CURRENT AFFAIRS WEEKLY

WEEK-3
SEPTEMBER 2020

MAINS

- Growth in agriculture is not remunerative to Indian farmers
  AGRICULTURE
- First-ever World Solar Technology Summit (WSTS)
  CLIMATE CHANGE
- Demand on rise for doubling of Financial Grant and work days under NREGA
  GOVERNANCE
- India to be 'leading manufacturer' of Russia's 'Doubtful' Trial Vaccine
  HEALTH
- Assessing the 'critical' importance of Chushul sector in India-China standoff
  INTERNATIONAL RELATIONS
- Moon May Be Rusting Along Poles, Suggest Chandrayaan-1 Images
  SPACE

PRELIMS

- New Bird in Arsenal": 5 Rafales Joins Indian Air Force
- Successful test-firing of Hypersonic Technology Demonstrator Vehicle (HSTDV)
  DEFENCE
- International Day to Protect Education from Attack
  EDUCATION
- International Day of Clean Air for blue skies
  ENVIRONMENT
- Low concentration of Ozone in the Brahmaputra River Valley
  GEOGRAPHY
- Business Reform Action Plan
  States mandated to set up panel on Content Regulation of Govt Ads
  GOVERNANCE
- India-China five point action plan
  INTERNATIONAL RELATIONS
- Plea on 'Office of Profit' dismissed by President
  POLITY
- NIBEC, a DBT-supported facility for viral immunogenicity testing inaugurated
  SCIENCE & TECHNOLOGY

GS SCORE
An Institute for Civil Services
www.iasscore.in

— NOTE —

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 (SEPTEMBER, 2020)

CONTENTS

****

GS SCORE
An Institute for Civil Services

IAS 2021-22
GS FOUNDATION

LIVE & INTERACTIVE CLASSES

IAS 2021
GS FOUNDATION
PRELIMS *cum* MAINS

BATCH STARTS **15** SEPTEMBER 2020

GS MAINS
FOUNDATION
BASICS *to* ADVANCE

BATCH STARTS **15** SEPTEMBER 2020

BATCH 2

GS MAINS
ADANCE
A Solution for 1250 Marks

BATCH STARTS **21** SEPTEMBER 2020

IAS 2021/22/23
PATHWAYS
2 & 3 Years Course for College Students

BATCH STARTS **24** NOVEMBER 2020

OPTIONAL FOUNDATION

BATCH - 4
POLITICAL SCIENCE FOUNDATION
By: Dr. PIYUSH CHOUBEY
BATCH STARTS 22 OCTOBER

BATCH -2
HISTORY FOUNDATION
By: PIYUSH KUMAR
BATCH STARTS 09 OCTOBER

BATCH -1
GEOGRAPHY FOUNDATION
By: PRINCE MISHRA
BATCH STARTS 16 OCTOBER

1B, 2nd Floor, Pusa Road Karol Bagh, New Delhi-110005,
(Adjacent to Karol Bagh Metro Gate No. 8)
info@iasscore.in /iasscore

Visit: www.iasscore.in
8448496262

SECTION: A

(MAINS)

CURRENT AFFAIRS

GROWTH IN AGRICULTURE IS NOT REMUNERATIVE TO INDIAN FARMERS

CONTEXT

Farmers are not earning proportionately to their production or matching agricultural growth. As such, a farmer's share in consumers' expenditure on food items is very low; sometimes, it is less than 66 per cent and as low as 20 per cent in case of fruits and vegetables. There are two key facets of the farmers' crisis – falling income and indebtedness.

⊙ BACKGROUND

- When output increases well beyond the market demand at a price remunerative to producers, market prices decline.
- And in the absence of an effective price support policy, farmers are faced with a loss in income, depending on how much the price decline is.
- The 'farm distress' in recent years has been partly on account of this situation, as the loss of income is beyond the ability, particularly of small farmers, to absorb.
- In recent times, agriculture made headlines for all the wrong reasons:
  - Farmers quitting cultivation
  - the sector turning into a perennial loss-making enterprise
  - the country's official policy to downsize the dependence on agriculture to reduce overall economic hardship among the poorest of the population.
- Agriculture's fast-declining economic importance reached such an extent that economists suggested India had already turned into a **non-agrarian economy** and the more people quit farming, the better the fortune of remaining farmers would be.
- But two developments in the first half of September seem to be forcing us to revise these perceptions of Indian farming and farmers.
  - First, when India recorded 23.9 per cent contraction in the gross domestic product (GDP) in the first quarter (April-June, 2020), agriculture emerged as the unbelievable winner, growing at 3.4 per cent. This growth in the agriculture sector was based on the rabi or winter crop, that was anyway a bumper one.
  - Second, the kharif or the monsoon crop is already an exceptional one in terms of acreage. It has broken a four-year record, with 109.5 million hecatres (ha) under sowing.

Kharif Crops

- The crops that are sown in the rainy season are called kharif crops (also known as the summer or monsoon crop) in India.
- Kharif crops are usually sown with the beginning of the first rains in July, during the south-west monsoon season.
- Rice, maize, bajra, ragi, soybean, groundnut, cotton are all Kharif crops.

Rabi Crops

- The crops that are sown in the winter season (November to April) are called Rabi crops. (also known as the "winter crop") in India.
- The Rabi means, when the crop is harvested. Some of the important rabi crops are wheat, barley, peas, gram and mustard.

- Now, the tough question: how much will farmers earn out of this?
- As per all the indications, Indian farmers are going to suffer one of their worst losses, proportionate to their investment and excitement.

⊙ ANALYSIS

Crop output and income of farmers

- Usually, crop output value is used as a proxy for farmers' income. But in recent years, the sector has witnessed no co-relation between crop output and the income of farmers.
  - For instance, take the situation in 2016-17. This was the year when India had a record acreage that was surpassed only this kharif season. Crop value output in that year grew at 5.9 per cent, the fastest in recent times.
    - But according to the National Account Statistics released recently, 2016-17 didn't register any real growth in farmers' income.

Wholesale Price Index (WPI)

- The Wholesale Price Index (WPI) for agriculture indicates the price at which farmers sell their produce.
- Thus, it is an indication of how much they could earn. The higher it is, the more is the income for farmers.
  - But in the first quarter, WPI for food items was 2.1 per cent. It was seven per cent in the first quarter of last year.
  - This means farmers didn't get a good return from their bumper rabi crops. Similarly, they didn't receive any good returns for the kharif season.

Why the returns are not good even after bumper harvest?

- The harvest would be bumper but the government is already distributing foodgrains from its reserve as part of the novel coronavirus disease (COVID-19) relief package, free and cheaper as well.
- It already has an overflowing stock.
- These would immediately lead to a market glut for the farmers, reducing prices for their produce.
- On the other hand, there might not be a huge demand for foodgrains since the loss in income caused by the pandemic has reduced purchasing power generally.
- This would lead to a fall in food prices. Ultimately, farmers are not earning proportionately to their production or matching agricultural growth.

Recent Government Schemes for Agricultural Reforms

- **Financial assistance:** To support farmers in effectively undertaking the post-harvest rabi produce and preparatory work for kharif crops, Rs 30,000 crore additional emergency working capital fund through NABARD and Rs 2 lakh crore of concessional credit has been provided.
  - Allocation of Rs 1 lakh crore for Agri Infrastructure Fund will strengthen cold chain and post-harvest management infrastructure in the vicinity of their farm gates for farmers.
  - The allocation of Rs 20,000 crore for fishermen under **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** will provide significant impetus to production and exports of marine, inland fisheries and aquaculture and further strengthen infrastructure for fishing harbours, cold chain and markets.
  - The announcement on setting up of **Animal Husbandry Infrastructure Development Fund** of Rs 15,000 crore will tremendously support private investments in dairy processing, establishment of plants for export of niche products, strengthen value addition and cattle feed infrastructure.
- **Amendment to Essential Commodities Act:** With the aim to enable better price realisation for farmers to attract private investments and make the agriculture sector competitive, amendment of the Essential Commodities Act and deregulation of agriculture food items, including cereals, edible oils, oilseeds, pulses, onions and potato, have been announced.
- **Extension of Operation Green to TOTAL:** Another step towards a better price realisation for farmers has been the extension of Operation Green from Tomato, Onion and Potatoes (TOP) to all fruits and vegetables (TOTAL) in a pilot project for six months. Also, this will reduce wastages and promote affordability of products by consumers.
- In addition, during the last few years, a plethora of schemes and initiatives have been announced by the government. A few of the major schemes are:
  - soil health card scheme
  - launch of a pan-India electronic trading platform under the National Agriculture Market (NAM)
  - Pradhan Mantri Fasal Bima Yojana
  - Pradhan Mantri Krishi Sinchai Yojana (PMKSY)
  - dedicated online interface e-Krishi Samvad
  - favourable taxation treatment to Farmer Producers Organisations (FPQs)
  - Micro-Irrigation Fund (MIF)

Doubling farmers' income

- The Government shared the vision of doubling farmers' income in 2016.
- A time frame of six years (2016-17 to 2022-23) was delineated as the period for implementation of this reform measure to transform the vision into reality.
- The roadmap for doubling farmers' income include-
  - increase in productivity of crops
  - increase in production of livestock
  - improvement in efficiency of input use
  - increase in crop intensity
  - diversification towards high value crops
  - improved price realisation by farmers
  - shift to non-farm jobs

- **Agriculture Export Policy, 2018:** In a major breakthrough, the Government approved the Agriculture Export Policy, 2018 with an objective to double farmers' income by 2022.

