids, utility scale battery production etc. Multiple startups have already raised hundreds of millions of dollars in venture investments.

- ❖ Impact on Investment and Employment: Given the scale and magnitude of change desired, the scale of investment needed is substantial. Successive Governments have consistently pursued a stable renewable energy policy with strong results. FDI inflow in the Indian non-conventional energy sector stood at US$ 9.22 billion between April 2000 and March 2020 (DPIIT). More than US$ 42 billion has been invested in India's renewable energy sector since 2014 and India rank's third globally in the EY Renewable Energy Country Attractive Index 2019. Investments in excess of $500 billion are required over the next decade to meet our energy targets. Utility-scale renewables sector have already created 100,000jobs (2020), and the current targets are likely to generate another 1.3 million direct jobs.

- ❖ Impact on Health Care Infrastructure: India is also exploring the case for ensuring universal rural healthcare through a sustainable energy path. A CEEW study (June, 2020) has shown that primary healthcare centres in Chhattisgarh with battery supported solar PV systems (costing just Rs 28/ person) have better outcomes, especially in maternal and neonatal cases, due to power supply for medical equipment and storage of drugs. Expanding the application across a fractured health care system can have far reaching benefits at affordable costs.

- ❖ Impact on Pollution: Pollution is bad for both health and economy. India loses a significant $150 billion per annum owing to just air pollution (Green Peace 2020). Studies by acclaimed institutions have established that the use of solar and wind energy reduces pollution levels by as much 80-97%. India's total renewable capacity was around 35.7% (Sep 19) of the total installed generation capacity consequent to which CO_2 emissions fell by around 1% in FY 20. India aims to have 175 GW by 2022 from renewable/clean energy, and has pledged a 33-35% reduction in the emissions intensity of its economy by 2030, compared to 2005 levels. This is expected to have far-reaching impact across sectors like health care, urbanisation, transportation, power, etc.

Challenges of Taxing Carbon

- ❖ Carbon tax is regressive in nature -it affects the poor more than the rich. The highest rise in price will be in fuel and energy which affects the poor.

- ❖ Inflation: High transportation cost will lead to inflation and affect the informal sector.

- ❖ Insufficient: increasing carbon taxes is alone insufficient to reduce emissions as income levels rise.

Conclusion

- • India is among the nations that are hardest hit by climate impacts. There is growing public support for climate action, but we need solutions that are seen to be in India's

interest. A market-oriented approach to tax and trade carbon domestically and to induce similar action by others through international trade and diplomacy offers a way forward.

16. **What is meant by Quadrilateral Security Dialogue (QUAD) Group? What was the major outcome of the First Summit of the Quadrilateral Security Dialogue (QUAD)? How does India's engagement in Quadrilateral Security Dialogue (QUAD) support it as a Regional Power in Asia?**

நாற்கர பாதுகாப்பு பாதுகாப்பு பேச்சுவார்த்தை (QUAD) குழு என்றால் என்ன? நாற்கர பாதுகாப்பு பாதுகாப்பு பேச்சுவார்த்தையின் (QUAD) முதல் உச்சி மாநாட்டின் முக்கிய விளைவு என்ன? QUAD-இல் இந்தியாவின் ஈடுபாடு ஆசியாவில் ஒரு பிராந்திய சக்தியாக அதை எவ்வாறு ஆதரிக்கிறது?

Quadrilateral Security Dialogue (QUAD)

- Recently, the high level senior official meeting of Quad nations was concluded in Bangkok (Thailand) on the margins of East Asia Summit on 4th November.
- In past some time, differences among the Quad countries seem to have narrowed down.
- There are also common references to the creation of a free, open and inclusive regional architecture, rules of the road, freedom of navigation and over-flight, and, ASEAN centrality.

Backdrop of Quad

- Quadrilateral Security Dialogue (Quad) is the informal strategic dialogue between India, USA, Japan and Australia with a shared objective to ensure and support a "free, open and prosperous" Indo-Pacific region.
- China's unilateral claim on the Nine-Dash Line in the South China Sea; rapid warship building its first overseas base in Djibouti; and its surface and subsurface activities in Indian Ocean beyond the Malacca Straits have alarmed regional countries like India and Japan about increasing Chinese ambition.
- In this context, the idea of Quad was first mooted by Japanese Prime Minister Shinzo Abe in 2007.
- However, the idea couldn't move ahead with Australia pulling out of it, apparently due to Chinese pressure.
- In December 2012, Shinzo Abe again floated the concept of Asia's "Democratic Security Diamond" involving Australia, India, Japan and the US to safeguard the maritime commons from the Indian Ocean to the western Pacific.
- In November 2017, India, the US, Australia and Japan gave shape to the long-pending "Quad" Coalition to develop a new strategy to keep the critical sea routes in the Indo-Pacific free of any influence (especially China).
- Quad is criticized by China as Asian version of the North Atlantic Treaty Organization (NATO).

