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**APRIL**

**22.04.2021**

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**GS 2 : Polity, Governance, International Relations**

**1. India should be a 'country of particular concern': U.S. panel**

**Context:**

The U.S. Commission on International Religious Freedom (USCIRF) has recommended for the second year in a row that the State Department put India on a list 'Countries of Particular Concern' (CPCs) for the worst violations of religious freedoms in 2020.

**Recommendations:**

- The administration must **impose targeted sanctions on Indian individuals and entities for severe violations of religious freedom.**
- Another recommendation was for the administration **to promote inter-faith dialogue** and the rights of all communities at bilateral and multilateral forums such as **Quad.**

**Note:**

- USCIRF is an **independent bi-partisan commission.**
- It was created by the International Religious Freedom Act (IRFA) of 1998.
- USCIRF's principal responsibilities are to review the facts and circumstances of violations of religious freedom internationally and to make policy recommendations to the President, the Secretary of State, and the Congress.
- The USCIRF recommendations are **non-binding** and the **Trump administration had rejected the USCIRF recommendation to designate India a CPC in 2020.**
  - Pakistan and China along with Myanmar, Eritrea, Iran, Nigeria, North Korea, Saudi Arabia, Tajikistan and Turkmenistan were placed in the CPC list for engaging in or tolerating systematic, ongoing, egregious violations of religious freedom.
  - The US also designated al-Shabaab, al-Qaida, Boko Haram, Hayat Tahrir al-Sham, the Houthis, ISIS, ISIS-Greater Sahara, ISIS-West Africa, Jamaat Nasr al-Islam wal Muslimin and the Taliban as 'Entities of Particular Concern'.

## 2. SC paves way for ad-hoc judges in HCs

### Context:

The Supreme Court activated a dormant **constitutional provision** to pave way for the **appointment of retired High Court judges as ad-hoc judges** for a period of two to three years to clear the backlog.

### Details:

- SC said **retired judges** who had handled certain disputes and fields of law for over 15 years **could deal with them faster** if brought back into harness as ad-hoc judges.
- The SC also came out with **guidelines to regulate appointments**.
- **Article 224A**, used rarely, **deals with the appointment of ad-hoc judges in High Courts**.
- Under the Article, the **Chief Justice of a High Court for any State may at any time, with the previous consent of the President, request any person who has held the office of judge of that court or of any other High Court to sit and act as a judge of the High Court for that State.**

## 3. A recipe for vaccine inequity

### Context

- The Central government has announced the Phase 3 strategy for vaccinations against the coronavirus.

### Details

- As part of the 'liberalised and accelerated Phase 3 strategy of Covid-19 vaccination', all persons above the age of 18 years **will be eligible** to get Covid-19 vaccine jabs.
  - Vaccines will be **provided free of cost** to the eligible population i.e. Health Care Workers (HCWs), Front Line Workers (FLWs) and all people above 45 years of age.
- Under Phase 3 of the Covid vaccination strategy, vaccine manufacturers would supply 50 per cent of their monthly Central Drugs Laboratory released doses to the **Government of India** and would be free to supply the remaining 50 per cent doses to **state governments and in the open market**.
- The Government of India, from its share, will allocate vaccines to states/UTs based on criteria of the **extent of infection** (number of active Covid cases) and **performance** (speed of administration).

- The division of vaccine supply, ie, 50 per cent to the Centre and 50 per cent to state government or private buyers, is only mandatory for the vaccines manufactured in India. The sale of all imported vaccines will be allowed in the open market without restrictions.

### Criticism

- The Central government has failed to fulfil its responsibility to ensure equity in vaccine availability by clearly stating that **free vaccination would be limited to healthcare and frontline workers and people above 45 years of age.**
  - The government's projected population for the year 2021 for the 18-44 years age group is 595 million. This huge population **has not been included in priority groups** to have access to vaccines, and it would be covered solely by State governments and the private sector.
  - While the private sector may be able to cater to a small percentage of the population that can afford to pay a higher price per dose, the States must buy vaccines and administer them for free for a huge number of people.
- Countries like the USA whose healthcare is highly privatized is offering vaccines free of cost to adults. On the contrary, India is limiting free vaccines only to few sections of society.
- A bigger issue is that with States required to procure 50% of vaccines directly from manufacturers, the governments will end up competing with each other and with private players.
- The Central government, by allowing States to procure vaccines directly from manufacturers, has deftly shifted any future blame to State governments.