Why Agriculture matters?

- The role of the agriculture sector remains critical to the Indian economy as a large proportion of the population still depends on agriculture directly or indirectly.
- The sector is a supplier of food, fodder and raw materials for a vast segment of industry.
- Agriculture sector in India is still the primary source of livelihood of millions. More than 40 per cent of the total workforce in the country still depends on agriculture for their livelihood.
- India is globally acknowledged as the leading producer of several agriculture and allied products.
- Globally, India is well known as the leading producer of **milk, banana, mango, guava, papaya, ginger, okra, wheat, rice, fruits, vegetables, tea, sugarcane, cashew nut, cereals, coconut, lettuce, chicory, cardamon, pepper**, among others with availability of **diverse agro-climatic zones**.
- India supports around 18 per cent of the world's population with about 2.4 per cent of the world's land and 4 per cent water resources.

Is raising MSP the 'only' solution?

- Raising the minimum support price (MSP), price deficiency payments or income support schemes can only be a partial solution to the problem of providing remunerative returns to farmers.
- A sustainable solution is market reforms to enable better price discovery combined with long-term trade policies favourable to exports.
- The creation of a competitive, stable and unified national market is needed for farmers to get better prices.

What's adding to the challenges?

- In recent years, agricultural markets have witnessed only limited reforms. They are characterised by-
  - inefficient physical operations
  - excessive crowding of intermediaries
  - fragmented market chains
- Due to this, farmers are deprived of a fair share of the price paid by final consumers. States have also not shown any urgency in reforming agricultural markets.
- For better price for farmers, agriculture has to go beyond farming and develop a value chain comprising farming, wholesaling, warehousing, logistics, processing and retailing.

What needs to be done?

- **Focus on ease of doing farm business:** Availability of sound ease of doing business is critical for the growth of the agriculture sector. There is a need to strengthen the environment for providing one stop information source on various policy developments, incentives offered, agriculture supporting resources and infrastructure facilities across the country.
- **Strong government support:** Farmers must be assured that the government will extend necessary help to enable them to continue farming in a profitable way.
- **Price stabilisation fund:** A price stabilisation fund should be established and proactive measures taken to save farmers from economic collapse.
- **Focus on crop insurance:** Crop insurance and prompt compensation are important for sustainable agriculture. The government needs to promote a credit-cum-insurance policy, which will insulate farmers from losses due to factors beyond their control.
- **Crop-livestock integration:** Crop-livestock integration has always helped in ensuring both income and nutrition security.
  - The National Commission on Farmers recommended a major non-farm initiative, on the model of the rural township programme of China.
    - This would involve agriculture-based enterprises such as mushroom cultivation, use of bio-pesticides and bio-fertilisers, apiculture, inland and coastal aquaculture, and the biological software essential for sustainable agriculture.
  - **Biomass utilisation:** The State needs to adopt more biomass utilisation through bioparks such as the rice bio-park established by the Government of India in Myanmar.

⊙ CONCLUSION

Agriculture is dying, not as in the production of food but as a desirable profession. The clearest indicator of the problems of agriculture as a profession is how there are actually shortfalls of labour in some areas,

with larger farms relying on imported farm labourers, drawn not just from the neighbouring states but from the far ends of the country (especially the north-east) and even Nepal.

In the present difficult scenario amid the COVID-19 pandemic, the agriculture sector is the low hanging fruit. At this juncture, the government have an opportunity to boost more and more growth of agriculture with a lot of efforts and technology support. This will also lead to growth of the manufacturing sector and spur the overall economic growth trajectory of the country.

****

FIRST-EVER WORLD SOLAR TECHNOLOGY SUMMIT (WSTS)

CONTEXT

The International Solar Alliance (ISA) organized the first-ever World Solar Technology Summit (WSTS). The summit brought together key stakeholders – leading academic scientists, technology developers, researchers, and innovators on one platform.

⊙ ABOUT:

- ISA discussed the recent developments in solar technologies both in terms of cost and technology, along with technology transfers, challenges, and concerns in the field.
- The main objective of the summit was to showcase next-generation solar technologies to member countries.
- The summit also allowed decision-makers and stakeholders to meet and discuss their priorities and strategic agenda towards a broader integration.
- Some of the key events during the summit was the signing of a Memorandum of Understanding (MoU) between the ISA and the International Institute for Refrigeration (Paris); and a partnership agreement between ISA and Global Green Growth Institute (South Korea) for the promotion of one million solar pumps.
- Partnership agreements on the implementation of 47 projects was also signed and exchanged between ISA and NTPC. A partnership agreement on the 'One Sun One World One Grid' was signed and exchanged between the Ministry of New and Renewable Energy (MNRE), the World Bank, and the ISA.
- As of June 2020, the ISA framework agreement has been signed by 86 countries, with 68 having submitted instruments of ratification.
- Last year, it was announced that the ISA would no longer be treated as a foreign source of funding.
- Previously, the Commonwealth of Nations and the ISA signed a Memorandum of Understanding to expand solar power in the Commonwealth member countries. The ISA and Commonwealth have at least 28 common member countries.

The International Solar Alliance (ISA)

- The International Solar Alliance (ISA) is an alliance of 121 countries initiated by India, most of them being sunshine countries, which lie either completely or partly between the Tropic of Cancer and the Tropic of Capricorn.
- The primary objective of the alliance is to work for efficient exploitation of solar energy to reduce dependence on fossil fuels.
- This initiative was first proposed by Indian Prime Minister Narendra Modi in a speech in November 2015 at Wembley Stadium, in which he referred to sunshine countries as Suryaputra ("Sons of the Sun").
- The alliance is a treaty-based inter-governmental organization. Countries that do not fall within the Tropics can join the alliance and enjoy all benefits as other members, with the exception of voting rights. After the United Nations, it is the largest grouping of states world-wide.

Geographical importance

- The area of Earth located in between the Tropic of Cancer and Tropic of Capricorn is called the tropical (torrid) zone. This is the part of the world in which the sun can appear directly overhead, and that more-direct exposure means that the sun's actual effect is greater here; anywhere north or south of this zone, sunlight always reaches the earth's surface at an angle and is correspondingly less intense.
- The sunniest countries of the world are on the African continent, ranging from Somalia- Horn of Africa-, east to Niger, west and north to Egypt.
- For India, possible additional benefits from the alliance can be a strengthening of ties with the major African countries and increasing goodwill for India among them.

Challenges before ISA

- First challenge, solar electricity has to overcome the roadblocks of transmission and storage. Cross-border transmission of electricity requires establishment of transmission lines from the producer to the consumer country. These lines have to be dedicated to the specific countries. For example, a transmission line from Bhutan to India cannot be used to transmit electricity from Bhutan to Bangladesh.
- Therefore, Solar Alliance can challenge the OPEC only when the infrastructure for cross-border transmission of electricity is put in place. It is necessary to build international transmission lines along the lines of the Belt Road Initiative of China.

- The second challenge lies in storage of electricity. Oil can be extracted and stored in large tanks and used when required. Not solar electricity. It is produced when the sun is shining. It is often the case that the buyer is unwilling to lift the solar electricity when it is being generated because at that time it may have other cheaper sources of electricity available.
- The cost of power has two components. The variable cost is the payment made for the numbers of units of electricity purchased. In addition, the buyer is required to pay certain amount towards the fixed cost of solar supply. This cost has to be paid by the buyer irrespective of whether it purchases the electricity or not.
- Solar has another disadvantage in the time of the day when it is generated. Solar electricity is available only during the day when the sun shines. The demand for electricity, however, is more during the morning and evening which are called "peak hours". Therefore, solar electricity is like warm clothes in the summer. It is produced when the demand is less.
- The challenge is to store solar electricity during the day and release it during the peak hours. Various methods are available for doing this. These include storing electricity in super-heated oil, in batteries, or in pump storage schemes.
- The third challenge is of providing the money for promoting solar electricity among the members. The Alliance has very little money of its own.
- The Alliance proposes to help channel funds from established multilateral banking institutions such as the Asian Development Bank, African Development Bank and the New Development Bank. But the priority of these institutions is different.
- Moreover, access to these institutions is already available to the member countries. The Alliance does not add to the availability of funds in a significant way. The challenge is to establish a "World Solar Development Bank". Certain developed countries that are deeply concerned with global warming could provide big-ticket funding for this initiative.
- The fourth challenge, and an opportunity for India, is to develop a solar power waste recycling business along the line of ship breaking business. Solar panels have a life of about 30 years. The panels have to be physically dismantled and the glass, silicon, copper and plastic have to be separated. The glass, copper and plastic are easily reused. The silicon cannot be reused for making new solar panels because it contains some glass.

