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- Disclaimer -

The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

CURRENT AFFAIRS ANALYST WEEK- 3 (MAY, 2021)

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IAS 2022 GS FOUNDATION



SECTION: A (MAINS)

CURRENT AFFAIRS

RABINDRANATH TAGORE: A PHILOSOPHICAL EDUCATIONIST

CONTEXT

Whole nation paid tribute to Rabindranath Tagore on the occasion of his birth anniversary

BACKGROUND A

- 7th May 2021 witnessed 160th birth anniversary of Rabindranath Tagore
- Rabindranath Tagore has also been widely quoted in the recently concluded Bengal Elections
- He was a poet, philosopher, social reformer and educationist
- Tagore was the very first Asian to receive the Noble Prize.

• ANALYSIS

Life of Rabindranath Tagore

- Tagore took birth in the city of Calcutta on 6th May, 1861
- His school life enriched his thoughts about the importance of school. According to him school was a place which hinders the native growth of the child and brought unwarranted and oblivion harm to the development of personality. All this made him to construct his own philosophy of life and education.
- At the age of 40, he himself initiated to set up his Shantiniketan Ashram (School) with around ten boys only to materialize his own ideas and ideals.
 - This institution turned into a world famous Vishva Bharati - a seat of international university and a melting point of Eastern and Western culture-a junction of humanity.
- Rabindranath Tagore a.k.a Gurudev passed away on August 7, 1941 leaving his permanent impression in the hearts of mankind.

Understanding Tagore's Educational Philosophy

The 'Educational Philosophy' given by him proclaims four fundamental principles which are considered under the following mentioned points:

Freedom for the Child:

 Tagore was a radical to the prevailing system of education where freedom was a faraway desire for the full nurturing of personality. He was a fervent promoter of granting ample freedom to the children.

- He added, "Freedom does not mean mere independence of control and right to self-will. It means the liberation of all aspects and powers of the personality, viz, the senses, the vital energies, the various mental capacities including intelligence and imagination, as also the functions of the heart – feelings, emotions, sympathy and love."
- In the context of freedom, education has only one connotation which essentially means child's own experiences and activities and "freedom from ignorance about the laws of universe and freedom from passion and prejudice in our communication with the human world."
- Therefore, freedom for the learner(child) was the fundamental principle in the whole area of educational activities.

Active Communication with Nature and Man:

- Nature, according to him, is a manuscript of God where God resides and education should enable a person to realize his immediate relationship with nature and guides him to understand freely and voluntary from the book of nature.
- Active contact with nature helps one in natural and spontaneous growth.
- He advocates the communion of men with his fellow-men for gathering essential qualities to live amidst social groups, for he, the man, is fundamentally a gregarious animal. He said, "next to nature, the child should be brought into touch with the stream of social behaviour." The children are brainwashed into the stream by the process of socialisation and social networks.
- In other words, the child learns all forms of social behaviour through social contacts, and for the learning a good deal of opportunities should be provided to them.
- True education is that which enables the child to be in touch with the complete life of people

 economic, social, spiritual, intellectual and aesthetic life.

Creative Self-expression:

- Education to be real must be of the whole man which includes all faculties including his emotions, senses and intellect.
- Education must provide full-scale opportunities to the children for self-expression. For self- expression which is creative in nature, Tagore forwarded the following, activities like art, craft, music, drawing, painting, dramatics etc.
- He said, "Hand-work and arts are the spontaneous overflow of our deeper nature and spiritual significance."
- In Shantiniketan the above activities mentioned were strongly undertaken by the children.
- Tagore observed, a large part of human could never be able to find its expression in the basic language of words.
- It must hold many other languages such as lines, colours, sounds and movements for the exposure of his aesthetic desire and for the fulfilment of selfexpression.

Internationalism:

 He wanted to unite the men without any differences in the world. His humanism is cosmopolitan in nature. It knows no bounds. He recommended amiable relationship among the parts of people through the devices of love, mutual understanding and respect of mankind.

- He wanted to combine the humanity through the device of cooperation and mutual understanding. This concept has been preserved in Viswa Bharati system of education.
- Universal brotherhood of mankind is the bed rock of his philosophy of internationalism. His internationalism was spiritual out and out as he said that "all men came from one common source viz. Brahman or God and Brahman manifests in all without any distinction on the basis of caste, creed, class, colour, sect etc."
- Therefore, all the humans have a common father, i.e. God. Being a nationalist, Tagore was proud of rich cultural tradition and heritage of his country.
- His love for his own motherland has been reflected through his patriotic writings. His theories of nationalism were opposite to the theories of aggressive nationalism and draconian imperialism. His nationalism was in agreement with the temper of internationalists.

ONCLUSION

Tagore believes that, the core aim of education is to enable and prepare an individual for the service of the nation and so education stands for human regeneration, cultural representation, harmony and intellectualism. Educational institutions should be built on the power of thinking and imagination in an individual and helps them to form herself/himself into a self-sustained building block of human society and a creative canvas of nation on the whole.

CYBERATTACK ON US PIPELINE AND ITS IMPACT ON OIL PRICES

CONTEXT

Colonial Pipeline Company that transports about 45 per cent of all petrol and diesel to the east coast of the United States was forced to shut down operations due to a recent cyberattack.

• BACKGROUND

- A cyberattack is an offensive which targets computer information systems, infrastructures, computer networks, or personal computer devices.
- An attacker attempts to access data, functions, or other restricted areas of the system without authorization, potentially with malicious intent.
- In 1979, a 16-year-old Kevin Mitnick hacked into The Ark, the computer at the Digital Equipment Corporation, which was used for developing operating systems.
- There were 53,117 cases of cyber attacks in the country in 2017. This had risen to 208,456 in 2018 and 394,499 in 2019.
 - On average, nearly 3,137 cyber security-related issues were reported daily during 2020.
 - India ranks 3rd in terms of the highest number of internet users in the world after USA and China, the number has grown 6-fold between 2012-2017.
 - India was ranked among the top five countries to be affected by cybercrime

• ANALYSIS

The Cyberattack on oil pipeline

- It was a ransomware attack on a key US pipeline network.
- This has led to a disruption in fuel supplies in the eastern part of the United States.
- It caused the US federal government to declare a regional emergency to allow transportation of fuels through tanker trucks to tide over the impact of shortages.
- According to the US Federal Bureau of Investigation, acriminal gang called Darkside was responsible the cyberattack.
- Oil prices rose in response to the attack on Colonial Pipeline.