### Conclusion

- The second wave has amply demonstrated that unlike 2020, more people in the age group of 18-40 years have been symptomatically infected, with many requiring hospitalisation. Hence, a policy that promotes vaccine inequity based on age bands is a dangerous proposition.

## 4. Centre steps in to restore oxygen supplies to Delhi

### Context:

With the growing number of COVID-19 cases, **oxygen stocks at several hospitals in the national capital dipped to alarming lows** following disruption of supplies.

**Issue:**

- **Hospitals are overcrowded** and there is a **severe dearth of medical oxygen** in several hospitals across the country.
- During the first wave of the pandemic, the demand for liquid medical oxygen was much lower at 2,800 metric tonnes per day (MTPD) which has increased to 5,000 MTPD.
- **Uneven distribution** through supply and logistic chains.

**Note:**

**India's oxygen production** is currently at **7,000 metric tons**, which is higher than the daily oxygen requirement.

**Steps taken by the Government:**

- The centre has sanctioned the setting up of **162 Pressure Swing Adsorption (PSA) oxygen plants** at public health facilities with a capacity of 15419 MT. Out of these, 33 have already been installed.
- The Centre has **banned the supply of oxygen for industrial purposes**.
  - Supply for industries that make ampoules and vials, pharmaceuticals, refineries, steel plants, nuclear energy facilities, oxygen cylinder, wastewater treatment plants, food and water purification would continue.
- The **Indian Railways announced** the commencement of '**Oxygen Express**' via a green corridor carrying oxygen cylinders across the country.
- **Green corridors** have been set up to ensure the **smooth passage of oxygen trucks**.

## 5. India at 142nd rank on press freedom index

### What's in News?

**India has been ranked 142nd** on the **press freedom index**.

### Details:

- In 2016, India's rank was 133, which has steadily climbed down to 142 in 2020.

### Key Findings:

- The RSF report says **India is one of the world's most dangerous countries for journalists** trying to do their job properly.
- It states that the journalists in the country are **exposed to every kind of attack**, even **police violence against reporters, ambushes** by political activists, and reprisals instigated by criminal groups or corrupt local officials.

### Note:

- In February 2020, fearing such an adverse assessment, a **cell was set up in 18 Ministries to find ways to improve the position on 32 international indices.**
- The **Information and Broadcasting Ministry** was delegated to look at the **freedom of press index.**

### World Press Freedom Index

- World Press Freedom Index is **published every year since 2002** by **Reporters Without Borders (RSF)**, a French non-governmental organisation.
- The Index **ranks 180 countries and regions according** to the level of freedom available to journalists.
- It is a **snapshot of the media freedom situation** based on an evaluation of pluralism, independence of the media, quality of legislative framework and safety of journalists in each country and region.
- **It does not rank public policies** even if governments obviously have a major impact on their country's ranking, **nor is it an indicator of the quality of journalism** in each country or region.

## 6. Strengthening the process of choosing the police chief

### Context

- Param Bir Singh has been removed as the Mumbai Police Commissioner. The removal has put the focus on the process of appointing and removing police chiefs.

### Problems in Police Personnel Administration

- Absence of any prescribed procedure in law about the appointment and the removal.

- The political executive in the state enjoys enormous discretion and wield unregulated power to select and appoint officers of their choice as the heads of their police forces and remove them when they are not found to be aligned with the Government.
- Lack of independent processes has led to appointment and removal the basis of which is questionable and even if the procedure has been laid, the proceedings are opaque.
- While the principles of democratic accountability necessitate the police chief to remain answerable to the elected government at all times, the moot reform issue is in ensuring the right balance between conditioning the government's legitimate role in appointing or removing the police chief with the need to safeguard the chief's operational autonomy.

## Police Reforms

### 1. Independent police oversight body

- Shifting the responsibility of appointment and removal from the government alone to a bipartisan, independent oversight body of which the government is one part.

