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GS 2 : Polity, Governance, International Relations

1. The ECI cannot be a super government

Context:

- The **ongoing state assembly elections** have brought the focus on the functioning of the Election Commission of India.

Background:

Election Commission of India:

- The Election Commission of India (ECI) is a **constitutional body** that **superintends, directs and controls the conduct of elections**. It is the constitutional duty of the ECI to ensure that the elections held are free and fair.
- The ECI administers elections to the Lok Sabha, Rajya Sabha, State Legislative Assemblies, State Legislative Councils and the offices of the President and Vice President of the country.
- The Election Commission operates under the authority of the Constitution as per **Article 324** and subsequently enacted the **Representation of the People Act**.

Details:

Powers enjoyed by the Election Commission of India:

- The ECI enjoys wide powers mainly derived from Article 324 of the Constitution.
- The Supreme Court in the **Mohinder Singh Gill vs Chief Election Commissioner case** held that Article 324 contains plenary powers to ensure free and fair elections and these are vested in the ECI which can take all necessary steps to achieve this constitutional object. All subsequent decisions of the Supreme Court have reaffirmed the judgment in the Mohinder Singh Gill vs Chief Election Commissioner case.
- Besides the **model code of conduct**, the ECI also issues from time to time directions, instructions and clarifications on a host of issues that crop up in the course of an election.

The model code of conduct:

- The model code of conduct issued by the ECI is a **set of guidelines meant for political parties, candidates and governments to adhere to during an election.**
- This code is **based on consensus among political parties.** The model code is observed by all stakeholders for fear of action by the ECI.
- The code has been issued in exercise of the ECI's powers under Article 324.
- Since it is a code of conduct framed on the basis of a consensus among political parties, it has **not been given any legal backing.**
 - The ECI's opposition to giving legal backing to the model code of conduct is based on the fact that once it becomes a part of law all matters connected with the enforcement of the code will be taken to court, which would delay elections.

Unresolved questions over ECI:

- There exists a considerable amount of confusion about the extent and nature of the powers which are available to the ECI in enforcing the model code of conduct as well as its other decisions in relation to an election.

Enforceability of the model code of conduct:

- Paragraph 16A of the Election Symbols (Reservation and Allotment) Order, 1968 says that the commission may suspend or withdraw recognition of a recognised political party if it refuses to observe the model code of conduct.
- The article expresses doubts on the **legal sustainability** of this above provision.
- The reason is that withdrawal of the recognition of a party recognised under these orders seriously affects the functioning of political parties. Given the fact that the **model code of conduct is itself not legally enforceable, the ECI may not be allowed to resort to a punitive action** such as withdrawal of recognition.

Transfer of officials:

- The **ECI can transfer officials working under State governments** if it receives a report from the observers of the ECI about the conduct of certain officials of the States that could adversely affect the free and fair election in that State.
- Given the fact that the **transfer of an official is within the exclusive jurisdiction of the government**, it is actually not clear whether the ECI can transfer a State government official in the exercise of the general powers under Article 324 or under the model code.

- The article further argues that unbridled power to the ECI to transfer officials without the concurrence of the State governments could bring to a halt the whole state administration.
- In Mohinder Singh Gill's case, the Court had made it abundantly clear that the ECI can draw power from Article 324 only when no law exists which governs a particular matter. It means that the ECI is bound to act in accordance with the law in force. **Transfer of officials, etc. is governed by rules made under Article 309 of the Constitution** which cannot be bypassed by the ECI under the purported exercise of the power conferred by Article 324.

Interference in administrative moves:

- According to the model code, ministers cannot announce any financial grants in any form, make any promise of construction of roads, provision of drinking water facilities, etc. or make any ad hoc appointments in the government departments or public undertakings.
- **The government is not allowed by the ECI to take any action, administrative or otherwise** if the ECI believes that such actions or decisions will affect free and fair elections.
- This allows the ECI unbridled powers in intervening in the administrative decisions of a State government or even the union government.
- This power has been used by the ECI to stop the Government of Kerala from continuing to supply kits containing rice, pulses, cooking oil, etc. The article argues against such a move based on the following aspects.
 - This step could adversely impact the poor and marginalized people's ability to access food, especially in the post-pandemic phase.
 - The Supreme Court in **Subramaniam Balaji vs Govt. of T. Nadu & Ors (2013)** held that the distribution of colour TVs, computers, cycles, goats, cows, etc, done or promised by the government is in the nature of welfare measures and is in accordance with the directive principles of state policy, and therefore it is permissible during an election.
 - Section 123 (2)(b) of the **Representation of the People Act, 1951** says that the declaration of a public policy or the exercise of a legal right will not be regarded as interfering with the free exercise of the electoral right.