Ransomware attack

- A ransomware attack is a cyber-attack using malware that encrypts the victim's files and requires users pay a ransom to decrypt the files.
- Hackers also added the element of downloading all the data on an enterprise network before encrypting it.
- The hackers can then threaten to leak the data if the ransom is not paid.

What could be done to protect oil pipelines in future?

- Zero-trust security framework: The zero-trust approach means anything and everything is suspected whenever any activity is done on the network, and every user which also includes the CEO, will have to be verified time and again.
- Cloud Access Security Brokers (CPAB): It acts as intermediaries between users and cloud service providers. It could improve an overall cybersecurity strategy.

What Indian government is doing to secure its oil?

 India's oil and gas PSUs were making efforts to beef up security, and that organisations managing critical infrastructure such as pipelines and refineries were required by the government to implement certain security measures.

Some of the major cyber attacks in India

- A Cyberattack took place on Cosmos bank when hackers siphoned off Rs. 94.42 crores. Canara Bank ATM servers were targeted in around mid-2018. During the attack more than 300 user's ATM details were hacked by attackers and wiped off 20 lakh rupees from various bank accounts.
- 1.1 billion Indian Aadhaar card details were leaked in 2018. UIDAI released the official notification about this data breach and mentioned that around 210 Indian Government websites were hacked.



 Popular microblogging platform Twitter became victim to cyber-attack through a phone spearphishing attack in 2020. Almost 130 accounts were said to be compromised.

 20 million user accounts of the Bangalore-based popular edtech platform Unacademy were breached. The breach had exposed usernames, passwords, date joined, email addresses, first and last names, and other information of the users.

International Cyber Security

- The Convention on Cybercrime of the Council of Europe is known as the Budapest Convention.
- It is the only binding international instrument on this issue.
- It serves as a guideline for any country developing comprehensive national legislation against Cybercrime.
- It acts as framework for international cooperation between State Parties.
- It was drawn up by the Council of Europe in Strasbourg, France.
- It was opened for signature in Budapest, in 2001 and entered into force in 2004.
- Countries such as Brazil and India have declined to adopt the Convention as they did not participate in its drafting.

Indian Government steps

• **CERT-In:** Computer Emergency Response Team is operational since January 2004. CERT-In is the national nodal agency for the computer security

incidents. CERT-In has been designated to serve as the national agency to perform multiple Cyber Security related issues.

- Security Officers: The government has issued guidelines for chief information security officers regarding their key roles and responsibilities for securing applications and infrastructure, and compliance.
- **Audits and drill:** It has also mandated regular cyber security audits and mock drills.
- National Cyber Coordination Centre (NCCC): It has started to generate situational awareness of existing and potential cyber security threats.
- National Cyber Security Policy 2013 was formulated to build secure and resilient cyberspace for Indian citizens and businesses.
- India and Australia also signed 4 year collaboration on cyber affairs and critical technologies. A collective budget of \$12.7 million was pledged towards the collaboration.

• CONCLUSION

Due to the drastic changes to the conventional functioning of working due to COVID-19 pandemic, cybersecurity emerged as the biggest challenge. As the world has come to a standstill, it becomes more crucial to work in a more cybersecure world. The international efforts are required to put a curb over it.



PULSE OXIMETRY AND IMPORTANCE OF OXYGEN

CONTEXT

In this second wave of COVID-19 pandemic pulse oximeters have become a daily household item and regrettably hypoxia has become the leading cause of death.

• BACKGROUND

- The Karnataka's Covid Technical Advisory Committee has recommended that government provide medical kits for all patients in home isolation which must include pulse oximeters along with other drugs
- This device measures SpO2 of blood working on the principle of pulse oximetry and falling oxygen saturation level is a signal of hypoxia.

• ANALYSIS

What is pulse oximetry?

Pulse oximetry is a non-invasive method for monitoring a person's oxygen saturation in blood. There are two types of pulse oximetry- transmissive and reflectance.

What is transmissive pulse oximetry?

- Asensor is placed on a thin part of the patient's body, usually a fingertip or earlobe, or an infant's foot from which EM radiation can pass easily.
- Fingertips and earlobes have higher blood flow rates than other tissues, which facilitates heat transfer, thus giving accurate reading.
- The device will pass two different wavelengths of light through the body part to the photodetector.
- It measures the change in absorbance at each of the wavelengths, allowing it to determine the absorbances due to the "pulsing arterial blood" alone, excluding venous blood, skin, bone, muscle and fat and hence calculating the SpO2 level.

What is reflectance pulse oximetry?

- It is a less popular alternative to transmissive pulse oximetry.
- This method does not require a thin section of the body and therefore it is well suited to a universal application such as the feet, forehead, and chest, but it also has some limitations.

Effects of Non-functional Haemoglobin on Oxygen Saturation Measurements

- If the patient has a large amount of non-functional haemoglobin, the reading is not accurate.
- Non-functional haemoglobin is defined as haemoglobin which is incapable of carrying oxygen, but does include carboxyhaemoglobin (HbCO) and methaemoglobin (METHb).
- Functional haemoglobin is defined as haemoglobin capable of carrying oxygen.
- It includes oxygenated haemoglobin (HbO2) and deoxygenated haemoglobin (Hb).

Common issues with pulse oximetry

- Light Interference
 - Sometimes external light sources may cause inaccurate readings when they interfere with the light (radiation) with different wavelengths.
- Movement Artifacts
 - Movement artifacts, such as shivering, have been overcome with the latest SpO2 algorithms. However, unusually rapid and vigorous movement may cause movement artifact in the pulse.
- Sensor application
 - The sensor should fit the application site snugly. If the sensor is too tight, it might cause venous pulsation. If the sensor is too loose, the light emitting from the emitters may not pass completely through the site and may cause absurd readings. If adhesive sensors are not of the right size, the emitter and detector may not line up correctly.
- Inadequate Blood Flow
 - Blood pressure cuffs, tight clothing or restraints may interfere with blood flow. Use another application site or loosen clothing
- Nail Polish
 - Some nail polish and false fingernails may cause false readings. If possible, switch to an unpolished nail, or consider another application site.