## Background

- The **National Police Commission (NPC)** was appointed by the Government of India in 1977.
  - This was the first commission appointed at the national level after independence.
  - Since the power to appoint its head and to remove becomes highly important from the point of view of controlling the force, it had suggested that the head of the police force should be selected from a panel.
- This position was later reaffirmed by the **Supreme Court of India** in its judgment in 2006, in Prakash Singh.
  - The SC in the past had issued directives to the State Government restraining their powers of appointment. It had directed the states to first consult the Union Public Service Commission to ensure that the entire selection process is not only transparent but also corruption-free.
- The Model Police Bill, 2015 places the responsibility with a multiparty State Police Board, also referred to as the **State Security Commission (SSCs)**.
  - Made up of government officials, the Leader of the Opposition as well as independent members from civil society, the board provides the additional safeguard of civilian oversight over the appointment process.



## Gaps in SSCs

- New police acts were created by a few states, some have made changes to existing acts and a few states have passed executive orders to establish SSCs but not a single state adheres to the balanced composition suggested by the SC.
    - Some do not include the Leader of the Opposition; others neither include independent members nor follow an independent selection process of the members.
    - In essence, the commissions remain dominated by the political executive.
  - Moreover, in as many as 23 States, governments retain the sole discretion of appointing the police chief.
    - Assam, Jharkhand, Karnataka, Meghalaya and Mizoram are the only States where, on paper, the SSC is given the responsibility of shortlisting candidates.
    - Whether this process is followed in practice each time remains to be verified.
2. The second element critical to police reforms is instituting an independent and transparent selection and decision-making process around appointment and removal.

## Appointments

- On appointments, the Court and the Model Police Act require the UPSC/SSC to shortlist candidates on the basis of length of service, service record, and range of experience and a performance appraisal of the candidates over the past 10 years.
- Unanswered Questions
  - What qualifies as a “good” range of experience?
  - How is the integrity of a candidate measured during appraisals?
  - What is the process required to be followed by the SSC in reviewing the suitability of candidates?
  - Should not interviews with the candidates be considered as a requirement, for instance?

## Removal

- The NPC had required State governments to seek the **approval** of the State Security Commission before removing the police chief before the end of term.
- This important check was diluted under the Prakash Singh judgment that only requires governments to **consult** the SSC.



- Concerns
  - Most States omit even this cursory step.
  - Broad terms such as “on administrative grounds” or “in the public interest” continue to be retained in police acts to justify the government’s power to remove the police chief. Such terms remain liable to misuse.

### **T.P. Senkumar vs Union of India (2017)**

- The Supreme Court has emphasised that “prima facie satisfaction of the government” alone is not a sufficient ground to justify removal from a tenure post in government.
- The rule of law requires such decisions to be for compelling reasons and based on verifiable material that can be objectively tested.

### **Way forward**

- To prevent politically motivated adverse actions, clear cut rules, regulations, specific benchmarks have to be integrated into decision-making processes, both on appointments and removals.
- The United Kingdom (UK) example can be adopted:
  - The UK had passed the Police Reform and Social Responsibility Act, 2011, which introduced public confirmation hearings as an additional layer of check for the appointment of the heads of their police forces known as Chief Constables (outside of London city).
  - Such steps can help ensure fairness in administrative decisions and need to be considered in our context as well in order to protect the political neutrality of the police.

### **Conclusion**

- Any further delay in implementing reforms in this area will continue to demoralise the police and cripple the rule of law.

## **GS 3 : Economy, Science and Technology, Environment**

### **7. A fresh push for green hydrogen**

#### **National Hydrogen Energy Mission (NHEM)**

#### **A look at stats**

- Currently, India consumes around 5.5 million tonnes of hydrogen, primarily produced from imported fossil fuels.
- In 2030, according to an analysis by the Council on Energy, Environment and Water (CEEW), green hydrogen demand could be up to 1 million tonnes in India across application in sectors such as ammonia, steel, methanol, transport and energy storage.

