

March (Week 3)

INDEX

Contents

Prelims	3
NATIONAL	3
SARAS and EDGES	3
Chilika lake	3
Mumbai Climate Action Plan	4
Pradhan Mantri Fasal Bima Yojna.....	5
India's urban unemployment rate	6
What are WPI and CPI inflation rates?.....	7
Heatwave.....	8
One Rank One Pension Scheme	9
Sealed cover jurisprudence	10
Deep ocean gliders.....	11
POSH-the law against sexual harassment in India	12
INTERNATIONAL	15
United States Federal Reserve	15
Great Barrier Reef.....	16
Ukraine's new law on cryptocurrencies.....	16
War Crimes	18
Man-Portable Air-Defence Systems	19
Daylight Saving Time	20
Mains	21
GS I	21
Sanskritisation.....	21
GS II	23
Geneva Conventions and the Russia-Ukraine war.....	23
Fragmenting world order, untied nations.....	25
Towards inclusive education.....	27
GS III	29
Clean energy must use the battery of a circular economy	29
The functioning of the ISS after sanctions.....	30
India's solar capacity: Milestones and challenges	32
Yuan as a reference currency for interim oil trade	34

Current Affairs Quiz	36
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Prelims

NATIONAL

SARAS and EDGES

(Source: [The Hindu](#))

Context: *In a country of a billion phones, hungry for every bit of radio signal, is a group of scientists looking for spots where one can escape them.*

Details:

- This continuing decade-long quest, led by scientists at the Raman Research Institute (RRI), Bengaluru has taken them multiple times to Ladakh, to a place aptly named the Timbuktu Collective in Andhra Pradesh, and to lakes in northern Karnataka, with their radio telescope **SARAS (Shaped Antenna Measurement of the Background Radio Spectrum)**, which hopes to catch the trace of an extremely elusive sign from space — that of the birth of the first stars or what's called “the cosmic dawn”.
- Reverberations of the Big Bang that birthed our universe 13.8 billion years ago continue to linger in a swathe of radiation called the cosmic microwave background (CMB).
- At a very specific region in this spectrum, current cosmological models of the universe say, there is a point where the microwave radiation is a little dim and this, these models say, is because light from the first stars may have made hydrogen extra opaque at specific radio wavelengths.
- Several groups around the world have designed custom-made, highly sensitive radio telescopes and are placing them in regions as remote as deserts in Australia to an island in the Antarctic Ocean and, if a proposal comes through, in the lunar orbit.
- The **EDGES (Experiment to Detect the Global Epoch of Reionization Signature)** telescope, placed in an Australian desert, recorded an unusual signal that the group claims is the sign of the cosmic dawn.
- However the signal's pattern wasn't shaped in the way cosmological models predicted and since 2018, when the EDGES result was published, there's a flurry of interpretation on whether the instrument actually detected the signal, and if it did, what explained its unusual structure.
- To test this, the RRI group made an updated version of SARAS, called SARAS-3. Its chief distinguishing characteristic is that, unlike other radio telescopes, it can be deployed on water bodies. Water — being of uniform layers — would be an ideal medium, the group reckoned, to make such a sensitive measurement.
- Following weeks of observations and months of statistical analysis by Saurabh Singh, research scientist at the RRI, SARAS 3 did not find any evidence of the signal claimed by the EDGES experiment.

Chilika lake

(Source: [The Hindu](#))

Context: *The Odisha government has proposed to ban movement of mechanised fishing boats in the Mangalajodi area of the Chilika lake, an important haunt of migratory birds, to provide the winged guests an undisturbed ecosystem for six months every year.*

Details:

- The Orissa High Court concurred with the proposal, directing that the ban be strictly implemented.
- A high-level meeting had discussed the issue in response to a court order.
- Mangalajodi is recognised as globally important for the conservation of birds. Migratory birds arrive there for roosting.
- However, no statutory rules and regulations are there for protecting the 8.3-sq.km marshland with emergent vegetation.