Conclusion:

- The ECI, through the conduct of free and fair elections in an extremely complex country like India, has helped maintain the integrity and independence of the electoral process, considered indispensable to the democratic system.

- However, **the unlimited and arbitrary powers enjoyed by the ECI need to be addressed** given the dangers associated with such a scenario.

2. Sukanya Samriddhi Yojana

- Sukanya Samriddhi Yojana is a **personal finance scheme** for the **girl child**, launched in 2015, **under the Beti Bachao, Beti Padhao campaign**.
- It is a **small deposit scheme** for the girl child that provides an **income tax rebate**.
- The scheme is jointly governed by the **Ministry of Women and Child Development, the Ministry of Health and Family Welfare, and the Ministry of Human Resource Development**.
- The scheme focuses on encouraging the parents of the female child for building a fund for their future education and marriage expenses.
- The account will remain operative for **21 years from the date of opening of the account** or marriage of the girl child **after attaining 18 years of age**.
 - To meet the requirement of higher education expenses, partial withdrawal of 50 per cent of the balance would be allowed after the girl child has attained 18 years of age.

3. Myanmar shadow govt. wants invite for ASEAN crisis talks

Context:

Myanmar's shadow government has urged Southeast Asian leaders to give it a seat at the table during ASEAN crisis talks and **not to recognise the military regime that seized power in a February coup**.

Issue:

- The military has deposed the democratically elected leadership of Myanmar and has taken over the administration.
- **The Army has moved to quell mass protests** against its rule killing at least 730 people.

Details:

- Aung San Suu Kyi, other elected leaders have been detained and power has been handed over to military chief Min Aung Hlaing.

- The Army has stated that it had carried out the detentions in response to “election fraud”.
- The coup has come after days of escalating tension between the civilian government and the military that stirred fears of a coup in the aftermath of the election.

India’s stakes:

- India has expressed “deep concern” over developments in Myanmar. However, analysts have pointed out that given India’s stakes in Myanmar, the only option will be to engage, building on its outreach in recent years via the security and defence establishment.
- India’s security relationship with the Myanmar military has become extremely close over the years and it may not want to cut ties with Myanmar.
- Myanmar is vital for India in securing the North East frontiers from insurgent groups.
- A harsh reaction from India, on the lines of that from the U.S., would only benefit China. India also views Myanmar as the “gateway to the East” and ASEAN countries.
- India has cultivated several infrastructure and development projects with Myanmar. These include the India-Myanmar-Thailand trilateral highway and the Kaladan multi-modal transit transport network, as well as a plan for a Special Economic Zone at the Sittwe deep-water port.
- ASEAN members believe the crisis threatens regional stability.

Myanmar’s Shadow Government:

- Opponents of Myanmar’s ruling junta went on the political offensive declaring they have **formed an interim national unity government** with members of Aung San Suu Kyi’s ousted Cabinet and major ethnic minority groups.
- The move comes on the eve of a **diplomatic initiative to solve Myanmar’s crisis** by the **Association of Southeast Asian Nations**.

4. Is compensation received for land acquired by govt. taxable?

- Compulsory acquisition of land by a government agency is construed as a transfer under Income Tax Act, and requisite Capital Gains Tax is attracted, which is computed as per the provisions laid.

Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013:

- Shortly known as **RFCTLARR Act**, it came into effect on **January 1, 2014**.
- Section 96 of the RFCTLARR Act states that 'No Income Tax' or 'Stamp Duty' shall be levied on any award or agreement made under RFCTLARR Act when lands are being acquired by appropriate government (including government companies and trusts/AOPs/societies controlled by government), except under Section 46, wherein Section 46 deals with land purchase by non-government/private parties through RFCTLARR Act.
- **Enhanced compensation as awarded by courts is taxable under the head 'Capital Gains'**.
- **Interest on compensation** as awarded by the courts **will be taxable** in the year of receipt of such enhanced compensation under the head 'Income from Other Sources'.

GS 3 : Economy, Science and Technology, Environment

5. U.S., China agree to cooperate with urgency on climate crisis

Context:

The world's two biggest carbon polluters, **the U.S. and China** have agreed to **cooperate to curb climate change with urgency**. Their cooperation is key to the success of global efforts to curb climate change.