## Challenges

1. First, decentralised hydrogen production must be promoted through open access of renewable power to an electrolyser (which splits water to form H<sub>2</sub> and O<sub>2</sub> using electricity).
  - Currently, most renewable energy resources that can produce low-cost electricity are situated far from potential demand centres. If hydrogen were to be shipped, it would significantly erode the economics of it.
  - A more viable option would be wheeling electricity directly from the solar plant.
2. Second, we need mechanisms to ensure access to round-the-clock renewable power for decentralised hydrogen production.
  - Therefore, as we scale up to the target of having 450 GW of renewable energy by 2030, aligning hydrogen production needs with broader electricity demand in the economy would be critical.
3. Third, we must take steps to blend green hydrogen in existing processes, especially in the industrial sector.
  - Improving the reliability of hydrogen supply by augmenting green hydrogen with conventionally produced hydrogen will significantly improve the economics of the fuel.
  - This will also help build a technical understanding of the processes involved in handling hydrogen on a large scale.
4. Fourth, policymakers must facilitate investments in early-stage piloting and the research and development needed to advance the technology for use in India.
  - The growing interest in hydrogen is triggered by the anticipated steep decline in electrolyser costs.
  - India should not be a mere witness to this. Public funding will have to lead the way, but the private sector, too, has significant gains to be made by securing its energy future.

5. Finally, India must learn from the experience of the National Solar Mission and focus on domestic manufacturing.
  - Establishing an end-to-end electrolyser manufacturing facility would require measures extending beyond the existing performance-linked incentive programme.
  - India needs to secure supplies of raw materials that are needed for this technology.
  - Further, major institutions like the DRDO, BARC and CSIR laboratories have been developing electrolyser and fuel-cell technologies.
  - There is a need for a manufacturing strategy that can leverage the existing strengths and mitigate threats by integrating with the global value chain.

## 8. A fresh push for green hydrogen

### Increasing the production of green hydrogen

- India will soon join 15 other countries in the hydrogen club as it prepares to launch the **National Hydrogen Energy Mission (NHEM)**.
- India will soon join 15 other countries in the hydrogen club as it prepares to launch the **National Hydrogen Energy Mission (NHEM)**.
- In 2030, according to an analysis by the Council on Energy, Environment and Water (CEEW), green hydrogen demand could be up to 1 million tonnes in India across **application in sectors such as ammonia, steel, methanol, transport and energy storage**.

### Dealing with challenges

Several challenges in scaling up to commercial-scale operations persist. Following are five recommendations.

#### 1) Decentralise green hydrogen production

- Decentralised hydrogen production must be promoted through **open access of renewable power** to an electrolyser (which splits water to form H<sub>2</sub> and O<sub>2</sub> using electricity).
- Currently, most renewable energy resources that can produce **low-cost electricity are situated far from potential demand centres**.
- Producing oxygen at such locations and then shipped, it would significantly **erode the economics of it**.

- A more viable option would be wheeling electricity directly from the solar plant.
- However, **the electricity tariffs could double** when supplying **open-access power across State boundaries**.
- Therefore, operationalising **open access in letter and spirit**, as envisioned in the Electricity Act, 2003, must be an early focus.

## 2) Ensure access to round-the-clock renewable power

- To minimise **intermittency associated with renewable energy**, for a given level of hydrogen production capacity, a green hydrogen facility will store hydrogen to ensure continuous hydrogen supply.
- Therefore, as we scale up to the target of having 450 GW of renewable energy by 2030, aligning hydrogen production needs with broader electricity demand in the economy would be critical.

## 3) Blending green hydrogen in industrial sector

- We must take steps to blend green hydrogen in existing processes, especially the industrial sector.
- Improving the reliability of hydrogen supply by augmenting green hydrogen with conventionally produced hydrogen will significantly **improve the economics of the fuel**.
- This will also help build a technical understanding of the processes involved in handling hydrogen on a large scale.

## 4) Facilitate investment

- Policymakers **must facilitate investments** in early-stage piloting and the research and development needed to advance the technology for use in India.
- The growing interest in hydrogen is triggered by the anticipated **steep decline in electrolyser costs**.
- Public funding will have to lead the way, but the private sector, too, has significant gains to be made by securing its energy future.

## 5) Focus on domestic manufacturing

- India must learn from the experience of the National Solar Mission and focus on domestic manufacturing.
- Establishing an end-to-end electrolyser manufacturing facility would require measures extending beyond the existing **performance-linked incentive programme**.
- India needs to **secure supplies of raw materials** that are needed for this technology.

- Further, major institutions like the **DRDO, BARC and CSIR** laboratories have been developing electrolyser and fuel-cell technologies.

## Conclusion

Hydrogen may be lighter than air, but it will take some heavy lifting to get the ecosystem in place.