⊙ WAY FORWARD:

- There is no doubt that the future belongs to the Solar Alliance. However, for the Alliance to become a challenge to OPEC, following steps should be taken:
  - Initiate the establishment of an international electricity transmission grid.
  - Undertake research to bring down the cost of storage of electricity.
  - Establish a new multilateral bank dedicated to the promotion of solar power.
- Invest in research on reuse of silicon extracted from used solar panels.

****

DEMAND ON RISE FOR DOUBLING OF FINANCIAL GRANT AND WORK DAYS UNDER NREGA

CONTEXT

Activists demand doubling of financial grant and work days under NREGA

⊙ WHAT ACTIVISTS ARE DEMANDING?

- Highlighting how the Covid-19 pandemic has reinforced the importance of NREGA for rural India, the People's Action for Employment Guarantee (PAEG), a network of civil society organisations, activists and academics, has sought that the promised Rs 40,000 crore relief package be released by the Centre immediately as Rs 64,000 crores has been already spent and delays in wage payment would compound the woes of the rural poor.
- They also draw attention to households that need work and have exhausted 100 days.
- As per the PAEG analysis based on data from the NREGA MIS of the rural development ministry, around 6.8 lakh households have already completed 100 days of work, but this is only 1.2% of those employed under NREGA.
- Also an additional 51 lakh households have already completed 70 days of work. On average in the last 5 years, 42 lakh households completed 100 days of work in a year. It is further stated that most states are unable to provide a 100 - day guarantee
- It is shared that as many as 85 lakh new job cards have been issued since April 2020 (22% increase in the number of new job cards compared to the last 5 years). It is shared that 5.8 crore households have got work under NREGA since April this year and on average, the number of households that worked in NREGA in the last 5 years is 5.2 crore.
- In light of the current crisis, Rs 40,000 crores were allocated by the government of India in addition to the Rs 60,000 crores in the union budget for 2020-21. So far this year, timely and adequate allocation of funds has implied timely payment of wages.
- They go on to point that Rs 1 lakh crore in absolute terms, is the highest ever allocation. However, even before the half-way mark in this financial year, about Rs 64,000 crores have already been spent.

Mandate of Mahatma Gandhi Employment Guarantee Act 2005 (MGNREGA)

- The mandate of the MGNREGA is to enhance livelihood security in rural areas by providing at least 100 days of wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.

Issues facing MGNREGA

- The low wage rates have resulted in lack of interest among workers in working for MGNREGA schemes, making way for contractors and middle men to take control, locally.
- Despite the order of the Supreme Court and initiatives and GO (Government Order) by the Union Ministry of Finance, no provision has yet been worked out in the MIS for calculation of full wage delays and payment of compensation for the same.
- The ministry withholds wage payments for workers of states that do not meet administrative requirements within the stipulated time period. It is beyond any logic as to why workers would be penalised for administrative lapses.
- Due to great rush and poor infrastructure, the bank passbooks are not updated in many cases. Often, the workers do not get their wages during times of need due to the hassle and the cost involved in getting wages from the bank.
- There is a growing pile of evidence on how real-time MIS has made MGNREGA less transparent for workers, reduced accountability of frontline functionaries and aided in centralisation of the programme.
- There are a huge number of unemployment allowances being shown in the MIS currently.
- While the government has been boasting about Aadhar-based savings, the reality is that a huge number of genuine job cards and ration cards are getting deleted and genuine people have been deprived of their due entitlements.

Suggested measures

- The specialised training programmes be organised in the rural areas preferably in the village panchayats so that these functionaries get proper training for the better execution of the works.
- It is recommended that Gram Sabha and panchayat members should be sent for exposure visits to other states like Andhra Pradesh, Kerala where NREGA has done wonderful work.
- To curb corruption & malpractices, it is a requirement that MGNREGA works are properly monitored and supervised.

- The wage rates to be paid under NREGA should be revised on one hand and subsequently every year there should be enhancement in the existing wage rates by a reasonable percentage say around 10-15% or so.
- Women workers, particularly those with children, face major inconvenience due to lack of Creche facility and toilets. So the steps should be taken to provide adequate worksite facilities.
- The programme has the provision for 100 days employment per household. As such if a household who has more than one adult member, the mandats should be increased suitably however with some ceiling.
- The MGNREGS should develop a relevant instrument to provide skill generating work and activities for literate beneficiaries instead of engaging them completely in manual work.
- Women participation can be enhanced by appointing female supervisors on MGNREGS works. Women should be involved in the selection of works, which can create further mainstream employment in the village.
- Strict actions should be taken against the officers and other employees who are found involved in misguiding the persons who make their approaches to them to know about the Government Schemes for employment opportunities.

⊙ CONCLUSION:

MGNREGA's success at the ground level is subject to proper and uninterrupted fund flow to the states. The government should ensure that the fund allocation is sufficient to ensure proper implementation on the ground. Also, now, amid the pandemic the focus has to be on getting people, including the migrant labourers, back to normal work.

****

INDIA TO BE 'LEADING MANUFACTURER' OF RUSSIA'S 'DOUBTFUL' TRIAL VACCINE

CONTEXT

India would be one of the leading manufacturers of the vaccine and ensure a major supply to the external world. Russia would start exporting the vaccine only when its domestic demands are fulfilled. Till that time, it would rely on India to fulfil global demand and its own domestic demand.

⊙ BACKGROUND

- Amid the race for a potential vaccine against the novel coronavirus, Russia has been in the news for developing the "world's first Covid-19 vaccine," Sputnik V.
- Now, the Russian government has reached out to the Indian government seeking a collaboration for manufacturing their COVID-19 vaccine, Sputnik V, and conducting its phase 3 trial, a source in the government said.
- The Department of Biotechnology (DBT) along with the Department of Health Research has been asked to lead and look into the matter.
- They (Russian government officials) have shared some information and data on Sputnik V, while more data related to the safety and efficacy of the vaccine is awaited.

⊙ ANALYSIS

A proxy war?

- Around the world, more than 30 vaccines — out of a total of more than 165 under development — are now in various stages of human trials.
  - Currently, eight vaccines have entered the final phase of mass human testing, including ones produced by Moderna in the United States, Oxford University and AstraZeneca in Britain, and several Chinese companies.
- The major powers are locked in a global race for a vaccine that President Donald Trump, Putin and China's president, Xi Jinping, are treating as a proxy war for their personal leadership and competing national systems.
  - The United States, with an effort called Operation Warp Speed.
  - China have poured billions into the pursuit, and health officials worry that Russia is trying to snatch a victory by cutting corners.
- By skipping large-scale clinical trials, the Russian dash for a vaccine has raised widespread concern that it is circumventing vital steps — and potentially endangering people — in order to score global propaganda points.
- However, Russia maintained that its vaccine is based on a design developed years ago by Russian scientists to counter the Ebola virus.

Details on COVID-19 Vaccine

- The vaccine has been developed by the Gamaleya Institute in Moscow in collaboration with Russia's Defence Ministry.
- Russian President Vladimir Putin had earlier hailed Sputnik V named after the Soviet Union's 1957 launch of the world's first satellite into space, as the first vaccine globally to receive clearance.
- The Russian vaccine uses adapted strains of the adenovirus, a virus that usually causes the common cold, to trigger an immune response.
- The vaccine consists of two components
  - a recombinant adenovirus type 26 (rAd26) vector
  - a recombinant adenovirus type 5 (rAd5) vector
- Both are carrying the gene for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike **glycoprotein (rAd26-S and rAd5-S).**
- Adenoviruses commonly affect humans and primates and have emerged as a sought-after platform to develop a vaccine against COVID-19. Adenoviruses are commonly used as vectors in vaccines.

Other Vaccines

- **Oxford University:** The **ChAdOx1** vaccine candidate developed by Oxford University is based on a **chimpanzee adenovirus** vector platform.
- **China:** The Beijing Institute of Biotechnology and CanSino Biologics Inc. of China too are developing a vaccine on an **adenovirus platform.**

What is vector-based vaccine?

- A vector-based vaccine is one where a part of the coronavirus is inserted into another virus and delivered to the body, following which the inserted coronavirus part, usually the spike protein molecule, is discharged.

- The body then recognises this as a foreign pathogen and mounts an immune response.
- The vector used here is the human adenovirus, a group of respiratory viruses that cause common cold and flu-like illnesses in humans and animals.

Grey areas regarding the trials

There are many grey areas regarding the trials which are yet to be addressed.

- **Underpowered trial:** The Phase-1 and Phase-2 trials of the vaccine had just 38 participants. Of these, the second phase had 20. This is a highly underpowered trial.
- **Non-randomised trial:** Second, the trial was non-randomised. A clinical trial has two arms-
  - one group receives the active experimental vaccine
  - the other, the placebo
- Whether a study participant would be assigned an active or placebo group is decided randomly. Hence, such a trial is called randomised, blind and placebo control trial.
- However, the Russian trial was neither randomised nor blind nor had a placebo arm.

The Lancet medical journal

- Though world medical community at large has been sceptical of Russia's COVID-19 vaccine, the recent peer-reviewed data, published in The Lancet medical journal, could give a much-needed boost to its credibility.
- Based to the data from preliminary results of phase 1 and phase 2 trials, The Lancet medical journal said Russia's potential coronavirus vaccine, Sputnik V, approved in the country last month, induced an antibody response in all participants with no serious side effects.
- The vaccine produced a response in T-cells, a type of white blood cells that helps the immune system combat any infection.