Details:

- The pact comes ahead of **Biden's summit with world leaders**.
- 40 world leaders including the Chinese President have been invited to the summit.
- The U.S. and other countries are expected to announce more **ambitious national targets for cutting carbon emissions** ahead of or at the meeting, along with pledging **financial help for climate efforts by less wealthy nations**.

Note:

- China is the world's biggest carbon emitter, followed by the U.S.
- The two countries pump out nearly half of the fossil fuel fumes that are warming Earth's atmosphere.

6. An obituary for the IP Appellate Board

Context:

- The **Tribunal Reforms (Rationalisation and Conditions of Service) Ordinance, 2021**, has resulted in shutting down the Intellectual Property Appellate Board (IPAB).

Intellectual Property Appellate Board:

- The **Intellectual Property Appellate Board (IPAB)** was India's specialist tribunal for determining disputes relating to intellectual property (IP) rights.
- Historically, appeals from the Intellectual Property Office (IPO), rectification and revocation applications were heard by the various High Courts. However, the **Patents (Amendment) Act of 2002** divested these powers from the High Courts and extended them to the IPAB.
- The IPAB was initially established under the Trade Marks Act of 1999, later its jurisdiction was extended to hear patent cases after the Patents (Amendment) Act of 2002.

Lacunae with respect to the functioning of IPAB:

- The IPAB has been plagued by challenges ever since its inception.

Understaffed:

- It has remained perennially understaffed.
- It has functioned **without a full-time head** for almost two years.
- The appointment of the **technical member** for patents, who brings the much-needed technical expertise that patent cases usually demand, was delayed.

Poorly funded:

- Not only was the IPAB understaffed, with its administrative staff often being on deputation, it was also grossly underfunded, which resulted in **very poor infrastructure for it**.
- The IPAB had sittings in five different cities, with just one chairperson who had to fly between them at times.

Less emphasis on patent side functions:

- The IPAB's jurisdiction of cases was split between trademarks, patents, copyright, and geographical indication, where the predominant business pertained to trademarks.
- **The IPAB has not been performing its adjudicatory function on the patent side regularly** due to administrative reasons.
- Though the patents side of the IPAB existed in theory since 2002, the Central government notified its functioning only in April 2007 after a rebuke from the Madras High Court.

Poor disposal rate:

- The disposal rate for patents at the IPAB was very poor.
- **The patents bench saw a paltry disposal rate of about 20 patent cases a year.** Nearly 70% of the patent cases filed were either pending at some stage or yet to be taken up for hearing. Going by this disposal rate, it would have taken another decade to dispose of the pending applications, leave alone the new ones.
- Notably, the tribunals were established with the primary aim of speedy disposal of cases by specialised experts.

Other issues:

- The IPAB has been the subject matter of judicial review before the various High Courts. These cases include a **challenge to the constitutionality of the IPAB.**
- One of the former chairpersons had publicly raised concerns regarding the **judicial and institutional independence of the IPAB.**

Concerns:

Impact on the innovation ecosystem:

- The functioning of the IPAB is critical for the innovation ecosystem.
- Every patent granted by the Patent Office is a potential subject matter in appeal before the IPAB. An unjustified patent grant at the Patent Office, by error or oversight, can only be corrected in appeal.
- Thus the shutting down of the IPAB adversely impacts the innovation ecosystem in India.

Missed opportunity:

- India has done relatively well with respect to legislation regarding patents. It has offered the world a host of **TRIPS-compliant flexibilities** in its statute.
- **Retraction of product patents** for pharmaceuticals and chemicals.
- **Anti-evergreening** provisions.
- Robust **compulsory licensing regime**.
- The tenure of the IPAB will be remembered as a missed opportunity to develop the home-grown **jurisprudence on patent law**– case laws from the highest courts on how these provisions will be worked.

7. Normal is good

Context:

- The India Meteorological Department (IMD) has forecast a **‘normal’ monsoon for the current year**.