## THE INDIAN EXPRESS

## GS 2 : Polity, Governance, International Relations

### 1. Fifth Session of Codex Committee on Spices and Culinary Herbs

#### Why in News

Recently, the **Food Safety and Standards Authority of India (FSSAI)** inaugurated the **fifth session of the Codex Committee on Spices and Culinary Herbs (CCSCH)** established under **Codex Alimentarius Commission (CAC)**.

#### Key Points

- **About the Codex Committee on Spices and Culinary Herbs (CCSCH):**
  - **Establishment:** It was formed in **2013**.
  - **Terms of Reference:**
    - To **elaborate worldwide standards for spices and culinary herbs** in their dried and dehydrated state in whole, ground, and cracked or crushed form.
    - To **consult, as necessary, with other international organizations** in the standards development process to avoid duplication.
  - **Host:**
    - **India is the host country** and **Spices Board India** is the **Secretariat** for organising the **sessions of the committee**.

- **Spices Board (Ministry of Commerce and Industry)** is the flagship organization for the development and worldwide promotion of Indian spices.
  - **About the Codex Alimentarius Commission (CAC):**
    - **About:**
      - It is an **intergovernmental body** established jointly by the **UN's Food and Agriculture Organisation (FAO)** and the **World Health Organisation (WHO)** in **1963**, within the framework of the **Joint Food Standards Programme**.
        - The **Secretariat of the CAC** is hosted at **FAO headquarters in Rome**.
      - It was **established to protect the health of consumers** and ensure fair practices in the food trade.
      - It **meets in regular session once a year** alternating between Geneva and Rome.
    - **Members:**
      - Currently, it has **189 Codex Members** made up of 188 Member Countries and 1 Member Organization (**The European Union**).
      - **India** is a member.
    - **Food Standards:**
      - The **Codex Alimentarius** is a **collection of international food standards** that have been adopted by the CAC.
      - Codex Standards **cover all the main foods**, whether processed, semi-processed or raw.
        - In addition, materials used in the further processing of food products are included to the extent necessary for achieving the principal objectives of the code.
      - Codex provisions **concern the hygienic and nutritional quality of food**, including microbiological norms, food additives, pesticide and **veterinary drug residues, contaminants, labelling and presentation**, and methods of sampling and risk analysis.
  - **About Food Safety and Standards Authority of India (FSSAI) :**
    - **Establishment:**
      - **FSSAI** is an autonomous **statutory body** established under the **Food Safety and Standards Act, 2006 (FSS Act)**.
      - It is **headquartered in Delhi**.
    - **Administrative Ministry:**
      - Ministry of Health & Family Welfare.
    - **Functions:**
      - **Framing of regulations** to lay down the standards and guidelines of **food safety**.
      - **Granting FSSAI food safety license** and certification for food businesses.



- **Laying down procedure** and guidelines for laboratories in **food businesses.**
- **To provide suggestions** to the government in framing the **policies.**
- **To collect data** regarding contaminants in foods products, identification of emerging risks and introduction of **a rapid alert system.**
- **Creating an information** network across the country about food safety.
- **Promote general awareness** about food safety and **food standards.**

## 2. Subsidy Policy for Urea Produced from Coal Gasification

### Why in News

The Cabinet has **approved an exclusive subsidy policy for urea produced through coal gasification by Talcher Fertilizers Limited (TFL).**

- **Urea is a widely used fertiliser in India.**

### Key Points

- **About the TFL Urea Project:**
  - **Capacity and Location:** TFL is **setting up the 1.27 million tonne per annum capacity urea plant based on coal gasification technology in Odisha** with an estimated investment of Rs. 13,277 crore.
    - **This will be the only plant to produce the nitrogenous soil nutrient (urea) through coal gasification route.**
    - **Talcher Fertilizers Ltd. (TFL) is a Joint Venture Company of four PSUs (Public Sector Undertakings) namely Rashtriya Chemicals & Fertilizers (RCF), GAIL (India) Ltd. (GAIL), Coal India Ltd. (CIL) and Fertilizer Corporation of India Ltd. (FCIL).**
  - **Expected Benefits:**
    - The project will **improve availability of fertilizer to farmers** thereby boosting development of eastern region and will save transport subsidy for supply of urea in eastern part of the country.
    - It would **assist in reducing Urea imports** to the tune of 12.7 LMT (Lakh Metric Tonnes) per annum leading to savings in foreign exchange.