Assessing India's capability in the pharma sector

- Historically, India is a very important part of vaccine manufacturing. India produces 60 per cent of the world's vaccines.
- India, a leader in the pharma sector, and supplier of low cost vaccines to the whole world, has the capacities to quickly scale up production of any vaccine for quick availability on a large scale at affordable prices to fight the pandemic.
- As Russia saw a huge surge in COVID-19 cases, India had supplied more than 90 tonnes of medical supplies to Russia including hydroxychloroquinone.

⊙ CONCLUSION

India would be one of the leading manufacturers of the vaccine and ensure a major supply to the external world. Russia would start exporting the vaccine only when its domestic demands are fulfilled. Till that time, it would rely on India to fulfil global demand and its own domestic demand.

****

ASSESSING THE 'CRITICAL' IMPORTANCE OF CHUSHUL SECTOR IN INDIA-CHINA STANDOFF

CONTEXT

The Chushul sub-sector has come into focus in the standoff between the Indian and PLA troops.

⊙ BACKGROUND

- Tensions along the disputed India-China border seem to be getting worse, three months after their deadliest confrontation in decades.
- The Asian giants accused each other this week of sending soldiers into the other's territory and fired warning shots for the first time in 45 years, raising the specter of full-scale military conflict.
- The high-altitude standoff along the eastern section of what's known as the Line of Actual Control (LAC), a loose demarcation, risks dramatically altering the already fraught relationship between the nuclear-armed neighbors.
- There are about 23 "disputed and sensitive areas" on the Line of Actual Control, stretching from Arunachal Pradesh to Ladakh region.
  - The other sensitive areas in Ladakh include the Trig Heights, Dumchele, Chumar, Spanggur Gap and Pangong Tso.
  - Outside of Ladakh, sensitive areas include Namkha Chu, Sumdorong Chu, Asaphila, Dichu, Yangtse, Fish Tail-I & II in Dibang Valley in Arunachal Pradesh and Barahoti, Kaurik & Shipki La in the middle sector.

⊙ ANALYSIS

What is the Chushul sub-sector?

- The Chushul sub-sector lies south of Pangong Tso in eastern Ladakh. It comprises- high, broken mountains and heights of Thatung
  - Black Top
  - Helmet Top
  - Gurung Hill
  - Magger Hill besides passes such as-
    - Rezang La and Rechin La
    - the Spanggur Gap
    - the Chushul valley
- Situated at a height of over 13,000 feet close to the LAC, the Chushul Valley has a vital airstrip that played an important role even during the 1962 War with China.
- Due to its location, Chushul is one among the five Border Personnel Meeting points between the Indian Army and the People's Liberation Army of China.
- It is here that representatives of the two armies meet for regular interactions.
  - The recent brigade-level meetings between the two sides were also held here.

What is its strategic importance to India?

- **Strategic location:** Chushul enjoys tremendous strategic and tactical importance because of its location and terrain, which make it a centre for logistics deployment.
- **Easy connectivity**: This sector has plains that are a couple of kilometres wide, where mechanised forces, including tanks, can be deployed. Its airstrip and connectivity by road to Leh add to its operational advantages.
- **Capability to dominate:** Indian troops have now secured the ridgeline in this sub-sector that allows them to dominate the Chushul bowl on the Indian side, and Moldo sector on the Chinese side.
- **Clear sight:** They also have a clear sight of the almost 2-km-wide Spanggur gap, which the Chinese used in the past to launch attacks on this sector in the 1962 War.

Did the Chinese try to capture Chushul in the 1962 War?

- After the initial attacks, including on the Galwan valley by the Chinese in October 1962, the PLA troops prepared to attack Chushul airfield and the valley to get direct access to Leh.
- However, just before the attacks were launched, the area was reinforced by the 114 Brigade in November 1962, which also had under its command two troops of armour and some artillery.
- It's important to note that the heights secured by Indian soldiers on the intervening night of August 29-30 were held by them in 1962 as well. These included Lukung, Spanggur Gap, Gurung Hill, Rezang La, Magger Hill and Thatung Heights.
- The units which held these areas included the 5 Jat, 1 Jat, 1/8 Gorkha Rifles, and 13 Kumaon. The Indian soldiers gave an outstanding account of themselves in the battles, where famously at Rezang La, the Charlie Company of 13 Kumaon lost 114 soldiers out of its total 120. The Company Commander, Maj Shaitan Singh, was awarded the Param Vir Chakra for gallantry posthumously.
- After Gurung Hill and Rezang La fell to the Chinese, the brigade pulled back troops to the heights to give a better response to the enemy. However, the anticipated next attacks never came, as a ceasefire was declared. The brigade achieved its primary task after suffering 140 casualties, while the Chinese lost more than 1,000 soldiers.

Challenges in this area

- An immediate challenge is of a flare-up as troops of the two countries are deployed within a distance of 800 to 1,000 metres of each other at Black Top and Rechin La.
- Logistics also pose a major challenge. At this point, villagers of Chushul are being of great help.
  - Chushul village in Durbuk tehsil is home to around 170 families, most of whom are of Tibetan descent.
  - The villagers have been ferrying water and essential commodities to the Indian troops deployed at Black Top.

⊙ CONCLUSION

India and China inherited their territorial disputes from the period of British colonial rule. Border tensions have persisted despite talks at military, diplomatic and political levels. With strong nationalists leading both countries, the border has taken on a prominence not seen in years. Experts warn that if military hostilities are not stopped, war could be next.

****

MOON MAY BE RUSTING ALONG POLES, SUGGEST CHANDRAYAAN-1 IMAGES

CONTEXT

Recent images sent by Chandrayaan-1, India's first lunar mission, suggest that the Moon may be rusting along the poles.

⦿ BACKGROUND

- ISRO's maiden mission to the Moon has sent images which show that the Moon may be rusting along the poles.
- Chandrayaan-1 was launched in 2008.
- The sign of this finding is that even though the surface of the Moon is known to have iron-rich rocks, it is not known for the presence of water and oxygen, which are the two elements needed to interact with iron to create rust.
- The Chandrayaan-1 Moon data indicates that the Moon's poles are home to water, this is what the scientists are trying to decipher.

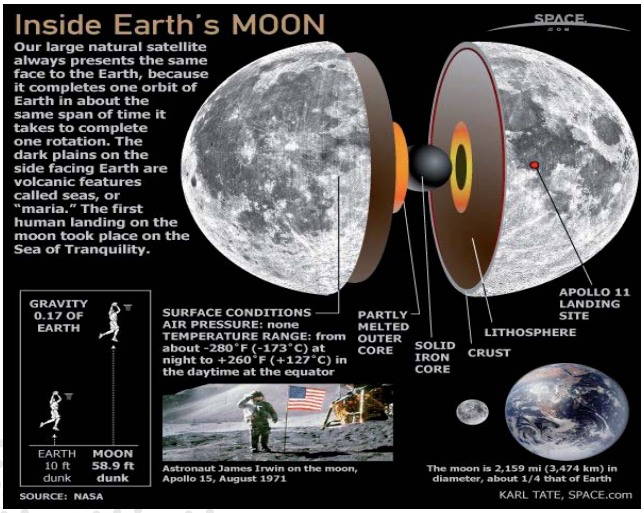
Chandrayaan-1

- Chandrayaan-1 was the first Indian lunar probe under Chandrayaan program. It was launched by the Indian Space Research Organisation in October 2008.
- ISRO's maiden mission to the Moon has sent images that show that the Moon may be rusting along the poles.
- Chandrayaan-1 orbiter, which discovered water ice and mapped out a variety of minerals while surveying the Moon's surface in 2008.
- Among its suite of instruments, it carried NASA's Moon Minerology Mapper (M3), an imaging spectrometer helped confirm the discovery of water locked in minerals on the Moon.

⦿ ANALYSIS

Important details about Moon

- The Moon (or Luna) is the Earth's only natural satellite and was formed 4.6 billion years ago around some 30–50 million years after the formation of the solar system.
- The Moon is in synchronous rotation with Earth meaning the same side is always facing the Earth.
- The first uncrewed mission to the Moon was in 1959 by the Soviet Lunar Program with the first crewed landing being Apollo 11 in 1969.



- **Atmosphere:** The moon has a very thin atmosphere, so a layer of dust — or a footprint — can sit undisturbed for centuries.
- And without much of an atmosphere, heat is not held near the surface, so temperatures vary wildly. Daytime temperatures on the sunny side of the moon reach 273 degrees F (134 C); on the dark side it gets as cold as minus 243 F (minus 153 C).
  - The lack of atmosphere means no sound can be heard on the Moon, and the sky always appears black.

Orbital characteristics	
Average distance from Earth	238,855 miles (384,400 km)
Perigee (closest approach to Earth)	225,700 miles (363,300 km)
Apogee (farthest distance from Earth)	252,000 miles (405,500 km)
Orbit circumference	1,499,618.58 miles (2,413,402 km)
Mean orbit velocity	2,287 mph (3,680.5 km/h)

Analysing the findings

- Data from the Indian Space Research Organisation (ISRO) has revealed that the Earth's natural satellite Moon might be rusting.