Quad Nations and China

- **USA:** USA had followed a policy to contain China's increasing influence in East Asia. Therefore, USA sees the coalition as an opportunity to regain its influence in the Indo-Pacific region.

- The US has described China, along with Russia, as a strategic rival in its National Security Strategy, National Defence Strategy and the Pentagon's report on Indo-Pacific Strategy.

- **Australia:** Australia is concerned about China's growing interest in its land, infrastructure and politics, and influence on its universities.
  - Taking into account its overwhelming economic dependence on China for prosperity, Australia has continued its commitment to a Comprehensive Strategic Partnership with China.

- **Japan:** In the last decade, Japan has expressed concerns related to China's territorial transgression in the region.
  - Trade volume with China remains the key lifeline to the Japanese economy, where net exports contributed exactly one-third of Japan's economic growth since the beginning of 2017.
  - Therefore, considering its importance, Japan is balancing its economic needs and territorial concerns with China
  - Japan has also agreed to involve in the Belt and Road Initiative by participating in infrastructure programs in third country. In this way, Japan can mitigate Chinese influence in those countries while improving relations with China.

- **India:** In recent years, China's violation of international norms, particularly its construction of military facilities on reclaimed islands in the South China Sea, and its growing military and economic power, pose a strategic challenge to India.

  - Considering China's strategic importance, India is carefully balancing China on one hand and the US on the other, by remaining committed to strategic autonomy to China, which has generally proved reassuring to China.
  - India has also not permitted Australia to participate in Malabar Trilateral Maritime exercises between India, US and Japan, concerned about what message it would send to China, which is wary of the exercise.
  - The recent Mamallapuram summit between President Xi Jinping and PM Modi is a positive development, valued by both sides as key to giving strategic guidance to stakeholders on both sides.

Challenges

- **China's Territorial Claims:** China claims that it has historical ownership over nearly the entire region of South China Sea, which gives it the right to manufacture islands. However, the International Court of Arbitration rejected the claim in 2016.
- **China's Closeness to ASEAN:** The ASEAN countries also have a well-knit relationship with China. The Regional Cooperation Economic Partnership (RCEP) is a recent example of China's increasing influence over ASEAN nations.
- **Economic Power of China:** Considering the economic might of China and the dependence of Quad nations like Japan and Australia on China, the Quad nations cannot afford to have strained relations with it.
- **Convergence among Quad Nations:** The nations in the Quad grouping have different aspirations, aims at balancing their own interest. Therefore, coherence in the vision of Quad nation as a grouping is absent.

Opportunities for India Under Quad Arrangement

Checkmating China

- The maritime space is a lot more important to China than engaging in opportunistic land grab attempts in the Himalayas.
- A huge chunk of Chinese trade happens via the Indian oceanic routes that pass through maritime chokepoints.
- In the event of any chinese aggression on borders, India by cooperation with Quad countries can potentially disrupt chinese trade.
- Hence, unlike in the continental sphere where India seems facing a 'nutcracker like situation' due to China-Pakistan collusion, the maritime sphere is wide open to India to undertake coalition building, rule setting, and other forms of strategic exploration.

Emerging as a Net Security Provider

- There is a growing great power interest in the maritime sphere, especially with the arrival of the concept of 'Indo-Pacific'. For instance, many European countries have recently released their Indo-Pacific strategies.
- With India, located right at the centre of the Indo-Pacific geopolitical imagination can realise the vision of a 'broader Asia' that can extend its influence away from geographical boundaries.
- Moreover, India can build around collective action in humanitarian assistance and disaster relief, monitoring shipping for search and rescue or anti-piracy operations, infrastructure assistance to climatically vulnerable states, connectivity initiatives and similar activities.
- Further, India with Quad countries can check imperialist policies of China in Indian ocean region and ensure Security and growth for all in the region.

Issues Related to Quad

- **Undefined Vision:** Despite the potential for cooperation, the Quad remains a mechanism without a defined strategic mission.
- **Maritime Dominated**: The entire focus on the Indo-Pacific makes the Quad a maritime, rather than a land-based grouping, raising questions whether the cooperation extends to the Asia-Pacific and Eurasian regions.
- **India's Aversion of Alliance System**: The fact that India is the only member that is averse to a treaty alliance system, has slowed down the progress of building a stronger Quadrilateral engagement.