- It will also give a boost to the '**Make in India**' initiative and '**Atmanirbhar Bharat**' campaign and would help development of infrastructure like roads, railways etc.
- It will also **provide new business opportunities** in the form of ancillary industries in the catchment area of the project.
- **Coal Gasification:**
  - Coal gasification is the **process of converting coal into synthesis gas** (also called syngas), which is a mixture of hydrogen (H<sub>2</sub>), carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>).
    - The syngas **can be used in a variety of applications** such as in the production of electricity and making chemical products, such as fertilisers.
    - The **hydrogen** obtained from coal gasification can be used for various purposes such as making **ammonia**, powering a hydrogen economy.
  - The **ammonia is reacted with the carbon dioxide** to produce **urea melt**.
  - **In-situ gasification of coal-or Underground Coal Gasification (UCG)**-is the technique of converting coal into gas while it is still in the seam and then extracting it through wells.
  - **India has set the target** that by 2030 it will gasify 100 million tonne of coal under four major projects with an overall investment of Rs. 20,000 crore.
- **Fertilizer Consumption in India:**
  - **India's fertiliser consumption in FY20** was about 61 million tonne – of which **55% was urea** – and is estimated to have increased by 5 million tonne in FY21.
    - Since **non-urea (MoP, DAP, complex) varieties cost higher**, many **farmers prefer to use more urea** than actually needed.
    - The government has taken a number of **measures to reduce urea consumption**. It introduced **neem-coated urea** to reduce illegal diversion of urea for non-agricultural uses. It also stepped up the **promotion of organic and zero-budget farming**.
  - **Subsidy on Urea:** The Centre **pays subsidy on urea to fertiliser manufacturers on the basis of cost of production at each plant** and the units are required to sell the fertiliser at the government-set Maximum Retail Price (MRP).
  - **Subsidy on Non-Urea Fertilisers:** The **MRPs of non-urea fertilisers are decontrolled** or fixed by the companies. The Centre, however, pays a **flat per-tonne subsidy** on these nutrients to ensure they are priced at "reasonable levels".
    - **Examples of non-urea fertilisers:** Di-Ammonium Phosphate (DAP), Muriate of Potash (MOP)

### 3. Global Youth Mobilization Initiative

#### Why in News

Recently, an initiative called the 'Global Youth Mobilization' has been launched for youths in communities impacted by the Covid-19 pandemic.

- A **Global Youth Summit (GYS)**, to be held virtually on 23<sup>rd</sup>-25<sup>th</sup> April 2021, marks the starting point for young people to get involved in the mobilization.
  - The GYS aims to offer young people aged 14-30 new insights, skills and contacts, as well as a platform to engage with their peers, leaders and policy makers.

#### Key Points

- **About:** It is a movement of young people taking action to improve their lives now and in a post-Covid-19 world.
- **Aim:** To address the negative impact of the pandemic on young people and support them to build back better.
- **Organisations Involved:** It is supported by the world's six largest youth organisations, World Health Organization (WHO), and United Nations (UN) Foundation.
- **Need:** There are an estimated 1.2 billion young people impacted by the Covid-19 pandemic response measures.
  - Disruptions to education, employment, services and social support have changed the future of an entire generation.
- **Funding:** With support from the Covid-19 Solidarity Response Fund, Global Youth Mobilization will support and scale-up youth-led solutions and youth engagement programs across the world.
  - The Covid-19 Solidarity Response Fund was established by the WHO with the help of the UN Foundation and the Swiss Philanthropy Foundation.

## GS 3 :Economy, Science and Technology,Environment

### 4. Earth Day

#### Why in News

Every year, **22<sup>nd</sup> April** is celebrated as Earth Day to raise public awareness about the environment and inspire people to save and protect it.

- The **theme** for the year 2021 '**Restore Our Earth**' examines **natural processes, emerging green technologies and innovative thinking** that can restore the world's ecosystems.