- The new research suggests that the moon is turning slightly red, indicating the formation of a reddish-black mineral form of iron named hematite on its surface, particularly at the poles.
- The formation of rust or iron oxide can be attributed to the presence of two key elements—water and oxygen—when they come in contact with iron.
- The lunar surface is littered with iron-rich rocks, which may facilitate this chemical reaction when combined with the other two elements.
- However, the Moon does not have any rich source of water and is devoid of oxygen in its atmosphere.
- It is believed that though Moon lacks atmosphere to support the formation of oxygen, it hosts traces of oxygen that travels from Earth to reach the lunar environment.

What NASA says?

- While the Moon is airless, research indicates the presence of hematite, a form of rust that normally requires oxygen and water. That has scientists puzzled.
- Scientists at the National Aeronautics and Space Administration (NASA) say that this could be because the Earth's atmosphere is lending a helping hand which, in other words, means that the Earth's atmosphere could be protecting the Moon as well.

The rusting chemistry

- Rust is the common name for iron oxide. The most familiar form of rust is the reddish coating that forms flakes on iron and steel (Fe_2O_3), but rust also comes in other colors including yellow, brown, orange, and even green
- For iron to become iron oxide, three things are required:
  - Iron
  - Water
  - Oxygen
- Rust forms when iron or its alloys are exposed to moist air. The oxygen and water in air react with the metal to form the hydrated oxide.

iron + water + oxygen → hydrated iron(III) oxide

Terrestrial oxygen travels to the moon

- In order to turn iron into rust, an 'oxidizer' is needed. An oxidizer is a molecule such as oxygen that removes electrons from a material such as iron.
- The sun's solar wind, a stream of charged particles that constantly hits the moon with hydrogen, has the opposite effect.
- However, Hydrogen is a reducer or a molecule that provides electrons to other molecules.
- Without protection from this solar wind, such as the magnetic field that shields our planet from it, rust should not be able to form on the moon.
- However it does, and the key might be the earth.
- The moon doesn't have an atmosphere of its own to provide sufficient amounts of oxygen, but it has trace amounts provided by Earth's atmosphere, according to the statement.
- This terrestrial oxygen travels to the moon along with an elongated extension of the planet's magnetic field called a 'magnetotail'.
- Earth's magnetotail can reach all the way to the near side of the moon where more of the hematite was found.
- Furthermore, the magnetotail blocks 99 percent of solar wind from blasting the moon at every full moon, drawing a temporary curtain over the lunar surface, allowing periods of time for rust to form.

What about 'water'?

- Another ingredient required to form the rust is water and the moon mostly lacks in it.
- The researchers have proposed that fast-moving dust particles that blast the moon might free water molecules locked into the moon's surface layer, allowing the water to mix with the iron.
- These dust particles might even be carrying water molecules themselves, and their impact might create heat that could increase the oxidation rate.

Which other planet is rusting?

- Mars has long been known for its rust. Iron on its surface, combined with water and oxygen from the ancient past, give the Red Planet its hue.

Is Earth to be 'blamed'?

- For iron to convert into rust it needs oxidizers, which can steal electrons from the iron and thus initiate rust formation.
- To understand the cause, the team examined the bombarding of hydrogen from the solar wind. However, it had the opposite effect since hydrogen is a reducer—which donates electrons instead of taking it.
- Therefore, solar winds may not be the reason behind rusting on the Moon's surface.
- The airless Moon may lack atmosphere to support the formation of oxygen, but it hosts traces of oxygen that travels from Earth to reach the lunar environment.

- Therefore, researchers say the Earth's magnetotail—an elongated region of the planet's magnetosphere—plays a significant role in this change observed over the Moon.
- In 2007, **Japan's Kaguya orbiter** helped scientists discover that oxygen from Earth's upper atmosphere can travel through magnetotail to the Moon, which is 3,85,00 kilometres away from the Earth.
- Therefore, the terrestrial oxygen can reach the near side of the Moon facing the Earth and this finding means that the oxygen from Earth may be driving the formation of hematite on the lunar surface.
- In addition, the magnetotail interferes with the hydrogen molecules released from the solar wind to reach the Moon atmosphere, which if reached may inhibit this rust formation.

◉ CONCLUSION

The new findings will reshape our knowledge about the Moon's polar regions. Earth may have played an important role on the evolution of the Moon's surface.

****

GS SCORE
An Institute for Civil Services

IAS 2021 TEST SERIES

MAINS & PRELIMS

BATCH 02
MAINS TEST SERIES 2021
GS MAINS Q&A
10 OCTOBER

BATCH 03
INTEGRATED TEST SERIES
for MAINS *cum* PRELIMS
27 SEPTEMBER

BATCH 01
ETHICS & ESSAY TEST SERIES
A Solution For 500 Marks
03 OCTOBER

BATCH 01
PRELIMS 2021 TEST SERIES
PRELIMS PRACTICE PROGRAMME (PPP)
11 OCTOBER

OPTIONAL TEST SERIES 2021

POLITICAL SCIENCE
TEST SERIES 2021
By: Dr. PIYUSH CHOUBEY
TEST STARTS 04 OCTOBER

HISTORY
TEST SERIES 2021
By: PIYUSH KUMAR
TEST STARTS 18 OCTOBER

GEOGRAPHY
TEST SERIES 2021
By: PRINCE MISHRA
TEST STARTS 11 OCTOBER

1B, 2nd Floor, Pusa Road Karol Bagh, New Delhi-110005,
(Adjacent to Karol Bagh Metro Gate No. 8)
info@iasscore.in /iasscore
Visit: www.iasscore.in
8448496262

SECTION: B

(PRELIMS)

CURRENT AFFAIRS

"NEW BIRD IN ARSENAL": 5 RAFALES JOINS INDIAN AIR FORCE

⊙ CONTEXT:

The first batch of five Rafale multirole fighter jets are formally inducted into the Indian Air Force at Ambala air base in Haryana, at a time when India is engaged in an escalating border row with China in eastern Ladakh.

⊙ ABOUT:

- The Rafale jets, built by French aerospace major Dassault Aviation, are known for air-superiority and precision strikes on ground targets, making them truly multirole jets.
- **Speed:** The state-of-the-art **4.5 Generation Rafale jet** can reach almost double the speed of sound, with a top speed of 1.8 Mach.
- The Rafales (literally meaning "gust of wind", and "burst of fire" in a more military sense) are capable of carrying a range of potent weapons.
- European missile maker MBDA's Meteor beyond visual range (BVR) air-to-air missile and Scalp cruise missile will be the mainstay of the weapons package of the Rafale jets.
  - MBDA developed the Meteor to combat common threats facing the UK, Germany, Italy, France, Spain and Sweden.
- The multirole French-made fighter jets will become a part of the IAF's 17 Squadron **"Golden Arrows".**
- **SCALP missile:** The Rafale jets also come with SCALP, the air-to-ground cruise missile with a range over 300 km. It is a long-range deep strike missile.
- The MICA air-to-air missile on Rafale is for both, close-quarter dogfights, and for BVR.
- **HAMMER:** At the last-minute, India has also asked for **HAMMER (Highly Agile and Manoeuvrable Munition Extended Range)**, which is an air-to-ground precision guided missile produced by French conglomerate Safran, and can be used against bunker-type hardened targets within the range of 70 km.
- India will only be the fourth country, after France, Egypt and Qatar, to fly the Rafale.

Rafale Specifications	
Maximum take-off weight	24.5 Tonnes
Height	5.30 m
Length	15.30 m
Fuel (internal)	4.7 Tonnes
Fuel (external)	Up to 6.7 Tonnes
Top Speed	1.8 Mach at High Altitude
Lending ground run	450 m (1,500 ft)

⊙ BACKGROUND:

- The Rafale entered service with the French Navy in 2004 and the French Air Force in 2006.
- India had signed an inter-governmental agreement with France in September 2016 for procurement of 36 Rafale fighter jets.
- The first batch of five Rafale jets arrived in India on July 29, nearly four years after India signed an inter-governmental agreement with France to buy 36 jets for ₹ 59,000 crore.
- A second batch of four-five Rafale jets is likely to arrive in India by November.

Sukhoi Su-30 MKI fighter jet

- The Sukhoi Su-30MKI is the most advanced fighter jet in operation with the Indian Air Force and is the primary air to air and air to ground strike machine.
- Su-30 MKI is built in India by HAL under license agreement with Russia's Sukhoi.
- The Sukhoi Su-30MKI has a top speed of Mach 2 (2120 kmph) and has a maximum takeoff weight of 38,800 kg.
- The jet can carry a wide range of equipment from radars to missiles, bombs and event rockets.
- **Weapon carrying capacity**: It is capable of carrying a variety of medium-range guided air to air missiles with active or semi-active radar or Infrared homing close range missiles.
- It can be used in carrying out nuclear strikes.
- The Su-30 MKI aircraft is capable of being refuelled by an Air to Air refuelling aircraft or by another Su-30 MKI aircraft carrying a buddy refuelling strap on pod.
- India's Su-30MKI multi-role fighter-bomber is one of the best 4 generation aircraft currently available.