Way Forward

- The Quad will need to have a clearer vision for itself. It is important for members of the Quad not to be reactive. It is also important to exhibit openness, and ensure that all talk of a 'Free and Open Indo-Pacific' is more than just a mere slogan.
- India, Japan, and Australia can take the lead in infrastructural projects, while the US too needs to be more pro-active in pushing ahead the vision of connectivity.
- The Quad should focus on building a robust regional consultation mechanism and coordinate with ASEAN nations on issues of regional importance.

- The Quad framework derives its geopolitical validation from India's association and presents a unique opportunity for India to be an active participant in shaping regional security architecture with global undertones.

17. **Discuss different types of cybercrimes in operation. Highlight on the measures required to be undertaken to fight the menace.**

நடைமுறையில் உள்ள பல்வேறு வகையான சைபர் குற்றங்களைப் பற்றி விவாதிக்க. அச்சுறுத்தலை எதிர்த்துப் போராட வேண்டிய நடவடிக்கைகள் குறித்து விவரிக்க.

- According to EY's latest Global Information Security Survey (GISS) 2018-19 – India edition, one of the highest number of cyber threats have been detected in India, and the country ranks second in terms of targeted attacks. Although Banking and Telecom are the most attacked sectors but Manufacturing, Healthcare, and Retail have also faced a significant number of cyber attacks.

Cyber Security

- Cyber Security is protecting cyber space including critical information infrastructure from attack, damage, misuse and economic espionage.
- **Cyber Space**: A global domain within the information environment consisting of the interdependent network of information technology infrastructures, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers.
- **Critical Information Infrastructure**: According to Section 70(1) of the Information Technology Act, CII is defined as a "computer resource, the incapacitation or destruction of which, shall have debilitating impact on national security, economy, public health or safety".
- **Cyber Attack**: It is a malicious and deliberate attempt by an individual or organization to breach the information system of another individual or organization.

Motives behind Cyber Attacks

- To seek commercial gain by hacking banks and financial institutions.
- To attack critical assets of a nation.
- To penetrate into both corporate and military data servers to obtain plans and intelligence.
- To hack sites to virally communicate a message for some specific campaign related to politics and society.

Types of Cyber Attacks

- Malware, short for malicious software refers to any kind of software that is designed to cause damage to a single computer, server, or computer network. Ransomware, Spy ware, Worms, viruses, and Trojans are all varieties of malware.
- Phishing: It is the method of trying to gather personal information using deceptive e-mails and websites.
- Denial of Service attacks: A Denial-of-Service (DoS) attack is an attack meant to shut down a machine or network, making it inaccessible to its intended users. DoS attacks accomplish this by flooding the target with traffic, or sending it information that triggers a crash.

- Man-in-the-middle (MitM) attacks, also known as eavesdropping attacks, occur when attackers insert themselves into a two-party transaction. Once the attackers interrupt the traffic, they can filter and steal data.
- **SQL Injection:**
  - SQL (pronounced "sequel") stands for Structured Query Language, a programming language used to communicate with databases.
  - Many of the servers that store critical data for websites and services use SQL to manage the data in their databases.
  - A SQL injection attack specifically targets such kind of servers, using malicious code to get the server to divulge information it normally wouldn't.

- **Cross-Site Scripting (XSS):**
  - Similar to an SQL injection attack, this attack also involves injecting malicious code into a website, but in this case the website itself is not being attacked.
  - Instead the malicious code the attacker has injected, only runs in the user's browser when they visit the attacked website, and it goes after the visitor directly, not the website.
  - Social engineering is an attack that relies on human interaction to trick users into breaking security procedures in order to gain sensitive information that is typically protected.

Components of Cyber Security

- **Application Security:** It encompasses measures or counter-measures that are taken during an application's development process to protect it from threats that can come through flaws in the app design, development, deployment, upgrade or maintenance.
- **Information security:** It is related to the protection of information from an unauthorized access to avoid identity theft and to protect privacy.
- **Network Security**: It includes activities to protect the usability, reliability, integrity and safety of the network.
- **Disaster Recovery Planning**: It is a process that includes performing risk assessment, establishing priorities, developing recovery strategies in case of an attack.

Need for Cyber Security

- **For Individuals**: Photos, videos and other personal information shared by an individual on social networking sites can be inappropriately used by others, leading to serious and even life-threatening incidents.
- **For Business Organizations**: Companies have a lot of data and information on their systems. A cyber attack may lead to loss of competitive information (such as patents or original work), loss of employees/customers private data resulting into complete loss of public trust on the integrity of the organization.
- **For Government**: A local, state or central government maintains huge amount of confidential data related to country (geographical, military strategic assets etc.) and citizens. Unauthorized access to the data can lead to serious threats on a country.