About Chilika Lake:

- Chilika is Asia's largest and world's second largest lagoon.
- In 1981, Chilika Lake was designated the first Indian wetland of international importance under the Ramsar Convention.
- Major attraction at Chilika is Irrawaddy dolphins which are often spotted off Satapada Island.
- The large Nalabana Island (Forest of Reeds) covering about 16 sq km in the lagoon area was declared a bird sanctuary in 1987.
- Kalijai Temple - Located on an island in the Chilika Lake.
- Chilika lake hosts birds migrating from thousands of miles away from the Caspian Sea, Lake Baikal, Aral Sea, remote parts of Russia, Kirghiz steppes of Mongolia, Central and South East Asia, Ladakh and the Himalayas.
- The birds find the vast mud-field and abundant fish stock here suitable to congregate.

Mumbai Climate Action Plan

(Source: [Indian Express](#))

Context: *The **Mumbai Climate Action Plan (MCAP)** has laid down a 30-year road map for the city to tackle the challenges of climate change by adopting inclusive and robust mitigation and adaptation strategies. The action plan has set short-, medium- and long-term climate goals aimed towards zero emission of greenhouse gas or a net-zero target for 2050. It has been said that actions must be taken on priority across six strategic areas—sustainable waste management, urban greening and biodiversity, urban flooding and water resource management, energy and buildings, air quality and sustainable mobility.*

MCAP

- After a vulnerability assessment of greenhouse gas (GHG) and natural green cover inventory over the last six months, the Brihanmumbai Municipal Corporation (BMC) prepared the plan with technical support from the World Resources Institute (WRI), India and the C40 Cities network.
- The first chapter of the 240-page document concentrates on the city, its ecological, cultural and economical landscapes.
- Secondly, the plan throws light on the current climate of the city called Baseline assessment—climate and air pollution risks, greenhouse gas inventory.
- The plan then assesses future trajectories in the business-as-usual scenarios and assesses future emission reduction scenarios to make Mumbai net-zero by 2050.
- The chapter ahead then lists down Sectoral Priorities and Plans, including ongoing initiatives in the departments, gaps, short-, and long-term action points. The final chapter of the plan deals with the road map to achieve the set targets.

Why does Mumbai need a climate action plan?



- As per a study conducted by WRI India on Mumbai's vulnerability assessment, the city will face two major challenges—temperature rise, and extreme rain events which will lead to flooding.
- As per the vulnerability assessment of greenhouse gas and natural green cover, the city has witnessed a warming trend.
- The analysis has revealed a warming trend over 47 years (1973-2020) with an increase of 0.25°C per decade for the city.
- A ward-level analysis of heat exposure indicates that 40 per cent of the population residing in the M-East ward—one of the most populated areas in the city, covering Deonar, Govandi and housing one of the largest landfills in the state capital—is exposed to heat stress as opposed to 0.9 per cent of residents of A Ward.
- Heat stress is when the body's internal mechanism to control heat fails and the core temperature rises, increasing the heart rate.
- Mumbai's climate action plan has set a vision and strategies to fight these climate challenges with mitigation and adaptation steps.

What is the city's current greenhouse gas emission?

- In 2019, which is taken as a base year, Mumbai's GHG emissions were 23.42 million tonnes of carbon dioxide emission, which is 1.8 tonnes CO₂e per person.
- Out of which, 16.9 million tonnes or 72 per cent is from the energy sector, followed by 4.56 million tonnes of CO₂ e or 20 per cent from the transportation sector.
- The city's waste sector contributes to a total of eight per cent of the total emissions. Most of the city's emissions come from energy use in residential buildings followed by commercial buildings and transport.
- Electricity consumption contributes significantly to total emissions (64.3%), due to the city's predominantly coal-based grid.

Pradhan Mantri Fasal Bima Yojna

(Source: [Indian Express](#))

Context: Maharashtra is the latest state to threaten to withdraw from the Pradhan Mantri Fasal Bhima Yojna (PMFBY) if changes to it are not carried out.

What is PMFBY?