### Key Points

- **Background:**
  - Earth Day was **first observed in 1970**, when 20 million took to the streets to protest against environmental degradation on the call of **US Senator Gaylord Nelson**.
    - The event was **triggered by the 1969 Santa Barbara oil spill**, as well as other issues such as smog and polluted rivers.
  - In **2009**, the **United Nations** designated 22<sup>nd</sup> April as '**International Mother Earth Day**'.
- **About:**
  - Earth Day is now **globally coordinated by EARTHDAY.ORG**, which is a non profit organisation. It was **formerly known as Earth Day Network**.
  - It aims to "**build the world's largest environmental movement to drive transformative change for people and the planet.**"
  - It recognizes a **collective responsibility**, as called for in the **1992 Rio Declaration (Earth Summit)**, to promote harmony with nature and the Earth to achieve a just balance among the economic, social and environmental needs of present and future generations of humanity.
  - The landmark **Paris Agreement**, which brings almost 200 countries together in setting a common target to reduce global greenhouse emissions, was also signed on Earth Day 2016.

### Other Important Days

- 22<sup>nd</sup> March: **World Water Day**
- 22<sup>nd</sup> April: **Earth Day**
- 22<sup>nd</sup> May : **World Biodiversity Day**
- 5<sup>th</sup> June: **World Environment Day**
- **Earth Overshoot Day**

### Earth Hour

- **Earth Hour** is the **World Wildlife Fund for Nature (WWF)**'s annual initiative that began in 2007. It is held every year on the last Saturday of **March**.

- It encourages people from more than 180 countries to **switch off the lights from 8.30 pm to 9.30 pm** as per their local time.

## 5. Scientists develop a new Covid-19 vaccine

### In news

- Using a new platform, scientists have developed a **Covid-19** vaccine that could offer protection against existing and future strains of the SARS-CoV-2 coronavirus and also other coronaviruses.

### Key takeaways

- The new vaccine-production platform was invented by Dr Steven L Zeichner of the University of Virginia Health System (UVA).
- It involves synthesising DNA that directs the production of a piece of the virus.
- This can instruct the immune system how to mount an immune response against the virus.
- The vaccine targets a part of the virus's spike protein called the fusion peptide.
- This compound is essentially universal among coronaviruses, and has not been observed to differ at all in the many genetic sequences of SARS-CoV-2 obtained from around the world.
- Most vaccines in development target either the entire **spike protein**, or just the receptor binding domain (RBD).
- While antibodies against the RBD can provide good neutralising activity, there can be mutations in the RBD that decrease the effectiveness of the antibodies.

### Prelims Practice Questions

1. Consider the following statements with respect to Krishnadevaraya of the Vijayanagara empire:

1. He belonged to the Tuluva dynasty.
2. He is the author of Amuktamalyada and Jambavati Kalyan.
3. He founded Vijayanagar City on the southern banks of River Tungabhadra.

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

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

Answer: b

#### Explanation:

- Krishnadeva Raya of the Tuluva dynasty was the most famous king of the Vijayanagar Empire.
- Krishnadevaraya published several works – Amuktamalyada, Madalsa Charitra, Jambavati Kalyan, etc. He is said to have been a master of several languages.
- Harihara and Bukka founded Vijayanagar City in 1336 CE on the southern banks of the Tungabhadra.
- They made Hampi the capital city.
- They served under Vira Ballala III, the Hoysala King.

2. Which of the following ministry has launched Smart Code Platform?

- a. Ministry of Corporate Affairs
- b. Ministry of Electronics and Information technology
- c. Ministry of Information and Broadcasting
- d. Ministry of Housing and Urban Affairs

Answer : d

### Explanation

#### Smart Code Platform

- It is a platform that enables all ecosystem stakeholders to contribute to a repository of open-source code for various solutions and applications for urban governance.
- It is designed to address the challenges that urban local bodies (ULBs) face in the development and deployment of digital applications to address urban challenges.
- As a repository of open-source software, the source code available on the platform will be free to use without any licensing or subscription fees.

#### 3. Consider the following statements with respect to Liquefied Petroleum Gas:

1. It contains propane and butane.
2. It is used as an aerosol propellant and a refrigerant.
3. It is a colourless odourless flammable mixture of hydrocarbon gases.

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

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

Answer: c

### Explanation:

- Liquefied petroleum gas (LPG or LP gas) is a flammable mixture of hydrocarbon gases used as fuel in heating appliances, cooking equipment, and vehicles.
- It is completely odourless and is made from refining petroleum or natural gas.
- Varieties of LPG bought and sold include mixes that are mostly propane ( $C_3H_8$ ), mostly butane ( $C_4H_{10}$ ), and, most commonly, mixes including both propane and butane.