Details:

- As per the IMD’s norms, a normal monsoon implies that **India will get 96% to 104% of the 88 cm** that it gets from June-September.
 - 88 cm is the **Long Period Average (LPA)**, which is a mean of monsoon rainfall from 1961-2010.
 - The months of July and August account for around two-thirds of the monsoon rains and are the most important months for sowing in India.
- Notably, there is a good chance of ‘above normal’ rain in central and southern India.
- The ‘normal’ monsoon forecast for the current year is primarily predicated on **‘neutral’ surface temperatures in the Central Equatorial Pacific**.
 - A warming El Niño is unlikely.
 - **El Niño is the warm phase of the El Niño–Southern Oscillation (ENSO)** and is associated with a band of warm ocean water that develops in the central and east-central equatorial Pacific. The ENSO is the cycle of warm and cold sea surface temperature (SST) of the tropical central and eastern Pacific Ocean. El Niño is accompanied by high air pressure in the western Pacific and low air pressure in the eastern Pacific. **El Niño adversely impacts monsoon rainfall over the Indian subcontinent.**
 - The **Indian Ocean Dipole** is expected to be unfavourable for excess rains.

- The Indian Ocean Dipole (IOD) is an irregular oscillation of sea surface temperatures in which the western Indian Ocean becomes alternately warmer (positive phase) and then colder (negative phase) than the eastern part of the ocean. The IOD affects the strength of monsoons over the Indian subcontinent.

Changes in IMD's forecasting:

Dynamic model:

- There has been the IMD's increasing reliance on **dynamical monsoon models**.
- Unlike the traditional statistical models, which are based on a fixed set of meteorological variables that have historically been correlated with variations in monsoon rainfall, the dynamical models **generate forecasts based on evolving weather patterns**.

More forecasts:

- Up until now, the IMD used to follow a two-stage monsoon forecast system, wherein after the prognosis in April, it used to give an updated estimate in late May or early June.
- This year onwards **there will be forecasts for June and September too**, to be given in May and August, respectively. Historically, predicting rain for June and September is challenging as it **corresponds to the monsoon's entry and exit**.

Forecasts for monsoon core zone:

- The IMD forecasts used to include an estimate of how much rain is likely in: northwest India, northeast India, central India and the southern peninsula.
- Now onwards, there will also be forecasts for what is called the monsoon core zone, which represents most of the rainfed agriculture region in the country.

Way forward:

- The forecasts apart from their emphasis on the agricultural sector should now **get urban-focused too** because of the natural disasters that accompany even 'normal' monsoons in Indian cities. The forecast should form a critical aspect of **India's disaster preparedness**.
- There should be more focus on incorporating the IMD forecasts down to municipal and block-level planning.

- The IMD must continue to widen its focus to aid business and services sectors that are in need of weather products.

8. Bat with sticky discs found in Meghalaya

What's in News?

Meghalaya has yielded India's first bamboo-dwelling bat with sticky discs.



- The **disc-footed bat** (*Eudiscopus denticulus*) was recorded in Meghalaya's Lailad area near the **Nongkhylllem Wildlife Sanctuary**.
- It is a small bat with disc-like pads in the thumb and bright orange colouration.
- It has a **flattened skull** and **sticky pads** that enable the bats to roost inside cramped spaces, clinging to smooth surfaces such as bamboo internodes.
- While there are other **bamboo dwelling species of bats in India**, the extent of adaptation for bamboo habitat in this species is not seen in the others.
- It is found to be **genetically very different** from all other known bats bearing disc-like pads.

Note:

- There are **130 species of bats in India**.
- The disc-footed bat has raised the variety of **bat species in Meghalaya to 66**.
 - This is the **most for any state in India**.
- Meghalaya has **three wildlife sanctuaries**. These are the **Nongkhylllem Wildlife Sanctuary**, the **Siju Sanctuary**, and the **Baghmara Sanctuary**.
- Baghmara Sanctuary is the home of the **insect-eating pitcher plant** (*Nepenthes khasiana*).

THE INDIAN EXPRESS

GS 2 : Polity, Governance, International Relations

1. China Not Leaving Hot Springs & Gogra Post

Why in News

Recently, during the 11th round of discussions between the senior military commanders of India and China to resolve the **standoff in eastern Ladakh**, China refused to vacate two of the four original friction points.

- At two friction points, **Patrolling Point 15 (PP15) in Hot Springs**, and **PP17A near Gogra Post**, China still has a platoon-level strength each, along with vehicles.
- Other two are the **Galwan valley** and the **Depsang plains**.