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Why is oxygen important for body?

- Fuel for cells: Oxygen is fuel for our cells and helps provide the basic building constituents that our bodies need to survive. The cells in our body combine oxygen with hydrogen and nitrogen to produce various proteins that build new cells/ tissues. When oxygen is combined with hydrogen and carbon, we get carbohydrates that provide energy to our bodies that is necessary for our survival.
- Constructing replacement cells: Oxygen is also a vital element for constructing replacement cells for our bodies. Each day, about 700 billion cells in our bodies wear out and must be replaced, without oxygen our bodies cannot build these new cells.
- Immune system: Oxygen is also an important part of our immune system. It is used to help kill bacteria, and it fuels the cells that make up our body's defences against viruses and other invaders. Air that has passed through (UV air sanitizers) is particularly good for our body's immune system, as it has been cleansed of bacteria and other agents before it enters our respiratory systems.

 Finally, it is important to note that the human eye is in particular need of oxygen to function well. However, the eye receives oxygen in a manner that is unique from the rest of the body. Few blood vessels travel to the eye, so our eyes absorb much of the oxygen they need directly through the cornea. The cornea is built in such a way to diffuse oxygen directly into the body from the air.

ONCLUSION

Pulse oximetry results may not be as accurate for people with darker skin. Their oxygen levels are sometimes reported as higher than they really are. This possibility should be considered when interpreting pulse oximetry results. A person's oxygen levels may be low if they feel short of breath, are breathing faster than usual, or feel too sick to do their usual daily activities, even if a pulse oximeter says their oxygen levels are normal.Supplementaloxygen or other treatments may be needed if they have shortness of breath or their SpO2 number is less than 95%.



GSSCORE

INDIA'S FOREST RIGHTS ACT ARE THE MOST VIABLE FOREST CONSERVATION LAW

CONTEXT

The Union environment ministry called for expressions of interest from consultancies to prepare a draft comprehensive amendment to the Indian Forest Act 1927.

• BACKGROUND

- There has been a history of Protection of Nature by classifying the areas as protected areas in different countries.
- This has given rise to the question of viability of notion of separation of human and nature which is not possible as an isolated concept.
- Currently 15.4% of land and 7.6% of oceans are under the Protected Areas regime through 257,889 designated PAs as on February 2021.
- The Fortress conservation is one of the ideas of conservation of forest and nature from the impacts of human.
 - ➤ It is traced through the establishment of Yosemite National Park in 1864 for 'public use, resort and recreation'.
 - It was carved out of California's Sierra Nevada Mountains by waging a war against the indigenous people, the Ah-wah-ne-chee, and forcing them out.
- The Concept of Protected Area (PA) was given rise to support the fortress conservation.
 - The first such Protected Area (PA) in the world, the Yellowstone National Park, was set up in 1872, as a public park or pleasuring ground for the benefit and enjoyment of the people.
- The first legal conservation framework is the US Wilderness Act of 1964 that recognised the value of preserving the area where the earth and its community of life are undistrubed.

• ANALYSIS

What is fortress conservation?

- The idea of fortress conservation is based on the myth that humans can be separated from the natural world.
 - Under this concept the forest enclaves are created, enclosed and policed by guards, gatekeepers and administrators.

- Due to Increasingly militarization these areas are fast emerging as killing fields.
- Forests, wildlife and forest dwellers all faced the impact of this ill-conceived pernicious conservation approach.

Impacts of Fortress Conservation

- About 363 million people inhabit the Protected Areas across the globe.
- Displacement: Around 10.8 to 173 million people are estimated to have been displaced from these PAs
 - ► It is said that the only thing that has displaced more people around the world than war is wildlife conservation.
 - On the other hand, between 2015 and 2020, deforestation was 0.1 million sq. km per year down from 0.16 million sq km in the 1990s.
- Habitat support: Around 1.65 billion to 1.87 billion people live in important biodiversity conservation areas.
- Need for future conservation: It is also supported that 30% of Earth should be under formal 'protection and conservation' by 2030 increasing to 50% by 2050.
- Impact on indigenous people: Globally, forests cover 31% land area is accessed by about 1.5 billion people of whom 60 million are indigenous peoples or tribals.

Fortress conservation Status in India

- In India forests areas has increased steadily from 18.19% of the land area in 1949-50 to 23.34% in 2019. This is 1.78% of total global forests. The government aims to convert 33% of land into forests.
- The Indian Forest Act 1927 provides for declaration of Reserved Forest (all rights are banned unless granted), Protected Forest (rights permitted unless banned) and Village Forest (Reserved Forest assigned to villages), and regulates transit of forest produces and prescribes duty leviable on them.

• It defines the forest offences, prohibited acts and prescribes penalties for the violation of PAs.

How the fortresses are being fortified in India?

- Some 171,921 sq km (5.03% of the total land area or 24.27% of the forests) are under the PAs regime of the Wildlife (Protection) Act 1972.
- It carves out National Parks with no rights, Wildlife Sanctuaries with restricted rights, Conservation Reserves in uninhabited government land but accessed by people and Community Reserves which include private land.
- The Act prohibits hunting of endangered species, lays down restrictions on hunting many animal species and list out offences that attract penalties.
- Currently this PA regime consists of 104 national parks, 566 wildlife sanctuaries, 97 Conservation reserves and 214 Community reserves.
- Marine PAs consisting of 10 National Parks, 115 Wildlife Sanctuaries, 4 Conservation Reserves and 1 Community Reserve.
- In addition, Tiger Reserves, an administrative category until 2006, were carved out of these National Parks and Wildlife Sanctuaries consisting of critical tiger habitat (CTH) or core area and buffer area.

How this Fortress was breached in India?

1. Wildlife (Protection) Act amendment

- The first breach in fortress conservation happened when the Wildlife (Protection) Act was amended in 2006 making Tiger Reserves, the most zealously guarded part of the PA, a statutory category, until then it was only an administrative category.
- The critical wildlife habitat (CWH) provision in the Forest Rights Bill was grafted almost completely into this amendment as CTH.
 - These are scientifically identified community confirmed areas which faced irreversible damage due to the presence and activities of forest dwellers that threaten the existence of tigers.
 - Community rights were recognised, livelihood affirmed, coexistence with wildlife promoted.