International Mechanisms:

- The International Telecommunication Union (ITU) is a specialized agency within the United Nations which plays a leading role in the standardization and development of telecommunications and cyber security issues.
- Budapest Convention on Cybercrime: It is an international treaty that seeks to address Internet and computer crime (cybercrime) by harmonizing national laws, improving investigative techniques, and increasing cooperation among nations. It came into force on 1 July 2004. India is not a signatory to this convention.
- Internet Governance Forum (IGF): It brings together all stakeholders i.e. government, private sector and civil society on the Internet governance debate. It was first convened in October–November 2006.
- Internet Corporation for Assigned Names and Numbers (ICANN): It is a non-profit organization responsible for coordinating the maintenance and procedures of several databases related to the namespaces and numerical spaces of the Internet, ensuring the network's stable and secure operation. It has its headquarters in Los Angeles, U.S.A.

Laws related to Cyber Security in India

Information Technology Act, 2000

- The act regulates use of computers, computer systems, computer networks and also data and information in electronic format.
- The act lists down among other things, following as offences:
  - Tampering with computer source documents.
  - Hacking with computer system
  - Act of cyber terrorism i.e. accessing a protected system with the intention of threatening the unity, integrity, sovereignty or security of country.
  - Cheating using computer resource etc.

Strategies under National Cyber Policy, 2013

- Creating a secure cyber ecosystem.
- Creating mechanisms for security threats and responses to the same through national systems and processes.
  - National Computer Emergency Response Team (CERT-in) functions as the nodal agency for coordination of all cyber security efforts, emergency responses, and crisis management.
- Securing e-governance by implementing global best practices, and wider use of Public Key Infrastructure.
- Protection and resilience of critical information infrastructure with the National Critical Information Infrastructure Protection Centre (NCIIPC) operating as the nodal agency.
  - NCIIPC has been created under Information Technology Act, 2000 to secure India's critical information infrastructure. It is based in New Delhi.
- Promoting cutting edge research and development of cyber security technology.
- Human Resource Development through education and training programs to build capacity.

Challenges

- Increased use of mobile technology and internet by people.
- Proliferation of Internet of Things (IoT) and lack of proper security infrastructure in some devices.
- Cyberspace has inherent vulnerabilities that cannot be removed.
- Internet technology makes it relatively easy to misdirect attribution to other parties.
- It is generally seen that attack technology outpaces defence technology.
- Lack of awareness on Cyber security.
- Lack of Cyber security specialists.
- Increased use of cyberspace by terrorists.

Recent Steps taken by Government

- **Cyber Surakshit Bharat Initiative:** It was launched in 2018 with an aim to spread awareness about cybercrime and building capacity for safety measures for Chief Information Security Officers (CISOs) and frontline IT staff across all government departments.
- **National Cyber security Coordination Centre (NCCC):** In 2017, the NCCC was developed. Its mandate is to scan internet traffic and communication metadata (which are little snippets of information hidden inside each communication) coming into the country to detect real-time cyber threats.
- **Cyber Swachhta Kendra:** In 2017, this platform was introduced for internet users to clean their computers and devices by wiping out viruses and malware.
- Training of 1.14 Lakh persons through 52 institutions under the Information Security Education and Awareness Project (ISEA) – a project to raise awareness and to provide research, education and training in the field of Information Security.
- **International cooperation:** Looking forward to becoming a secure cyber ecosystem, India has joined hands with several developed countries like the United States, Singapore, Japan, etc. These agreements will help India to challenge even more sophisticated cyber threats.

Way Forward

- Real-time intelligence is required for preventing and containing cyber attacks.
- Periodical 'Backup of Data' is a solution to ransomware.
- Using Artificial Intelligence (AI) for predicting and accurately identifying attacks.
- Using the knowledge gained from actual attacks that have already taken place in building effective and pragmatic defence.
- Increased awareness about cyber threats for which digital literacy is required first.
- India needs to secure its computing environment and IoT with current tools, patches, updates and best known methods in a timely manner.
- The need of the hour for Indian government is to develop core skills in cyber security, data integrity and data security fields while also setting stringent cyber security standards to protect banks and financial institutions.