Key Points

- **Patrolling Point 15 and 17A:**
 - Along the **Line of Actual Control (LAC)** between India and China, Indian Army has been given certain locations that its troops have access to patrol the area under its control.
 - These points are known as patrolling points, or PPs, and are decided by the **China Study Group (CSG)**.
 - **CSG was set-up in 1976**, when Indira Gandhi was the prime minister, and is the **apex decision-making body on China**.
 - Barring certain areas, like **Depsang Plains**, these patrolling points are on the LAC, and troops access these points to assert their control over the territory.
 - It is an important exercise since the **boundary between India and China is not yet officially demarcated**.
 - **LAC is the demarcation that separates Indian-controlled territory from Chinese-controlled territory**.
 - PP15 and PP17A are **two of the 65 patrolling points in Ladakh along the LAC**.
 - Both these points are in an area where **India and China largely agree on the alignment of the LAC**.

- PP15 is located in an area known as the **Hot Springs**, while PP17A is near an area called the **Gogra post**.
- **Location of Hot Springs and Gogra Post:**
 - Hot Springs is just **north of the Chang Chenmo river** and Gogra Post is **east of the point where the river takes a hairpin bend** coming southeast from Galwan Valley and turning southwest.
 - The area is **north of the Karakoram Range of mountains**, which lies north of the **Pangong Tso lake**, and south east of Galwan Valley.
- **Importance:**
 - The area lies close to **Kongka Pass**, one of the main passes, which, according to China marks the boundary between India and China.
 - **India's claim** of the international boundary lies significantly east, as it includes the entire **Aksai Chin** area as well.
 - Hot Springs and Gogra Post are **close to the boundary between two of the most historically disturbed provinces** (Xinjiang and Tibet) of **China**.

Pangong Tso lake

- Pangong Lake is **located in the Union Territory of Ladakh**.
- It is **situated at a height of almost 4,350m** and is the **world's highest saltwater lake**.
- Extending to almost 160km, **one-third of the Pangong Lake lies in India and the other two-thirds in China**.

Galwan Valley

- The valley refers to the **land that sits between steep mountains that buffet the Galwan River**.
- The **river has its source in Aksai Chin**, on China's side of the LAC, and it flows from the east to Ladakh, where it **meets the Shyok river on India's side of the LAC**.
- The valley is **strategically located between Ladakh in the west and Aksai Chin in the east**, which is currently controlled by China as part of its Xinjiang Uyghur Autonomous Region.

Chang Chenmo River

- Chang Chenmo River or Changchenmo River is a **tributary of the Shyok River**, part of the **Indus River system**.
- It is at the southern edge of the disputed Aksai Chin region and north of the Pangong Lake basin.
- The source of Chang Chenmo is near the **Lanak Pass**.

Kongka Pass

- The Kongka Pass or Kongka La is a low mountain pass over a hill that intrudes into the Chang Chenmo Valley. It is **in the disputed India-China border area in Ladakh.**

Karakoram Range

- It is also known as **Krishnagiri** which is situated in the northernmost range of the Trans-Himalayan ranges. It forms India's frontiers with Afghanistan and China.
- It **extends eastwards from the Pamir for about 800 km.** It is a range with lofty peaks [elevation 5,500 m and above].
- Some of the peaks are more than 8,000 metre above sea level. **K2 (8,611 m)[Godwin Austen or Qogir] is the second highest peak in the world** and the highest peak in the Indian Union.
- The **Ladakh Plateau lies to the north-east of the Karakoram Range.**

2. World Heritage Day

Why in News

Every year, **18th April** is celebrated as '**International Day for Monuments and Sites**', also known as '**World Heritage Day**'.

- The **theme** for the year 2021 is "**Complex Pasts: Diverse Futures**".

Key Points

- **Background:**
 - The **International Council on Monuments and Sites (ICOMOS)** established the day in 1982 and the United Nations Educational, Scientific and Cultural Organization (UNESCO) approved it in 1983.
 - The aim of the Day is to create **awareness about Heritage among communities.**
- **UNESCO's World Heritage Sites:**
 - A **World Heritage Site** is a place that is listed by UNESCO for its special cultural or physical significance.
 - The list of World Heritage Sites is maintained by the international '**World Heritage Programme**', administered by the UNESCO World Heritage Committee.

- This is embodied in an international treaty called the **Convention concerning the Protection of the World Cultural and Natural Heritage**, adopted by UNESCO in 1972.
- **World Heritage Sites in India:**
 - Currently, there are **38 World Heritage Sites located in India**.
 - Of these, **30 are 'cultural'**, such as the Ajanta Caves, Fatehpur Sikri, Hampi monuments and the Mountain Railways of India, and **7 are 'Natural'**, including Kaziranga, Manas and Nanda Devi National Parks.
 - In 2019, '**Jaipur City**' became the 38th addition to the India list under 'Culture'.
 - **One** is classified as '**Mixed**', the **Khangchendzonga National Park**.