- The relocation and resettlement was done on mutually agreed terms with gram sabha consent.
- ➤ Human-wildlife coexistence was promoted, livelihood, developmental, social and cultural rights of the local people were recognised.

2. Fortress Conservation under the India's FRA, 2006

- The second breach was the enactment of FRA, that swept aside fortress conservation outright.
- It includes un-classed forests, un-demarcated forests, existing or deemed forests, protected forests, Sanctuaries, National Parks and Tiger Reserves including 'wastelands'.
- Perhaps the India's Forest Rights Act 2006 (FRA) is the first law in the world to outright discarding state-led fortress conservation.
- It adopted the conservation-based community forest governance.
- FRA recognised all conceivable traditional rights, whether listed in the law or not, except hunting.

3. Jurisdiction of gram sabhas

- The third breach was that FRA designated the gram sabhas as the governing authority of the forests.
- They are to demarcate their community forest resource area and to protect, regenerate, conserve, manage and regulate access under the FRA.

Associated Significance of breach of the fortress

- Reduction in migration
- Cooperation between the nature and human
- Conservation efforts support
- Availability of forest produce to local people
- livelihood support
- Decentralization of regulation efforts

ONCLUSION

Though the conservation of nature is essential but the human being as an essential part of the nature could not be remained separated from the conservation efforts. The collaboration is further required to support the co-existence of both nature and human.



BIOETHICS OF RESEARCH ON CHILDREN

CONTEXT

The clinical trial of COVAXIN on children aged 2-18 years is approved by the Drugs Controller General of India. This will be the first Covid vaccine to be tested over children in India.

• BACKGROUND

- Covaxin, developed by Bharat Biotech in association with the Indian Council of Medical Research and the National Institute of Virology, is launched as the only Made-in-India Covid inoculation.
- Oxford-AstraZeneca's Covishield produced by the Serum Institute, is the second vaccine being used in India.
- Last year, covaxin was cleared for emergency use meanwhile was also in clinical trial stage, which raised questions and was also seen to spur vaccine hesitancy in the early stages of India's vaccination programme.
- Due to the vulnerabilities of physical frailty and mental immaturity, rights of children and interest need to be protected from the risks correlated with any kind of research.

• ANALYSIS

What is bioethics?

- Bioethics is the study and analysis of ethical implications of the health-related life sciences and related technologies.
- Bioethics is also the discipline dealing with moral problems arising in the practice/research of medicine and other techniques.

What are the concerns regarding biomedical research on children?

- Children lack autonomy, due to their cognitive and emotional level of maturity and the legal status to consent to research participation on their own behalf (not on their own).
- Any examination on children must focus on the level of their cognitive, emotional, physical, and psychosocial development.
- A vulnerable set of patients (such as children from poor socio-economic strata being treated in government hospitals) should not be unduly exposed to research risks, just because they are easily obtainable.
- There are also special challenges regarding biomedical research in developing and third

world countries. In resource-constrained settings where the guardians of children have poor levels of literacy, and meanwhile children are even more vulnerable.

- The concept of research is not well understood by most parents and research is often confused with treatment (therapeutic misconception), or seen as a way of accessing new therapies or better clinical care.
- The parents may also be unduly susceptible to financial inducements to participate in research because of their poor socio-economic status.
- Overuse of these vulnerable groups is a special concern when they are unlikely to benefit from the knowledge gained from research.
- Research in resource-poor countries has been found unjust when it does not consider the needs of those societies and countries. For instance, a survey being organized on the children of a developing country with potential beneficiaries of the intervention being children from rich nations is bound to raise concerns.
- India faces additional challenges given the multicultural society and diversity of health-care systems of considerably varying standards.

Why is biomedical research necessary in children?

- The disease may affect only children, for example, hyaline membrane disease, birth asphyxia, neonatal hyperbilirubinemia, extrahepatic biliary atresia, infantile spasms, infantile tremor syndrome, Kawasaki disease, etc.
- Such diseases do not have adult equivalents and therefore, it is significant to conduct an analysis in children to enhance our knowledge regarding such diseases.
- Moreover, if the same disease affects both adults and children, the pathophysiological processes and responses to treatment in children may differ from those in adults, therefore, we cannot conclude the aid approved for adults to children.
- Some diseases such as nephrotic syndrome, hypertension and rheumatoid arthritis affect both adults and children, but the pathophysiological basis and clinical approach varies in both.



- The physiology of children is different from that of adults, and the pharmacokinetics of many drugs is age-dependent based on the maturation of the drug metabolism pathways.
 - For example, children can metabolize many drugs much more rapidly as compared to adults; hence, the dosage of the drug (per kg of body weight) that needs to be given is much higher in children.
- The absorption of drugs also varies with age.
 Pharmacokinetics and toxicity profile varies with growth and maturation from infancy to adulthood.
- The adverse effects of many drugs may also be different in children as compared to adults. For illustration, tetracyclines causes teeth discoloration in young children and use of aspirin is associated with Reye's syndrome in children
- Age-appropriate delivery vehicles and formulations (such as syrups) are needed for accurate, safe and palatable administration of medicines to infants and children.
- The pathophysiology of many disorders is dependent on a child's growth, development and adaptive plasticity. For instance, adaptive changes in the motor system following a perinatal stroke.

 Research in children is also one of the ways to understand some adult diseases that are thought to have their origins in early life. The natural history of the disease may be understood better and it may lead to potential preventive interventions in early life.

ONCLUSION

Children are an exceptional population with specific ethical and clinical concerns. Clinical research is of paramount importance in developing safe medications, paediatric formulations, clinical interventions and best practice guidelines. The vulnerable nature of this population must be considered when balancing the risks of research with the need for safe and validated therapies. Indian Council of Medical Research, the nodal agency in the country for biomedical research has developed ethical guidelines for biomedical research involving children. These guidelines are based on scientific and ethical principles, and balanced in providing guiding principles and processes and practices for achieving compliance. Adherence to these guidelines is a sine qua non for the development of robust child-friendly biomedical research environment.