- Introduced in the 2016-17 kharif season, PMFBY is a central-state scheme which aims to cushion farmers against crop loss.
- The central and state governments pay more than 95 per cent of the premium amount while the farmer bears 1.5-5 per cent of the premium.
- As extensive usage of technology is used to settle the claims of farmers within a stipulated time period, farmers are required to fill loss reports online which are validated by insurance companies before the compensation amount is paid directly in their accounts.
- Prior to 2020, the scheme was mandatory for farmers who availed institutional finance, but that was changed

PMFBY IN MAHARASHTRA

Year	Premium collected	Claims paid
2016-17	₹ 3,995.02 cr	₹ 1,924.72 cr
2017-18	₹ 3,544.33 cr	₹ 2,707.81 cr
2018-19	₹ 4,914.16 cr	₹ 4,655.46 cr
2019-20	₹ 4,925.57 cr	₹ 5,511.68 cr
2020-21	₹ 5,801.73 cr	₹ 823.19 cr*

* Rabi claims for 2020-21 yet to be finalised

and made voluntary for all farmers.

- Maharashtra has consistently seen a large number of farmers opting for the scheme, even when it was non-mandatory for non-loanee farmers. Till 2019-20, over 357 lakh farmers had opted for the scheme and over 162 lakh farmers had received a total compensation of Rs 10,048.67 crore.

Which states have withdrawn from the scheme, and why?

- Gujarat, Bihar, West Bengal, Andhra Pradesh, Telangana and Jharkhand have opted out of the scheme.
- The Lok Sabha's Standing Committee on Agriculture had noted in its report of August 2021 that these states decided to opt out because of low claim ratio and financial constraints.
- "Financial constraints of the state government and low claim ratio during normal season are the major reasons for non-implementation of the scheme by these states. However, they have implemented the schemes with lower benefits than PMFBY from their own resources and without contribution from central government," the report stated.

India's urban unemployment rate

(Source: [Indian Express](#))

Context: India's urban unemployment rate jumped to 12.6 per cent in the April-June quarter of 2021, compared to 9.3 per cent in the January-March quarter. It, however, eased from the 20.8 per cent level seen during the first wave of the Covid pandemic, the latest Periodic Labour Force Survey (PLFS) released by the National Statistical Office (NSO) shows.

The numbers

- The unemployment rate had shot up sharply during the nationwide lockdown in 2020 during the first wave of the pandemic.
- Data shows that in the 15-29 age group, 25.5 per cent of urban youth remained unemployed in April-June 2021 as against 34.7 per cent in April-June 2020 and 22.9 per cent in January-March 2021.
- Urban females fared worse than urban males. In the 15-29 age group, the unemployment rate for urban females stood at 31 per cent compared with 24 per cent for males during April-June 2021.
- The unemployment rate for urban females and males stood at 36 per cent and 34.3 per cent, respectively, in April-June 2020.
- The unemployment rate is defined as the percentage of unemployed persons in the labour force. The urban unemployment PLFS is based on the current weekly status approach, under which a person is considered unemployed if he/she did not work even for one hour on any day during the week but sought or was available for work at least for one hour on any day during the period.
- Labour force, according to current weekly status (CWS), is the number of persons either employed or unemployed on an average in a week preceding the date of the survey.
- Labour force participation rate in current weekly status in urban areas for people aged 15 years and above was 46.8 per cent in the April-June quarter of 2021, up from 45.9 per cent in the same period a year ago. It was 47.5 per cent in January-March 2021.

CMIE data

- According to the Centre for Monitoring Indian Economy (CMIE), which provides regular data on unemployment, the urban unemployment rate was 9.78 per cent in April, 14.72 per cent in May and 10.08 per cent in June last year.



- It eased to 8.32 per cent in July 2021, increased in August to 9.78 per cent and then again moderated to 8.64 per cent in September.
- The urban unemployment rate rose to 9.30 per cent in December and has eased since then to 8.16 per cent in January and 7.55 per cent in February 2022, as per CMIE.

What are WPI and CPI inflation rates?

(Source: [Indian Express](#))

Context: Any inflation rate essentially tells us the rate at which prices have been rising in an economy. As such, an inflation rate is expressed as a percentage. If the prices of onions rose from Rs 10 a kg last year to Rs 15 a kg this year, the inflation rate will be 50%. That's because a kg of onion is Rs 5 — that is, 50% — more than the base price (Rs 10) in this example. For every month, inflation rates are calculated both on a year-on-year basis — how prices have changed over the past year — as well as on a month-on-month basis — how prices have changed over the past month.