UNESCO

- It was founded in 1945 to develop the “intellectual and moral solidarity of mankind” as a means of building lasting peace. It is located in **Paris, France**.
- **Major Initiatives of UNESCO:**
 - **Man and Biosphere Programme**
 - **World Heritage Programme**
 - **Global Geopark Network**
 - **Network of Creative Cities**
 - **Atlas of World Languages in Danger**

ICOMOS

- It is a **global non-governmental organization** associated with UNESCO. It is located in **Paris, France**.
- Its mission is to promote the conservation, protection, use and enhancement of monuments, building complexes and sites.
- It is an **Advisory Body of the World Heritage Committee** for the implementation of the **World Heritage Convention of UNESCO**.
 - As such, it reviews the nominations of cultural world heritage and ensures the conservation status of properties.
- Its **creation in 1965** is the logical outcome of initial conversations between architects, historians and international experts that began in the early twentieth century and that materialized in the adoption of the **Venice Charter in 1964**.

GS 3 :Economy, Science and Technology,Environment

3. Baikal-GVD Telescope

Why in News

Russian scientists have launched **one of the world's biggest underwater neutrino telescopes** called the **Baikal-GVD (Gigaton Volume Detector)** in the waters of **Lake Baikal**, the world's deepest lake situated in **Siberia**.

- The construction of this telescope, which started in 2016, is motivated by the mission **to study in detail the elusive fundamental particles called neutrinos** and to possibly determine their sources.

Key Points

- **About Baikal-GVD Telescope:**
 - It is **one of the three largest neutrino detectors in the world** along with the **IceCube at the South Pole** and **ANTARES in the Mediterranean Sea**.
 - GVD is **designed to detect high-energy neutrinos** that may have come from the Earth's core, or could have been produced during nuclear reactions in the Sun.
 - It will **aid scientists' understanding of the origins of the universe** since some neutrinos were formed during the **Big Bang**, others continue to be formed as a result of **supernova explosions** or because of **nuclear reactions in the Sun**.
- **About Fundamental Particles:**
 - The **universe is made of some fundamental particles** that are indivisible. These **particles can be classified into quarks and leptons**.
 - But this **only applies to "normal matter"** or the matter that scientists know that 5% of the universe is made up of.
 - There has been the **discovery of over 12 such quarks and leptons, but three of these (protons, neutrons and electrons) make** what is referred to as the building block of life- **the atom**.
 - **Protons (carry a positive charge) and neutrons (no charge) are types of quarks**, whereas **electrons (carry a negative charge) are types of leptons**.
 - In different combinations, these particles **can make different kinds of atoms, which in turn make up molecules** that form everything- from a human being, to a mobile phone, a planet, and so on.
 - Studying what humans and everything around them is made up of **gives scientists a window into understanding the universe** a better way.
- **About Neutrinos:**

- Neutrinos (not the same as neutrons) are also a **type of fundamental particle**.
- Neutrinos **belong to the family of particles called leptons**, and there are **three types of neutrino**, i.e. electron-neutrino, muon-neutrino, and tau-neutrino.
- They are the **second most abundant particles, after photons**, which are particles of light.
- However, they are not easy to catch, this is because they **do not carry a charge**, as a result of which they **do not interact with matter**.
- **Natural sources of neutrinos** include the radioactive decay of primordial elements within the earth, radioactivity in the sun, cosmic interactions in the atmosphere and others.
- One way of **detecting neutrinos is in water or ice**, where neutrinos leave a flash of light or a line of bubbles when they interact. To capture these signs, scientists have to build large detectors.

Big-Bang Model

- It is a widely held theory of the evolution of the universe.
- Its essential feature is the **emergence of the universe from a state of extremely high temperature and density** – the so-called big bang that occurred 13.8 billion years ago.

Supernova

- Supernova is a **powerful and luminous stellar explosion**.
- This astronomical event **occurs during the last evolutionary stages of a massive star** or when a **white dwarf** is triggered into runaway nuclear fusion.

Quarks

- Quark is a fundamental constituent of matter and is defined as an elementary particle.
- The quarks combine to produce composite particles called **hadrons**, the most stable of which are **neutrons and protons** that are the components of atomic nuclei.