#### 4. Which of the following statements are incorrect with respect to International Mother Language Day

1. It is initiated by International Linguistics forum.
2. The day commemorates a long struggle by Bangladesh to protect its mother language Bangla.

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

**Answer : a**

### **Explanation**

#### **International Mother Language Day**

- UNESCO declared 21st February as International Mother Language Day in 1999 and World has been celebrating the same since 2000.
- The day also commemorates a long struggle by Bangladesh to protect its mother language Bangla.
- The resolution to mark 21st February as the International Mother Language Day was suggested by Rafiqul Islam, a Bangladeshi living in Canada.
- He proposed the said date to commemorate the 1952 killings in Dhaka during the Bangla Language Movement.
- The initiative is aimed at preserving and promoting mother languages.
- The aim is to protect the diverse culture and intellectual heritage of different regions of the world.

#### **5. Which of the following statement(s) is/are correct with respect to Findings on Sun's Rotation**

1. Sun rotates more quickly at its equator than at its poles.
2. Sun's differential rotation rates cause its magnetic field to become twisted and tangled.

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2



Answer : c

### Explanation

#### Findings on Sun's Rotation

- The scientists have estimated how the Sun has rotated over a century from data extracted from old films and photographs that have been digitized.
- The tangles in the magnetic field lines can produce strong localized magnetic fields and when the Sun's magnetic field gets twisted, there are lots of sunspots.
- The sunspots which form at the surface with an 11-year periodicity are the only route to probe the solar dynamo or solar magnetism inside the Sun and measure the variation in solar rotation.
- The team compared the consistent digitized data with manual data of rotation taken earlier and said that they have been able to differentiate the behaviours of the bigger and smaller solar spots.
- Recently, the researchers from the Aryabhata Research Institute of Observational Sciences (ARIES) have used the digitized data of Kodaikanal Solar Observatory in order to probe Sun's rotation over the Century.

#### Kodaikanal Solar Observatory

- It is a Solar Observatory of the **Indian Institute of Astrophysics**, located in **Palani range of hills**.
- It was established in **1899 as a Solar Physics Observatory**.

#### 6. With reference to Buddhism, consider the following statements:

1. In Varad Mudra the gesture of hand shows dispensing of boons.
2. The Vajrayana phase is also known as tantric Buddhism.

Which of the statements given above is/are correct?

- A 1 only
- B 2 only
- C Both 1 and 2
- D Neither 1 nor 2

Answer :C

### Explanation

- The Archeological Survey of India (ASI) has unearthed a Buddhist monastery, believed to be at least 900 years old, buried under a mound in a village near Juljul Pahar of Sitagarhi Hills in Jharkhand.
- Four statues found here are of deity Tara in **Varad Mudra** (gesture of hand showing dispensing of boons). **Hence, statement 1 is correct.**
- Six statues of the Buddha discovered here are in Bhumisparsha Mudra (gesture of hand showing five fingers of right hand towards the earth symbolising the Buddha's enlightenment).
- Vajrayana means "The Vehicle of the Thunderbolt", also known as **tantric Buddhism. Hence, statement 2 is correct.**
- It is grounded on esoteric elements and a very complex set of rituals compared with the rest of the Buddhist schools.

### **Mains Practice Questions**

#### **1. The States People's movement contributed towards the integration of princely states into the Indian Union. Discuss. (250 words)**

##### **Approach:**

- Highlight conditions and issues that people faced in princely states during British India.
- Related how such issues were absorbed and addressed under the Nationalistic Freedom Struggle, along with Congress's view of the polity of princely states.
- Conclude that integration into the Indian Union was part and parcel of the freedom movement.

#### **2. Indigenous people are one of the most vulnerable sections facing climate change, however, they can act as change agents, towards mitigating and adapting to climate change. Discuss. (250 words)**

##### **Approach**

- Briefly defining Indigenous people, highlight their vulnerability/problems face due to Climate Change.
- Highlight how they can act as change agent in mitigation as well as adaptation efforts with example.
- In conclusion, highlight some challenges for becoming a change agent and some measures to overcome them.