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MAINS & PRELIMS

STARTS

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MAY

2021

SECTION: B (PRELIMS)

CURRENT AFFAIRS

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MOUNT SINABUNG'S VOLCANIC ERUPTION

• CONTEXT:

Indonesia's Mount Sinabung erupted in a massive column of volcanic ash and smoke 3,000 metres (3 km) into the sky.

About the Mount Sinabung

- Indonesia is home to many active volcanoes because of its location in the "Ring of Fire" or the Circum-Pacific Belt.
 - Ring of Fire is an area along the Pacific Ocean and is characterized by active volcanoes and frequent earthquakes.
 - The Ring of Fire is home to about 75 per cent of the world's volcanoes and about 90 per cent of earthquakes.

- Mount Sinabung is a Pleistocene-to-Holocene stratovolcano of andesite and dacite in the Karo plateau, North Sumatra, Indonesia.
 - It is 40 kilometres from the Lake Toba supervolcano.
 - The volcano has been active since 2010 when it erupted after nearly 400 years of inactivity.

Why does a volcano erupt?

- There are three types of volcanoes: active, dormant or extinct.
- An eruption takes place when magma rises to the surface. It is a thick flowing substance and formed when the earth's mantle melts.
 - As magma is lighter than the rock, it is able to rise through vents and fissures on the surface of the earth. After its eruption, the magma is called lava.
 - Not all volcanic eruptions are explosive as the explosivity depends on the composition of the magma.
 - When the magma is runny and thin, the gases can easily escape it. In this case, the magma will flow out towards the surface.
 - When the magma is thick and dense, gases cannot escape it, which builds up pressure inside resulting in a violent explosion.

Risks from eruptions

- Volcano causes suffocation that makes people susceptible with respiratory conditions such as asthma and other chronic lung diseases.
- Volcanic eruptions can result in additional threats to health such as floods, mudslides, power outages, drinking water contamination and wildfires.

RANI RUDRAMA DEVI'S SCULPTURES

• CONTEXT: Two rare sculptural portraits of Rudrama Devi were unearthed at the premises of Sangameswara Swamy Temple at Teerthala village in Khammam district.

Key highlights of the newly discovered sculptures

- **Portraits:** It has safely retained queen Rudrama Devi's (A.D 1262 89) imperial personality.
- **Devotion:** The sculpture shows her **devotion for Lord Siva**.
- **The first sculptured panel: It** is in an oval frame and depicts the majestic personality of Rudrama Devi.
 - She is seated on her forefeet with her hands are in Anjali mudra (a gesture of worship).
 - The face is oval and eyes are closed in deep meditation.
 - She wears elaborate earrings, beaded necklaces, armlets, wristlets and anklets.
 - The lower garment covers up to ankles and tied with a waistband.
 - The queen bears a very striking royal crown on her head with some circular plaques are hanging from the lower edge of it, and cover a part of the forehead of the queen.
 - The sculpture indicates that Rudrama Devi visited the Sangamesvara temple at the time of its sanctification.
- **The second sculptural panel**: It is in a rectangular frame and represents arrival of the Rudrama Devi on a royal elephant to this temple site.
 - It shows the provincial chief under her control is welcoming her by stopping the running elephant with his hands.

What do we know about Rudrama Devi?

- **Rudrama Devi** (was a monarch of the Kakatiya dynasty in the Deccan Plateau from 1263-1289 until her death.
- She was one of the very few women who ruled as monarchs in India.
- As per the Ganapati Deva's Malkapuram inscription, Chaitra Bahula Ashtami is her birthday.
- **Challenges:** Rudrama Devi faced challenges from the Eastern Ganga dynasty and the Yadavas.
- **Devotion:** She was a staunch devotee of Shiva.

Some Information of Kakatiya dynasty

- The *Kakatiya dynasty* was a South Indian *dynasty*.
- It ruled most of eastern Deccan region that comprise present day Telangana and Andhra Pradesh, and parts of eastern Karnataka and southern Odisha.
- They ruled between 12th and 14th centuries.

• Their capital was Orugallu which is now known as Warangal.

- Kakatiya rulers served as feudatories to the Rashtrakutas and Western Chalukyas for more than two centuries.
- They assumed sovereignty under Prataparudra I in 1163 CE after suppressing the Chalukya subordinates in the Telangana region.

Sangameswara temple

- It is panchakuta, which is a five-unit marvellous shrine monument.
- The shrine stands on a well built *jagati* platform which is being covered under flooring.
- The shrine complex is enriched with two most marvellous sculptural representations.
- The temple is dedicated to lord Shiva.
- The temple was constructed during the reign of Rani Rudrama Devi.
- It is situated in the Teerthala village on the banks of Akeru river.
- The place is venerated as 'Triveni sangama sthali' and is situated on the confluence of three rivers Akeru, Munneru and Buggeru.

BEHIND THE CLASHES AT JERUSALEM'S AL-AQSA

• CONTEXT:

The clashes between the Israel and Palestine were erupted during the holy month of Ramadan, which led to death and wounds of hundreds.

Reason behind the clashes

- The tensions came to a head before the annual May 10 Jerusalem Day processions by Jewish groups through the Old City of East Jerusalem, which mark the day the territory was captured by Israeli forces during the **1967 Arab-Israeli war**.
- Israel annexed the territory later and incorporated it into West Jerusalem, captured earlier, in the 1947 war.

Significance of Al-Aqsa Mosque

- Location: It is located on a plaza at Temple Mount, which is known as Haram-e-Sharif in Islam.
 - The Mount is also Judaism's holiest site.

- Important Features:
 - **Dome of the Rock**: It is the most imposing structure on the compound with its golden dome.
 - **Western Wall:** It is also known as the Wailing Wall sacred to Jews, is one side of the retaining wall of the Al-Aqsa compound.
- Conflict over Al-Aqsa
- Major conflict site: Al-Aqsa is central to the rival claims over Jerusalem.
- Capital: Both Israel and Palestine have declared it their capital.
 - In 1980, the Israeli Parliament passed the Jerusalem Law that declared it the country's capital.
 - Palestinians declared Jerusalem the capital of the putative state of Palestine by a law passed by the **Palestinian Authority in 2000.**
 - The 1988 Palestinian Declaration of Independence also declared Jerusalem as the capital.
- Administration: After the 1967 Six-Day War, Israel gave Jordan the administration and management of the Al-Aqsa compound.