Lepton

- Lepton, any member of a class of subatomic particles that **respond only to the electromagnetic force, weak force, and gravitational force**.
- They are not affected by the strong force.
- Leptons are said to be elementary particles; and **can either carry one unit of electric charge or be neutral**.

4. Exotic Animals

Why in News

Recently, the Delhi High Court directed the Centre to take a decision on **framing rules to confer protection for exotic animals** that are currently **not under the purview of the Wildlife (Protection) Act, 1972**.

- The court's order came in response to a petition filed by animal rights group, **People for the Ethical Treatment of Animals (PETA)** India about the status of a male **hippopotamus** rescued from the Asiad Circus in Uttar Pradesh.
- Earlier in June 2020, the **Ministry of Environment, Forest and Climate Change** issued an **advisory to streamline and formalise the process of importing live exotic animals**.

Key Points

- **Exotic Animals:**
 - The term exotic does not have a set definition but it usually **refers to a wild animal or one that is more unusual and rare than normal domesticated pets** like cats or dogs.
 - These are those **species which are not usually native to an area** and are introduced to an area by humans.
- **Provisions Related to Illegal Trade of Animals:**
 - Illegally traded exotic animals are confiscated under **Section 111** of the **Customs Act, 1962** which is read with the provision of the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** and the Foreign Trade Policy (Import-Export Policy) of India.
 - **CITES is an international agreement between governments**. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species. **India** is a party to it.
 - Also, **Sections 48 and 49** of the **Wildlife Protection Act, 1972** prohibit trade or commerce in wild animals, animal articles or trophies.

Hippopotamus

- **About:**

□

- Hippopotamus, **also called hippo or water horse**, is an **amphibious** African ungulate mammal.

- It is considered to be the **second largest land animal** (after the elephant).
- Hippos are **well adapted to aquatic life**. The ears, eyes, and nostrils are located high on the head so that the rest of the body may remain submerged.
- Hippopotamuses were extinct in northern Africa by 1800 and south of Natal and the Transvaal by 1900. They are still **fairly common in East Africa, but populations continue to decrease continent wide**.

□ **Scientific Name:**

- Hippopotamus amphibius.

□ **Threats:**

- **Human-wildlife conflict** and habitat encroachment.
- Often **killed for their meat** under the guise of protection, and they are also hunted for **hippo fat and their ivory canine teeth**.

□ **Protection Status:**

- **IUCN Red List:** Vulnerable
- **CITES:** Appendix III

5. COVID-19 Vaccines and Blood Clots

In news

- Reports of rare blood clots occurring after COVID-19 vaccination have led some countries to limit the usage of **AstraZeneca's vaccine** for certain categories of people, while other countries have paused the administration.

Key takeaways

- An adverse effect following immunisation with the AstraZeneca jab is not merely blood clots in large vessels, but also a low platelet count.
- The effect is similar to heparin-induced thrombocytopenia (HIT), where heparin, which is used to clear clots, actually causes blood clots and a fall in the platelet count.
- The heparin combines with platelet factor 4 to form a complex.
- This immune complex induces an abnormal immune response, in which antibodies are generated against the complex.

- This antibody-platelet factor 4-heparin immune complex binds to platelets and activates them.
- The platelets form clots everywhere.
- The low platelet count is because the platelets are used up.
- A similar process seems to follow vaccination, except there is no heparin trigger.
- Scientists are still trying to establish a clinical definition for this adverse effect.

6. Species in news: Rewaconodon Indicus

In news

- The Tiki Formation in Madhya Pradesh, a treasure trove of vertebrate fossils, has now yielded a new species and two genera of cynodonts, small rat-like animals that lived about 220 million years ago.

Key takeaways

- Researchers from the IIT Kharagpur, used scanning electron microscopy to study about 10 teeth samples collected from Shahdol District, Madhya Pradesh.
- The results showed that they had found a new species, and they named it *Rewaconodon indicus*, indicating India, the country it was discovered from.
- The team also identified two new genera from the area.
- The first was named *Inditherium floris*, after India and the Latin word *therium* meaning beast.
- As the teeth had a flower-shaped crown, it earned the species name *floris*.
- The second was named *Tikiodon cromptoni*, after Tiki Formation and Greek word *odon* meaning tooth.
- The species name is after paleontologist A.W. Crompton.