RAFALE vs China's J20

- While China's J20 Chengdu jets are called fifth generation combat jets, compared to 4.5 generation Rafale, the J20 have no actual combat experience.
- Whereas the Rafale is combat proven, having been used by the French Air Force for its missions in Afghanistan, Libya and Mali.
- It has also been used for missions in Central African Republic, Iraq and Syria.
- Rafale can also carry more fuel and weapons than the J20.

How significant is the development?

- With its multi-role capabilities, including electronic warfare, air defence, ground support and in-depth strikes, the Rafale lends air superiority to the Indian Air Force.
- The MICA air-to-air missile on Rafale is for both, close-quarter dogfights, and for BVR. At the last-minute, India has also asked for HAMMER (Highly Agile and Manoeuvrable Munition Extended Range), which is an air-to-ground precision guided missile produced by French conglomerate Safran, and can be used against bunker-type hardened targets within the range of 70 km.

SUCCESSFUL TEST-FIRING OF HYPERSONIC TECHNOLOGY DEMONSTRATOR VEHICLE (HSTDV)

⊙ CONTEXT: **The Defence Research and Development Organisation (DRDO) successfully test-fired the Hypersonic Technology Demonstrator Vehicle (HSTDV), making India the fourth**

country in the world after the US, China and Russia to develop such technology.

⊙ **ABOUT:**

What is HSTDV?

- The HSTDV is an unmanned scramjet demonstration aircraft for hypersonic speed flight.
- Hypersonic flight means a speed greater than five times the speed of sound (Mach 5).
- Apart from being used as a vehicle for hypersonic and long-range cruise missiles, the HSTDV is a dual-use technology that will have multiple civilian applications, including the launch of small satellites at low cost.
- The HSTDV used the indigenously developed scramjet propulsion system, which is an improvement over the Ramjet engines which work efficiently at supersonic speeds of around Mach 3 (three times the speed of sound).

What are Hypersonic nuclear missiles?

- Hypersonic missiles travel at speeds faster than 3,800 miles per hour or 6,115 km per hour, much faster than other ballistic and cruise missiles.
- They can deliver conventional or nuclear payloads within minutes.
- They are highly manoeuvrable and do not follow a predictable arc as they travel.
- They are said to combine the speed of ballistic missiles with the manoeuvring capabilities of cruise missiles.
- The speed makes them hard to track compared to traditional missile tech.

Which countries are in the 'race' of pursuing hypersonic missile?

- In March this year, the United States announced it had successfully tested an unarmed prototype of a hypersonic missile.
- China and Russia are also vigorously pursuing hypersonic weapons, though Russia is reportedly not developing or considering them for use with a nuclear warhead.
- In July, Russian President Vladimir Putin said his country's Navy vessels would be armed with hypersonic nuclear strike weapons and underwater nuclear drones, which, he said, are in the final phase of testing.

Different types of missiles

- Cruise and ballistic missiles
  - **Cruise missiles:** A cruise missile either locates its target or has a preset target.
    - ➤ It navigates using a guidance system — such as inertial or beyond visual range satellite GPS guidance — and comprises a payload and aircraft propulsion system.
    - ➤ Cruise missiles can be launched from land, sea or air for land attacks and anti-shipping purposes, and can travel at subsonic, supersonic and hypersonic speeds.
    - ➤ Since they stay relatively close to the surface of the earth, they cannot be detected easily by anti-missile systems, and are designed to carry large payloads with high precision.
- **Ballistic missiles:** Ballistic missiles, meanwhile, are launched directly into the upper layers of the earth's atmosphere.
  - They travel outside the atmosphere, where the warhead detaches from the missile and falls towards a predetermined target.
  - They are rocket-propelled self-guided weapons systems which can carry conventional or nuclear munitions.

- They can be launched from aircraft, ships and submarines, and land.

- **ICBMs**
  - Intercontinental ballistic missiles (ICBMs) are guided missiles which can deliver nuclear and other payloads.
  - ICBMs have a minimum range of 5,500 km, with maximum ranges varying from 7,000 to 16,000 km.
  - Only a handful of countries, including Russia, United States, China, France, India and North Korea, have ICBM capabilities.
    - In 2018, India successfully test-fired nuclear-capable ballistic missile Agni-V, with a strike range of 5,000 km.

- **Anti-satellite missiles**
  - ASAT can incapacitate or destroy satellites for strategic military purposes.
  - Other anti-satellite weapons include ground-based jammers to disrupt the signal from navigation and communications satellites.
  - The United States, Russia, and China are among countries pursuing anti-satellite weapons.
  - India had successfully test fired an ASAT on 27 March last year, knocking off one of its own satellites 300 km in space.

INTERNATIONAL DAY TO PROTECT EDUCATION FROM ATTACK

⊙ CONTEXT:

- **The UN-sponsored first-ever International Day to Protect Education from Attack is being observed for the first time on September 9 2020.**

⊙ ABOUT:

- The September-9 International Day to Protect Education from Attack was established on May 2020 by a unanimous decision of the UN General Assembly, calling on UNESCO and UNICEF to raise awareness of the plight of millions of children living in countries affected by conflict.
- The resolution proclaiming the Day was presented by the State of Qatar and co-sponsored by 62 countries.
- The Day draws attention to the plight of more than 75 million 3-to-18-year-olds living in 35 crisis-affected countries and to their urgent need of educational support.

Attack on Education

- More than 22,000 students, teachers, and academics were injured, killed, or harmed in attacks on education during armed conflict or insecurity over the past five years.
- Between 2015 and 2019, 93 countries experienced at least one reported attack on education.
- Students and educators were most frequently harmed by direct attacks in Afghanistan, Cameroon, and Palestine.
- Armed forces, other state actors, and armed groups used schools and universities for military purposes in 34 countries between 2015 and 2019, including as bases, detention centers, and weapons stores.

- In the past five years, state armed forces or armed groups reportedly recruited students from schools in 17 countries.

Education in India

- While India's latest literacy rate stands at 78%, education scenario in the country is still at a very poor stage and there is a lot of scope for improvement.
- In rural areas, about 70% of the individuals aged 15 years and above could not complete their secondary education, i.e, 10th standard and above, and in urban areas, about 40% of individuals were not able to secure the same education level, according to the latest data by the National Statistical Office (NSO).

Right to Education

- The Right to Education Act 2009, also known as the RTE Act 2009, was enacted by the Parliament of India on 4 August 2009.
- It describes modalities of the importance of free and compulsory education for children aged between 6-14 years in India under Article 21 (A) of the Constitution of India.

Constitutional Background

- Originally Part IV of Constitution of India, Article 45 and Article 39 (f) of DPSP, had a provision for state funded as well as equitable and accessible education.
- In 1993, the Supreme Court's landmark judgment in the Unnikrishnan JP vs State of Andhra Pradesh & Others held that **Education is a Fundamental right flowing from Article 21.**
- Eighty-sixth amendment of Indian Constitution Act 2002 inserted article 21A in the Indian Constitution which provides free and necessary education of all children in between the age of six to fourteen years as a fundamental Right.

INTERNATIONAL DAY OF CLEAN AIR FOR BLUE SKIES

⊙ CONTEXT: **The very first International Day of Clean Air for blue skies was held on September 7th, 2020.**

⊙ ABOUT:

- The General Assembly of United Nations adopted a resolution in 2019 to observe the International Day of Clean Air for Blue Skies on 07th September every year starting from 2020.
- The Day calls for increased international cooperation at the global, regional and sub-regional levels.
- It provides a provide a platform for strengthening global solidarity as well as political momentum for action against air pollution and climate change, including actions like the increased collection of air quality data, carrying out joint research, developing new technologies and sharing best practices.
- The theme for the Day is **#CleanAirforAll.**

Objective of the Day

- **The Day aims to:**
  - **Awareness:** Raise public awareness at all levels—individual, community, corporate and government—that clean air is important for health, productivity, the economy and the environment.
  - **Establishing linkages:** Demonstrate the close link of air quality to other environmental/developmental challenges such as – most and foremost – climate change and the global Sustainable Development Goals.
  - **Best measures:** Promote and facilitate solutions that improve air quality by sharing actionable knowledge best practices, innovations, and success stories.
  - **Alliance:** Bring together diverse international actors working on this topic to form a strategic alliance to gain momentum for concerted national, regional and international approaches for effective air quality management.

What's polluting the 'sky'?

- Energy-related greenhouse gas (GHG) emissions, driven by fossil fuels, have skyrocketed over the last half century and now make up more than two-thirds of all GHG emissions.
- According to the World Health Organization, air pollution kills millions of people a year worldwide.
- Air pollution and climate change are intimately connected. As well as driving climate change, emissions of various toxic gases from the extraction and burning of fossil fuels, is also a major source of air pollutants.
- It's a two-fold problem:
- **Health impact** – tiny, invisible particles of pollution penetrate deep into our lungs, bloodstream and cells.
  - These pollutants are responsible for about one-third of deaths from stroke, chronic respiratory disease, and lung cancer, as well as one quarter of deaths from heart attack.
- **Climate impact:** Air pollution also has a climate impact – **short-lived climate pollutants (SLCPs)** are among pollutants most linked with both health effects and near-term warming of the planet.
  - These pollutants include methane, black carbon, ground-level ozone and sulphate aerosols.
  - They have significant impacts on the climate: black carbon and methane, in particular, are among the top contributors to global warming after CO2.