CHINA ROCKET CRASH IN THE INDIAN OCEAN

• CONTEXT:

An uncontrolled re-entry of Chinese rocket made into the Earth's atmosphere and disintegrated over the Indian Ocean.

About the crash over the Indian Ocean

- The debris came from the upper stage of Long March 5B rocket, which is China's largest.
- It was launched into space for putting into orbit a core module of the new Tianhe space station, which is expected to become operational in 2022.
- It was 10-floor large vehicle of the rocket that weighed 18 metric tonnes.
- It went into orbit along with the section of the under-construction space station which it was carrying.
- In orbit, the vehicle kept rubbing against the air at the top of the atmosphere, and the resulted friction caused it to start losing altitude.
- The piece hurtled through a low-Earth orbit at roughly 25,490 km/hr.
- When rockets carry their payload into space, their booster stages fire the engine again after completing their job so that it can drop back to Earth and not remain in orbit.
- Space agencies ensure that such rocket parts end up in uninhabited areas, like as the middle of the ocean.

Long March 5

It is also known as Chang Zheng 5.

- It is a Chinese heavy-lift launch vehicle which is developed by the China Academy of Launch Vehicle Technology.
- It is the first Chinese launch vehicle that is designed to use non-hypergolic liquid propellants exclusively.
- There are two CZ-5 variants: **CZ-5** and **CZ-5B**.

- The maximum payload capacity for for CZ-5B is approximately 25,000 kg to low Earth orbit and for CZ-5, it is approximately 14,000 kg to geostationary transfer orbit.
- It is presently the most powerful member of Long March rocket family.
- It is the world's third most powerful orbital launch vehicle after the Falcon Heavy and Delta IV Heavy.

Major Concerns

- Set standard: According to the standard practice when a rocket is launched, its discarded booster stages re-enter the atmosphere after its liftoff and it harmlessly fall into the ocean.
- The incident has raised questions about the space technology that China is developing, and the probability of harm being caused to populated areas in the future.
- China chose not to do this for its Long March rocket, leading to its vehicle crashing back uncontrollably.
- China's plan to launch 10 more missions like this until 2022 to complete the Tianhe has thus sparked worry that pieces from its rockets could end up causing injuries.

Some Earlier crashes

- SpaceX rocket stage made an uncontrolled landing on a farm in Washington state in the US.
- In 1979, when the NASA space station Skylab was brought down, some of the debris ended up in Australia.
- In 1978, a nuclear-powered Soviet satellite crashed in Canada.
- In May 2020, pieces from another Long March rocket of the same 5B variant had crashed on Ivory Coast.
- In 1991, Collapse of the former Soviet space station Salyut 7

United Nations (UN) Treaties

- International space laws have been created under the UN Committee on the Peaceful Uses of Outer Space (COPUOS).
- Three treaties with potential relevance to orbital debris issues have entered into force:
 - Outer Space Treaty, 1967: the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies.
 - The Liability Convention, 1972: the Convention on International Liability for Damage Caused by Space Objects.
 - The Registration Convention, 1976: the Convention on Registration of Objects Launched into Outer Space.

'CONNECTED COMMERCE: CREATING A ROADMAP FOR A DIGITALLY INCLUSIVE BHARAT'

OONTEXT: NITI Aayog and Mastercard have released a report, 'Connected Commerce: Creating a Roadmap for a Digitally Inclusive Bharat'.

Key highlights of the report

- The report identifies the challenges in accelerating digital financial inclusion in India.
- It provides recommendations for making digital services accessible to its 1.3 billion citizens.
- NITI Aayog was a knowledge partner in this endeavour.
- The report highlights key issues and opportunities, with inferences and recommendations on
 - policy and capacity building across agriculture
 - small business (MSMEs)
 - urban mobility
 - cyber security

Issues addressed during the knowledge series were

- **Digital financial inclusion: A**cceleration of digital financial inclusion for underserved sections of Indian society.
- **Support to SMEs:** Enabling SMEs to 'get paid, get capital and get digital' and access customers, and ensure their continued resilience.
- **Cyber resilience:** Policy and technological interventions to foster trust and increase cyber resilience.
- Agriculture Support: Unlocking the promise of digitization in India's agriculture sector.
- **Digital roadmap:** The essential elements of a digital roadmap to make transit accessible for all citizens.

Key recommendations in the report are:

- Strengthening the payment infrastructure: To promote a level playing field for NBFCs and banks.
- **MSMEs support:** Digitizing registration and compliance processes and diversifying credit sources to enable growth opportunities for MSMEs.
- **Building information sharing systems**: which include a 'fraud repository', and ensuring that online digital commerce platforms carry warnings to alert consumers to the risk of frauds.
- **Enabling agricultural NBFCs**: To access low-cost capital and deploy a 'phygital' (physical + digital) model for achieving better long-term digital outcomes. Digitizing land records will also provide a major boost to the sector.
- **Ease of mobility**: To make city transit seamlessly accessible to all with minimal crowding and queues, leveraging existing smartphones and contactless cards, and aim for an inclusive, interoperable, and fully open system such as that of the London 'Tube'.

What other steps government has taken for digitalization?

• PRADHAN MANTRI JAN-DHAN YOJANA (PMJDY)

- PMJDY is a national mission on financial inclusion encompassing an integrated approach to bring about comprehensive financial inclusion of all the households in the country.
- The plan envisages universal access to banking facilities at least one basic banking account in every household.

• PRADHAN MANTRI GRAMIN DIGITAL SAKSHARTA ABHIYAAN (PMGDISHA)

- PMGDISHA is a scheme to make six crore persons in rural areas, across States/ UTs, digitally literate, reaching to around 40% of rural households by covering one member from every eligible household by 31st March, 2019.
- It aims to bridge the digital divide, specifically targetting the rural population including the marginalised sections of society like Scheduled Castes (SC) / Scheduled Tribes (ST), Minorities, Below Poverty Line (BPL), women and differently-abled persons and minorities.