Prelims Practice Questions

1. Which of the following missiles are included in IGMDP (Integrated Guided Missile Development Program)?

1. Prithvi
2. Agni
3. Trisul

Select the correct answer using the code given below:

- A 1 and 3 only
B 2 and 3 only
C 1 and 2 only
D 1, 2 and 3

Answer : D

Explanation

- **IGMDP (Integrated Guided Missile Development Program)** was conceived by Dr. A.P.J. Abdul Kalam to enable India attain self-sufficiency in the field of missile technology. The 5 missiles (**P-A-T-N-A**) developed under this program are:
 - Prithvi: Short range surface to surface ballistic missile.
 - Agni: Ballistic missiles with different ranges, i.e. Agni (1,2,3,4,5)
 - Trishul: Short range low level surface to air missile.
 - Nag: 3rd generation anti-tank missile.
 - Akash: Medium range surface to air missile. **Hence, option D is correct.**

2. Which of following institutions releases Global Wealth Report:

- A World Economic Forum
B International Monetary Fund
C Credit Suisse Group
D World Bank

Answer : C

Explanation

- Recently, **Credit Suisse** has released the **Global Wealth Report 2020**. Credit Suisse is a financial services company based in Switzerland. **Hence, option C is correct.**
 - The Credit Suisse Global Wealth Report provides the most comprehensive and up-to-date coverage of information on household wealth worldwide.
- Highlights of **Global Wealth Report 2020**
 - In 2019, total global wealth rose by USD 36.3 trillion and wealth per adult reached USD 77,309, which is 8.5% more when compared to 2018.
 - In India, wealth inequality remains quite high. There is considerable poverty reflected in the fact that 73% of the adult population had wealth below USD 10,000 at the end of 2019.
 - At the other extreme, a small fraction of the population (2.3% of adults) had a net worth over USD 1,00,000.
 - Further, between January and April 2020, unemployment rates approximately tripled in India to 24%.

3. Exercise Desert Knight-21 and Garuda are air exercises between which of the following countries?

1. India
2. France
3. Australia
4. Saudi Arabia

Choose the correct option:

- a. 1 and 2 only
- b. 1 and 4 only
- c. 1, 2 and 3 only
- d. 1 and 3 only

Answer: a

Explanation:

- Exercise Desert King-21 is a bilateral air exercise between India and France.
- As part of Indo-French defence cooperation, Indian Air Force and French Air and Space Force have held six editions of Air Exercises named 'Garuda', the latest being in 2019 at Air Force Base Mont-de-Marsan, France.

4) Global Food Policy Report is published by:

- a. Food and Agriculture Organisation
- b. International Food Policy Research Institute
- c. United Nations Population Fund
- d. World Health Organization

Answer: b

Explanation:

Global Food Policy Report is the International Food Policy Research Institute's flagship report.

5) Consider the following statements with respect to Pong Dam Wildlife Sanctuary:

1. It is located in Sikkim.
2. It is a Ramsar Site of International Importance.
3. Pong Dam is constructed across the Beas river.

Which of the given statement/s is/are correct?

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1, 2 and 3
- d. None of the above

CHECK ANSWERS:-

Answer: b

Explanation:

- The Pong Dam also called the Beas dam is an artificial embankment Dam constructed across the Beas river in Himachal Pradesh.
- It is a Ramsar Site of International Importance.

6) Which of the following are a part of the Nilgiri Biosphere Reserve:

1. Mudumalai National Park
2. Bandipur National Park
3. Silent Valley National Park
4. Nagarhole National Park

Choose the correct option:

- a. 1 and 2 only

- b. 2 and 4 only
- c. 1, 2, 3 and 4
- d. 3 and 4 only

Answer: c

Explanation:

- The Nilgiri Biosphere Reserve is an International Biosphere Reserve in the Western Ghats and Nilgiri Hills ranges of South India.
- Mudumalai National Park, Bandipur National Park, Silent Valley National Park, Nagarhole National Park are all a part of the Nilgiri Biosphere Reserve.

Mains practice Questions

1. Citizen's Charter seeks to continuously improve the quality of public services for the people so as to respond to their needs and wishes. In the light of the statement discuss the foundational features of a citizen's charter and what do citizens expect out of it.

Approach

- Start the answer by defining the concept of the Citizen's Charter
- Discuss the foundational features of a citizen's charter and what do citizens expect out of it.
- Conclude suitably.

2. Farmer producer organizations have the potential to act as a solution to agrarian distress. Comment.

Approach

- Start the answer by defining the concept of Farmer Producer Organizations.
- Discuss the role of FPOs in dealing with agrarian distress.
- Conclude suitably.