World extreme air pollution events

- In many parts of the world extreme air pollution events have become a seasonal phenomenon, almost as reliable as the monsoon or autumn foliage.
- In early November, New Delhi and other cities in northern India experienced levels of air pollution that cancelled flights and kept people masked and indoors.
- In Ulaanbaatar, Mongolia, and the Thai capital, Bangkok, these events occur in January and February.
- In California and Australia, summer wildfires are being turbocharged by climate change, destroying habitat, and covering vast areas in a choking haze.

What India is doing to make its skies clear?

- The Union ministry of environment, forest and climate change (MoEFCC) is also considering a request to defer the deadline for thermal power plants to meet air pollution norms by 2022, another two years.
  - Thermal power plants are one of the largest sources of sulphur dioxide (SO2) and particulate matter (PM) pollution in India.
- **BS-VI standards:** With the country now having migrated to BS-VI standards, quality petrol and diesel is provided in the country, which is an important intiative to fight against pollution.
- **National Clean Air Programme:** In January last year, the Environment Ministry launched National Clean Air Programme (NCAP).
- It aims to tackle the problem of air pollution in a comprehensive manner with a target to achieve 20 to 30 percent reduction in PM 10 and PM 2.5 concentrations by 2024 keeping 2017 as base year.

LOW CONCENTRATION OF OZONE IN THE BRAHMAPUTRA RIVER VALLEY

CONTEXT:

Scientists have evaluated the near-surface ozone in the Brahmaputra River Valley and found a relatively low concentration of ozone over Guwahati compared to the other urban locations in India.

ABOUT:

What is Ozone?

- Ozone is a colorless gas made up of three oxygen atoms.
- Ozone is not emitted directly into the air but is formed through chemical reactions between natural and man-made emissions of nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the presence of sunlight.
- These gaseous compounds mix like a thin soup in the ambient, or outdoor, air, and when they interact with sunlight, ozone is formed.
- Ozone can be split into two major types:
  - **Stratospheric Ozone:** Stratospheric ozone or the "ozone layer" forms high in the atmosphere, 6-30 miles above the earth's surface, when intense sunlight causes oxygen molecules (O2) to break up and re-form as ozone molecules (O3).
    - These ozone molecules form the ozone layer and are commonly referred to as "good ozone."
    - At concentrations as high as 12,000 ppb (the EPA considers anything over 70 ppb to be unhealthy for human health and welfare) this ozone protects and shields people, trees, crops, property, and microorganisms from the harmful effects of the sun's ultraviolet light.
  - **Ground-Level Ozone:** Tropospheric, or ground-level ozone, is created by chemical reactions between:
    - oxides of nitrogen (NOx)
    - volatile organic compounds (VOC)
  - Ground-level ozone forms just above the earth's surface (up to about 2 miles above ground) and impacts human, animal, and plant respiration.
  - It usually increases when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight, impacting human health.

Why 'Ground-level ozone' is 'bad ozone'?

- Although ground-level ozone is less concentrated than stratospheric ozone, its impacts on human health and welfare make ground-level ozone "bad ozone."
- Ground-level ozone is an irritant and can negatively affect human health and welfare.
- Weather plays a substantial role in formation of ground level ozone. Ground-level ozone concentrations typically are highest on days warm/hot days with low humidity when wind is light or stagnant.

What Scientists have found?

- Scientists analysed the variability of ozone and other air pollutants over Brahmaputra River Valley region.
- It also assessed seasonal, day of week, and characteristics of ozone to identify the emission source of ozone and its precursors, especially methane (CH4) and NMHCs, along with study the relationships between the meteorological parameters, ozone and its precursors in a tropical setting.
- The examination of nitric oxide, nitrogen dioxide, and ozone concentrations in this study suggested that this site is well influenced by local sources such as adjacent major national highway.
- During the daylight hours, the site is in or nearly in a photo-stationary state, indicating a low impact of organic species on the ozone concentrations.

Brahmaputra Valley Region

- The Brahmaputra Valley has an average width of about 80 Km.
- The main river of the valley, Brahmaputra is one of the largest rivers in the world and rank fifth with respect to its average discharge.
- The river's origin is the Kanglung Kang glacier located about 63 km south east of the lake at an altitude of 5300m on Kailash range of Himalayas.
- After flowing through Tibet it enters India through Arunachal Pradesh and flows through Assam and Bangladesh before it joins Bay of Bengal.
- The drainage basin of the Brahmaputra extends to an area of about 580,000 sq km. Of this, 50.51% is in Tibet (China), 7.75% in Bhutan, 33.52% in India and 8.1% in Bangladesh.
- Its basin in India is shared by six states namely, Arunachal Pradesh (41.88%), Assam (36.33%), Nagaland (5.57%), Meghalaya (6.10%), Sikkim (3.75%) and West Bengal (6.47%).

BUSINESS REFORM ACTION PLAN

⊙ CONTEXT: **The Government announced the 4th edition of Business Reform Action Plan (BRAP) ranking of states.**

⊙ ABOUT:

- Ranking of States based on the implementation of Business Reform Action Plan started in the year 2015.
- Till date, State Rankings have been released for the years 2015, 2016 and 2017-18.
- **Area of focus:** Some of the key areas that the State Business Reform Action Plan 2019 focuses on are-
  - access to information and technology

- the setting up of a single window system
- construction permit enablers
- land administration

- These rankings represent the ease of doing business in the state with increased transparency, efficiency and effectiveness of the government regulatory functions vis-a-vis the business enterprises.
  - Ease of Doing Business (EODB) is a joint initiative by the Department for Promotion of Industries and Internal Trade (DPIIT) and the World Bank to improve the overall business environment in the States.

Key-takeaways from the findings:

- Andhra Pradesh has bagged the first rank among all the states in the country.
- While Uttar Pradesh stood in the second position, Telangana bagged the third spot in the overall ranking of the state business process reforms undertaken during 2019.
- The top ten states under State Reform Action Plan 2019 are:
  - Andhra Pradesh
  - Uttar Pradesh
  - Telangana
  - Madhya Pradesh
  - Jharkhand
  - Chhattisgarh
  - Himachal Pradesh
  - Rajasthan
  - West Bengal
  - Gujarat

STATES MANDATED TO SET UP PANEL ON CONTENT REGULATION OF GOVT ADS

⊙ CONTEXT: **As per directions of the Supreme Court, States are mandated to set up their three member committees on Content Regulation of Government Advertisements.**

⊙ ABOUT:

- As per the directions of Supreme Court on 13th May, 2015, Government of India on 6th April, 2016 had set up a three member body consisting of "persons with unimpeachable neutrality and impartiality and who have excelled in their respective fields", to look into content regulation of government funded advertisements of all media platforms.
- Under the Supreme Court's guidelines, the content of Government Advertisement should be relevant to the government's constitutional and legal obligations as well as the citizen's right and entitlements.
  - Advertisement materials should be presented in an objective, fair and accessible manner and designed to meet the objectives of the campaign
  - Advertisement materials should be objective and not directed at promoting political interests of ruling party

- Advertisement Campaigns be justified and undertaken in an efficient and cost-effective manner
- Government advertising must comply with legal requirement and financial regulations and procedures

- The Committee is empowered to address complaints from the general public on violation of Supreme Court's guidelines and make suitable recommendations.

Which States have constituted state-level committees?

- State-level committees have already been constituted by Karnataka, Goa, Mizoram and Nagaland.
- Chhattisgarh government has given its consent to the Central Committee to monitor the content of their government advertisements.

Recent CCRGA meet

- The Committee on Content Regulation in Government Advertising, CCRGA in its 19th meeting held recently took a serious note of delay in constituting state level Committees by other states.
- The CCRGA was of the view that some state governments' delay in setting up the state-level committees may be construed as contempt of Supreme Court's order.
- The CCRGA's attention was also drawn to the fact that some respondents were yet to furnish their replies to the notices issued to them in response to the complaints received by the Committee.
- The CCRGA felt that non-compliance of its decisions is a serious matter.
- It was of the considered opinion that in the event of any non-compliance of CCRGA's Orders, the Committee may be constrained to put embargo on issue of further advertisements by nodal agencies of concerned governments, which come under purview of this Committee.
- The Committee may, if necessary, also decide to summon the concerned official of the Government agencies dealing with release of advertisements in the event of undue delay in responding to Committee's notices.

INDIA-CHINA FIVE POINT ACTION PLAN

⊙ CONTEXT: **India and China have agreed on a five-point course of action to disengage and reduce tensions along the Line of Actual Control (LAC), where their troops have been engaged in a four and a half month long stand-off.**

⊙ ABOUT:

- The five-point plan is to-
  - not allow differences to become disputes
  - disengaging quickly to ease tensions
  - abiding by the existing India-China border protocols and avoiding escalatory action
  - continuing the dialogue between Special Representatives National Security Adviser Ajit Doval and Mr. Wang as well as the other mechanisms
  - working towards new confidence-building measures (CBMs

⊙ BACKGROUND:

- The Indian Army and the Chinese People's Liberation Army (PLA) have been locked in a standoff along the LAC in eastern Ladakh since early May with deaths of 20 Indian soldiers and almost an equal number on the Chinese side.