• PAHAL (DBTL)

• The PAHAL (DBTL) aims to reduce diversion and eliminate duplicate or bogus LPG connections. The scheme was earlier launched in 2013 and was modified in 2015.

• NREGA-SOFT

- NREGA-soft envisions implementing e-Governance across State, District and three tiers of Panchayati Raj Institutions.
- It empowers the common man using the information technology as a facilitator.
- NREGAs oft provides information to citizen in compliance with the right to information Act (RTI Act).

• DIGIDHAN ABHIYAAN

- The initiative plans to enable citizens and merchants to undertake real time digital transactions through the DIGIDHAN Bazaar.
- Through organising DigiDhan Mela's across the country, it aims to handhold users in downloading, installing and using various digital payment systems for carrying out digital transactions.

AADHAAR ENABLED PAYMENT SYSTEM (AEPS)

- AEPS is a bank led model which allows online interoperable financial inclusion transaction at PoS (MicroATM) through the Business correspondent of any bank using the Aadhaar authentication.
- It is a payment service.

PRODUCTION LINKED INCENTIVE SCHEME "NATIONAL PROGRAMME ON ADVANCED CHEMISTRY CELL BATTERY STORAGE"

• CONTEXT:

The Cabinet has approved the implementation of the 'National Programme on Advanced Chemistry Cell (ACC) Battery Storage' that was proposed by the Department of Heavy Industry.

About the Production linked Incentive Scheme

- **Production Linked Incentive Scheme (PLI)** is a production linked incentive to boost domestic manufacturing and to attract large investments in mobile phone manufacturing and specified electronic components.
- **Support:** The Scheme would boost the electronics manufacturing landscape and establish India at the global level in electronics sector.
- **Incentive:** The scheme will provide an incentive of 4% to 6% on incremental sales (over base year) of goods manufactured in India to eligible companies, for a period of five (5) years.
- **Time period:** Support shall be provided for a period of five (5) years subsequent to the base year.
- **Implementation:** The Scheme will be implemented by a Nodal Agency which shall act as Project Management Agency (PMA).
- The scheme has been initiated on the efforts of Ministry of Electronics and Information Technology (MeitY).
- **Second Round**: After the success of the First Round the proposal for accepting applications under **Second Round of the PLI Scheme** has been approved by the Competent Authority.
 - The target segment for the purpose of this round shall be **Specified Electronic Components**.
 - incentives of 5% to 3% shall be extended on incremental sales for a period of four (4) years.

About the 'National Programme on Advanced Chemistry Cell (ACC) Battery Storage'

- **Reduce import:** The National Programme on Advanced Chemistry Cell (ACC) Battery Storage will reduce the import dependence.
 - All the demand of the ACCs is currently met through imports in India.
- **Bidding process:** ACC battery Storage manufacturers will be selected by a transparent competitive bidding process.

What are Advanced Chemistry Cells (ACCs)?

- This is a new generation of advanced storage technologies.
- It can store electric energy either as electrochemical or as chemical energy and converts back to electric energy when required.
- Manufacturing facility: It would have to be commissioned within a period of two years.
- Time period: The incentive will be disbursed over a period of five years.
- Incentive amount: It will increase with increased specific energy density & cycles and increased local value addition.
- **Capacity Target**: Each ACC manufacturing facility should be of minimum five (5) GWh capacity and should ensure a minimum 60% domestic value addition at the Project level within five years.
- The beneficiary firms have to achieve a domestic value addition of atleast 25% and incur the mandatory investment Rs.225 crore /GWh within 2 Years and raise it to 60% domestic value addition within 5 Years, either at Mother Unit, in-case of an Integrated Unit, or at the Project Level, in-case of "Hub & Spoke" structure.
- **Support:** It will also support the Atmanirbhar Bharat initiative.

SOVEREIGN GOLD BOND SCHEME 2021-22

• CONTEXT:

The Government has decided to issue Sovereign Gold Bonds from May 2021 to September 2021 after the consultation with RBI.

What are Sovereign Gold Bonds?

- **Government security**: Sovereign Gold Bonds (SGBs) are government securities that are denominated in grams of gold.
- **Substitute:** They are substitutes of holding physical gold.
- **Cash redeem:** Investors have to pay the issue price in cash form and the bonds will be redeemed in the cash on maturity.
- **Issue authority:** The Bond is issued by Reserve Bank on behalf of the Government of India.
- Advantage: It offers a superior alternative to hold gold in physical form.
 - The risks and costs of storage are eliminated.
 - Investors are assured of market value of gold at the time of maturity and periodical interest.
- **Sold through**: The Bonds will be sold through Scheduled Commercial banks (except Small Finance Banks and Payment Banks), Stock Holding Corporation of India Limited (SHCIL), designated post offices, and recognised stock exchanges *viz.*, National Stock Exchange of India Limited and Bombay Stock Exchange Limited.

Features of the Sovereign Gold Bond Scheme 2021-22

- To be issued by Reserve Bank of India on behalf of the Government of India.
- The Bonds will be restricted for sale to resident individuals, HUFs, Trusts, Universities and Charitable Institutions.
- The Bonds will be **denominated in multiples of gram(s) of** gold with a **basic unit of 1 gram.**
- The tenor of the Bond will be **for a period of 8 years** with exit option after5th year to be exercised on the next interest payment dates.
- Minimum permissible investment will be 1 gram of gold.
- The **maximum limit of subscription** shall be 4 KG for individual, 4 Kg for HUF and 20 Kg for trusts and similar entities per fiscal (April-March) notified by the Government from time to time.
- In case of **joint holding**, the investment limit of 4 KG will be applied to the first applicant only.
- **Price of Bond** will be fixed in Indian Rupees on the basis of simple average of closing price of gold of 999 purity, published by the India Bullion and Jewellers Association Limited for the last 3 working days of the week preceding the subscription period.
- **Payment for the Bonds** will be through cash payment (upto a maximum of `20,000) or demand draft or cheque or electronic banking.
- The Gold Bonds will be issued as Government of India Stock under GS Act, 2006.
- The investors will be issued a Holding Certificate for the same.
- The **Bonds are eligible** for conversion into demat form.
- Bonds will be sold through Commercial banks, Stock Holding Corporation of India Limited (SHCIL), designated post offices (as may be notified) and recognised stock exchanges *viz.*, National Stock Exchange of India Limited and Bombay Stock Exchange, either directly or through agents.