18. **"Reforms in the United Nation are necessary in order to strengthen its effectiveness, legitimacy and Relevance as a multilateral organization". Discuss.**
"பலதரப்பட்ட அமைப்பாக அதன் செயல்திறன், நியாயத்தன்மை மற்றும் பொருத்தத்தை வலுப்படுத்த ஐக்கிய நாடுகள் சபையில் சீர்திருத்தங்கள் அவசியம்" - விவாதிக்க.

Approach

- Introduce the current status of the United Nations and its success in maintaining peace.
- Explain the need for United Nations reforms.
- Discuss India's stand in United Nations reforms.
- Conclude with a way forward.

Introduction

- The United Nations (UN) is an international organization founded in 1945. It is currently made up of 193 Member States.
- Since its inception, the UN has performed numerous humanitarian, environmental and peace-keeping undertakings.
- For over the five decades, the International Atomic Energy Agency (IAEA) has served as the world's nuclear inspector.
- UN treaties viz Chemical Weapons Convention-1997, the Mine-Ban Convention-1997 and the Arms Trade Treaty-2014 are the legal backbone of disarmament efforts.
- General Assembly adopted the Universal Declaration of Human Rights in 1948. It has helped to enact dozens of legally binding agreements on political, civil, economic, social and cultural rights.

Body

In recent years, there have been demands for reform of the whole body of the UN. Two basic kinds of reforms face the UN:

- Reform of the organisation's structures and processes.
- Review of issues that fall within the jurisdiction of the organisation.

Need for reforms:

- The UN represents a larger world and the irony is that it's security council has only 5 permanent members.
    - Current composition of the Security Council represents the post-World War II realities and thus is not in pace with the changing balance of power in the world.
- At the time of the formation of UNSC, big powers were given privileges to make them part of the council. This was necessary for its proper functioning as well as to avoid the failure like that of the organization 'League of Nations'.
- The regions like far East Asia, South America, Africa have no representation in the permanent membership of the council.
- It is widely believed by the global south or the developing countries that the UN's decisions reflect only western values and interests and are dominated by a few powers.
- Rise of fora like G4 (India, Brazil, Germany, and Japan) as important economies and emerging world powers are pushing after quick UN Security Council reforms.

- Some countries and experts want the UN to play a greater or more effective role in peace and security missions, while others want its role to be confined to development and humanitarian work (health, education, environment etc).

India's stand:

- India believes that she deserves a permanent place in the council considering the size of its economy, population and the fact that it is the largest democracy in the world.
  - India has become a major player not only in Asia but also in the world.
- The Security Council would be a more representative body if India would be there in it as a permanent member.

Conclusion

- Reform and improvement are fundamental to any organisation to serve the needs of the changing environment. The UN is no exception.
- In the current world scenario it has become crucial for the United Nations to reform itself and uphold its legitimacy.

19. Answer the following questions.
பின்வரும் வினாக்களுக்கு விடையளி.
a. **The adjacent sides of a parallelogram measures 34 m, 20 m and the measure of one of the diagonal is 42 m. Find the area of parallelogram.**
ஓர் இணைகரத்தின் அடுத்தடுத்த பக்கங்களின் அளவுகள் 34மீ, 20மீ மற்றும் அதன் ஒரு மூலைவிட்டத்தின் அளவு 42 மீ எனில் அந்த இணைகரத்தின் பரப்பைக் காண்க.

b. **The volume of a cylindrical water tank is litres. If the diameter of the tank is 7 m, find its height.**
ஒரு உருளை வடிவ தண்ணீர் தொட்டியின் கன அளவு லிட்டர் ஆகும் தொட்டியின் விட்டம் 7 மீ எனில், அதன் உயரம் காண்க.

20. Answer the following questions.
பின்வரும் வினாக்களுக்கு விடையளி.
a. **A ground is in the form of a circle whose diameter is 350 m. An athlete makes 4 revolutions. Find the distance covered by the athlete.**
ஒரு விளையாட்டுத் திடல், 350 மீ விட்டத்துடன் கூடிய வட்ட வடிவில் உள்ளது. ஓர் ஓட்டப்பந்தய வீரர், அத்திடலை நான்கு முறை சுற்றி வருகிறார் எனில், அவர் கடந்த தொலைவைக் கணக்கிடுக.

b. **If the total surface area of a cone of radius 7 cm is 704 cm², then find its slant height.**
704 ச.செ.மீ மொத்தப் புறப்பரப்பு கொண்ட ஒரு கூம்பின் ஆரம் 7 செ.மீ எனில், அதன் சாயுயரம் காண்க.

c. **Convert to base 10**
40324_5 ஐப் பத்தடிமான எண்ணாக மாற்று.