- The genesis of the current stand-off was the aggression undertaken by the PLA in the form of incursions by the People's Liberation Army (PLA).
- Given the scale, extent and timing, the operation was well planned at the highest level i.e. Central Military Commission (CMC) headed by President Xi Jinping as its Chairman.
- While the political intent was to give a strong message to Delhi to kowtow Beijing's interest, the military aim was to make quick territorial gains in the Depsang, Galwan and Pangong Tso area.
- This marked the first step in the escalatory ladder, which almost went as planned for China. Indian Army's swift mirror deployment took escalation to the next level.

How significant is the development?

- The process of dialogue between the nations is vital especially when the two are neighbours with strained relations.
- It reiterates the process of dialogue, disengagement, and easing of the situation. All this was comprehensively dealt with in the previous five agreements given below:
  - The 1993 'Maintenance of Peace and Tranquility Agreement' forms the basis of all followup agreements.
  - 1996 'Confidence Building Measures' denounced the use of force
  - 2005 'Standard Operating Procedures' and patrolling modalities.
  - 2012 'Process of Consultation and Cooperation'
  - 2013 'Border Cooperation Agreement', signed as a sequel to Depsang intrusion by PLA

PLEA ON 'OFFICE OF PROFIT' DISMISSED BY PRESIDENT

⊙ CONTEXT: **President Ram Nath Kovind has dismissed a plea to disqualify YSRCP Rajya Sabha Member V Vijayasai Reddy, accusing him of holding an office of profit.**

⊙ BACKGROUND:

- TDP leader C Ramakotaiah filed a petition filed under Article 102 (1) (a) of the Constitution of India, claiming that Reddy held office of profit as he had been appointed a Special Representative of the Andhra Pradesh Government at Andhra Bhavan in New Delhi.
- President Kovind referred the petition to the Election Commission (EC), seeking its opinion.
- The EC opined that in view of the provisions contained in the **Parliament (Prevention of Disqualification) Act, 1959,** Reddy did not incur disqualification for being a Member of Parliament.
- Based on the opinion given by EC, the President dismissed the plea for Reddy's disqualification.

⊙ ABOUT:

What is an office of profit?

- An office of profit is a position in the government which cannot be held by an MLA or an MP.
- The post can yield salaries, perquisites and other benefits. The origin of this term can be found in the **English Act of Settlement, 1701.**
  - Under this law, "**no person who has an office or place of profit under the King, or receives a pension from the Crown, shall be capable of serving as a member of the House of Commons."**

- This was instituted so that there wouldn't be any undue influence from the royal household in administrative affairs.

What constitutes an 'office of profit'?

- An office of profit has been interpreted to be a position that brings to the office-holder some financial gain, or advantage, or benefit. The amount of such profit is immaterial.
- In 1964, the Supreme Court ruled that the test for determining whether a person holds an office of profit is the test of appointment. Several factors are considered in this determination including factors such as:
  - whether the government is the appointing authority
  - whether the government has the power to terminate the appointment
  - whether the government determines the remuneration
  - what is the source of remuneration
  - the power that comes with the position

Why should an MLA or an MP not hold an office of profit?

- According to **Articles 102(1)(a)** and **191(1)(a)** of the Constitution, an MP or MLA is barred from holding an office of profit as it can put them in a position to gain a financial benefit.
- A person shall be disqualified for being chosen as, and for being, a member of either House of Parliament-
  - if he holds any office of profit under the Government of India or the Government of any State, other than an office declared by Parliament by law not to disqualify its holder.
- Under the Representation of People Act too, holding an office of profit is grounds for disqualification.

NIBEC, A DBT-SUPPORTED FACILITY FOR VIRAL IMMUNOGENICITY TESTING INAUGURATED

⊙ CONTEXT:

The National Immunogenicity and Biologics Evaluation Centre (NIBEC) for assessing clinical immunogenicity of viral vaccines, especially the ones in the pipeline for Covid-19, has been inaugurated.

⊙ ABOUT:

- Established jointly by Bharati Vidyapeeth University through its constituent unit Interactive Research School for Health Affairs (IRSHA) and BIRAC-DBT, Government of India through National Biopharma Mission, the facility was inaugurated virtually in an e-inauguration ceremony.
- NIBEC, established in about 10,000 sq ft, has one BSL-3+, 4 BSL-2 and 10 BSL-1 laboratories.
- **Evaluation tests:** Key immunogenicity evaluation tests like Plaque Reduction Neutralization Test (PRNT), Microneutralisation assay, IgM and IgG ELISA, developed, standardised and validated for dengue, chikungunya and SARS-CoV-2 viruses.

What is National Biopharma Mission?

- The Mission Programme is a Pan-India Programme with the main aim of making India a hub for design and development of novel, affordable and effective biopharmaceutical products and solutions.

- It is an Industry-Academia Collaborative Mission of Department of Biotechnology (DBT) for Accelerating Early Development for Biopharmaceuticals.
- The mission is implemented by Biotechnology Research Assistance Council (BIRAC).

Biotechnology Industry Research Assistance Council (BIRAC)

- Biotechnology Industry Research Assistance Council (BIRAC) is a not-for-profit Section 8, Schedule B, Public Sector Enterprise.
- It is set up by **Department of Biotechnology (DBT)** as an **Interface Agency** to strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs.
- BIRAC is a industry-academia interface, its key strategies include:
  - Foster innovation and entrepreneurship
  - Promote affordable innovation in key social sectors
  - Empowerment of start-ups & small and medium enterprises
  - Contribute through partners for capability enhancement and diffusion of innovation
  - Enable commercialization of discovery
  - Ensure global competitiveness of Indian enterprises

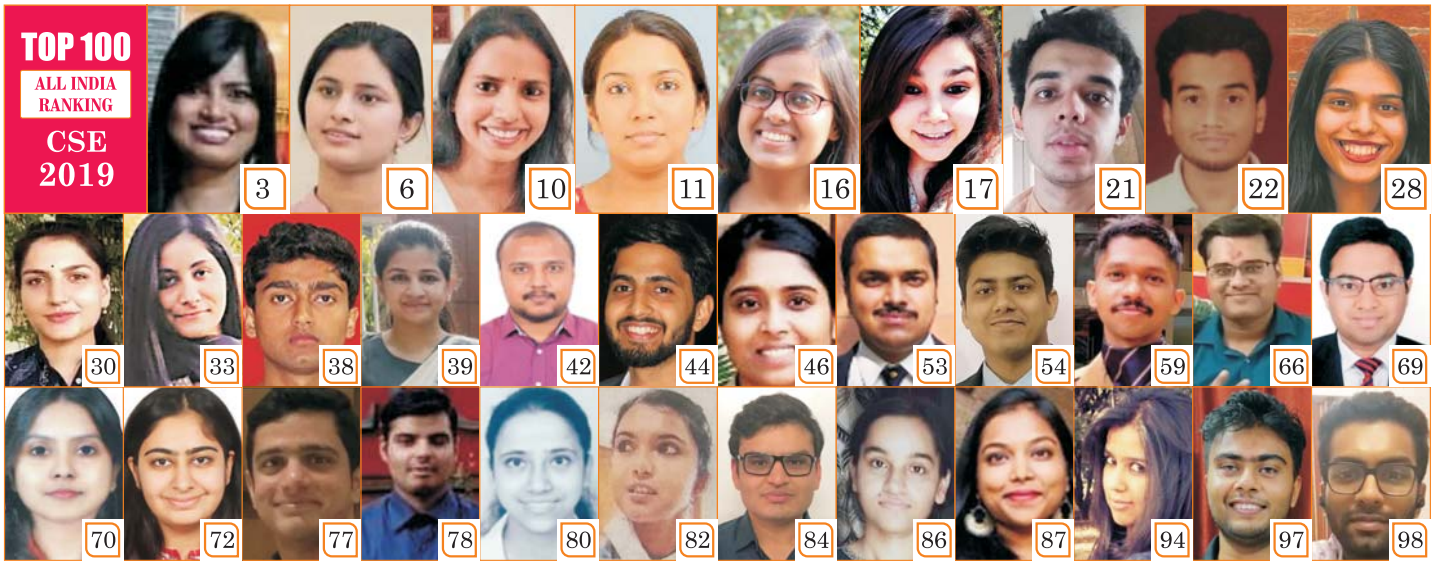
Significance of the development

- Vaccine development requires extensive evaluation in humans to establish safety, immunogenicity and clinical efficacy. Centralised viral and bacterial clinical immunogenicity labs meeting the stringent standards is a critical need for the vaccine industry.
- Domestic capabilities maintaining international standards in this space will accelerate and fast-track the development of indigenous vaccines in India.

****

GS SCORE
An Institute for Civil Services

CSE RESULTS



SUCCESS IS A PRACTICE WE DO!