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- The **investors will be compensated** at a fixed rate of 2.50 percent per annum payable semi-annually on the nominal value.
- **Bonds can be used as collateral** for loans. The loan-to-value (LTV) ratio is to be set equal to ordinary gold loan mandated by the Reserve Bank from time to time.
- Bonds will be **tradable on stock exchanges** within a fortnight of the issuance on a date as notified by the RBI.
- Bonds acquired by the banks through the process of invoking lien/hypothecation/ pledge alone, shall be counted towards Statutory Liquidity Ratio.

CHINESE SPACECRAFT SUCCESSFULLY LANDING ON MARS

CONTEXT: Chinese spacecraft, Tianwen-1, landed successfully on the surface of Mars which makes China the second space-faring nation after the U.S. to land on the Red Planet.

Key highlights of the Tianwen-1 Spacecraft

- Tianwen-1 or "Questions to Heaven", is China's first independent mission to Mars.
 - Tianwen-1, or "Questions to Heaven", named after a Chinese poem written two millennia ago.
- It is a **five-tonne spacecraft** that blasted off from the southern Chinese island of Hainan.
- It was launched by the powerful Long March 5 rocket.
- It is the **first Chinese** spacecraft which landed on Mars.
- It landed on a site on the Southern Utopia Plain.
- The landing process consisted of "**nine minutes of terror**" as the module decelerates and then slowly descends.

Minutes of terror

- In Mars missions, the '**minutes of terror**' is referred to the entry, descent and landing (EDL) phase of the rover.
- It is known as the events take place much quicker than the radio signals can reach Earth from Mars for communication.
- During the minutes of terror the engineers overlooking the event won't be able to guide or direct the Perseverance landing as it takes a while to establish or send any communication from Earth to Mars.
- Hence, the rover will have to perform a landing itself, with no human guidance involved.
- In the case of NASA's Perseverance, it was 'Seven minutes of terror' and in Chinese **Tianwen-1 Spacecraft**, It was Nine minutes of terror.
- It has a solar-powered rover, which is named as Zhurong.
 - It was named after a mythical Chinese god of fire, Zhuronghas.
 - It comprises six scientific instruments including a high-resolution opography camera.

- **Study:** The rover will survey the landing site before its departure from the platform to conduct inspections.
 - The rover will study the planet's surface soil and atmosphere.

• Zhurong will look for signs of ancient life, any sub-surface water and ice.

NATIONAL TECHNOLOGY DAY 2021

• **CONTEXT:** The National Technology Day is celebrated to mark the 30 years of the huge advancements India has made in the Science and Technology sector.

Highlights of the National Technology Day 2021

- It is celebrated every year on May 11 is across the country as National Technology Day.
- It was the 30th National Technology Day.
- The first time the National Technology Day was celebrated was on May 11, 1999.
- The day celebrates the achievements in the Science and Technology sector.
- The Technology Development Board has also instituted awards that are conferred by the President of India to scientists for their achievements in the field of technology and innovations.
- Theme: Each year a different theme is given for celebrating this important day.
 - This is decided by the Technology Development Board (TDB).
 - This year's theme, 2021: "Science and Technology for a Sustainable Future".
 - **The theme 2020**: 'Rebooting the Economy through Science, Technology and Research Translations' 'RESTART'.
- **Significance of the day:** On the same day in 1998, India carried out three successful nuclear tests under the name Operation Shakti, at the Indian Army's Pokhran Test Range which is located in Rajasthan, which had following features:
 - It was the code name given to the nuclear tests.
 - The tests were led by the late President Dr APJ Abdul Kalam.
 - These nuclear tests gave India entry into the elite group of nations with nuclear weapons.
 - India became the sixth nation to join the `nuclear-club'.
 - The Indian Army in collaboration with Bhabha Atomic Research Centre (BARC), Atomic Minerals Directorate for Exploration and Research (AMDER) and scientists from the Defence Research and Development Organisation (DRDO) conducted the tests.
- The day also remembered the country's first-ever indigenous aircraft, Hansa-1 flight which was designed by National Aerospace Laboratory (NAL).
- On this day the DRDO also tested a short-range missile with a quick reaction time surface-to-air Trishul missile.
- The day is also a boost to **Atmanirbhar Bharat** with the focus on making India a self-reliant nation.

WHO CLASSIFIES INDIA COVID STRAIN AS 'VARIANT OF CONCERN'

• **CONTEXT:** The B-1617 variant of coronavirus has been classified as a "variant of concern" by the World Health Organisation (WHO).

Key points about the B-1617 variant

- First in India: The B-1617 variant of coronavirus was identified in India.
- **Dispersal:** This variant is able to spread more easily than earlier forms of the virus.
- Mutation: It carries a mutation called L452R that affects the virus's spike protein.
 - The L452R mutation changes the part of the spike protein which directly interacts with ACE2.
 - The ACE2 molecule is found on the surface of our cells that the virus binds with to get inside.
 - It is estimated to be around 20% more transmissible than the earlier form of the coronavirus.
- Vaccine inefficiency: The vast majority of vaccines are based on targeting the spike protein.
 - The protein is on the outer surface of the virus and its change makes every time hard for the immune system to detect it.

How the Variants are classified?

Classification of Variants

In collaboration with a SARS-CoV-2 Interagency Group (SIG), the CDC established 3 classifications for the SARS-CoV-2 variants:

• Variant of Interest (VOI)

• It is a variant with specific genetic markers that have been associated with changes to receptor binding, reduced neutralization by antibodies generated against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity.

• Variant of Concern (VOC)

- A variant for which there is evidence of an increase in transmissibility, more severe disease (e.g., increased hospitalizations or deaths), significant reduction in neutralization by antibodies generated during previous infection or vaccination, reduced effectiveness of treatments or vaccines, or diagnostic detection failures.
- These variants spread more easily and quickly than other variants, which leads to more cases of COVID-19.

Variant of High Consequence (VOHC)

 A variant of high consequence has clear evidence that prevention measures or medical countermeasures (MCMs) have significantly reduced effectiveness relative to previously circulating variants.

SUCCESS IS A PRACTICE WE DO!