Inflation rates

- Inflation rates are calculated for all commodities and commodity groups. So, we have inflation rates for onions as well as for all food items.
- But, the price of any commodity, say onions, also varies whether one buys the commodity in the wholesale market or whether one buys in the city mall.
- Comparing last year's wholesale prices of onions with this year's retail store prices will be misleading.
- So, the government comes out with two indices — one for mapping inflation in the wholesale market and one for mapping inflation in the retail market.
- Inflation rates are also calculated for rural and urban markets for better policy analysis.

WPI vs CPI

- The two most-often used inflation rates in the country are the year-on-year
 - the wholesale price index (WPI) based inflation rate and
 - the consumer price index (CPI) based inflation rate
- The former is called the wholesale inflation rate and the latter is called the retail inflation rate.
- Both WPI and CPI are price indices. In other words, these are two different baskets of goods and services.
- The government assigns different weights to different goods and services based on what is relevant for those two types of consumers.

The two tables below bring out the differences.

Component	Weight (in %)	Inflation rate (in %); Feb 2022
All Commodities	100.00	13.11
Primary Articles	22.62	13.39
Fuel & Power	13.15	31.5
Manufactured Products	64.23	9.84

Table 1: Composition of Wholesale Price Index



Component	Weight (in %)	Inflation rate (in %); Feb 2022
General Index	100.00	6.07
Food and beverages	45.86	5.93
Pan, tobacco and intoxicants	2.38	2.39
Clothing and footwear	6.53	8.86
Housing	10.07	3.57
Fuel and light	6.84	8.73
Miscellaneous (services)	28.32	6.52

Table 2: Composition of Consumer Price Index

- The CPI-based inflation data is compiled by the Ministry of Statistics and Programme Implementation (or MoSPI) and the WPI-based inflation data is put together by the Department for Promotion of Industry and Internal Trade (or DPIIT).
- Looking at the way the two indices are constructed, it becomes clear how and why the two inflation rates are different.
 - For instance, the WPI is dominated by the prices of manufactured goods while the CPI is dominated by the prices of food articles. As such, broadly speaking, if food prices go up sharply, it will bump up the retail inflation rate far more than it would spike the wholesale inflation rate. The reverse will happen when prices of manufactured products (such as TVs and cars) rise sharply.
- A key difference that must not be missed is that the WPI does not take into account the change in prices of services — say a haircut or a banking transaction. But CPI does.
- If services such as transport, education, recreation and amusement, personal care etc. get significantly costlier, then retail inflation will rise but there will be no impact on wholesale price inflation.
- Since these two inflation rates are calculated based on two very different indices, it is not uncommon to find them at considerable variance with each other.

Heatwave

(Source: [Indian Express](#))

Context: *The Konkan region, including Mumbai, has been experiencing sweltering heat in the recent days, with the maximum temperatures touching the 40 degrees mark.*

What is a heatwave?

- A region or locality is considered to be under the influence of heatwave if the maximum temperature reaches or exceeds 40 degrees Celsius in the plains, or 30 degrees Celsius in hilly regions.
 - Over the coastal regions, the threshold for the maximum temperature is 37 degrees.



- When the maximum temperature departure ranges between 4.5 and 6 degrees, the India Meteorological Department (IMD) declares heatwave.
 - For instance, if the normal temperature of a locality should be 40 degrees, and the actual recorded temperature is 45 degrees, the locality is under heatwave.
- Likewise, severe heatwave is declared when the recorded maximum temperature of a locality departure from normal is over 6.4 degrees.
- This apart, if the locality records over 45 degrees and 47 degrees on any given day, then the IMD declares heatwave and severe heatwave, respectively.
- In India, heatwaves occur from March to June, occasionally in July. The peak heatwave events have been reported in the month of May.
- As per the IMD, the most heatwave prone states are Punjab, Haryana, Delhi, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Odisha, Madhya Pradesh, Rajasthan, Gujarat, Vidarbha, and parts of Karnataka, Andhra Pradesh, Telangana, and occasionally over Tamil Nadu and Kerala.

One Rank One Pension Scheme

(Source: [Firstpost](https://www.firstpost.com))

Context: *The Supreme Court upheld the Centre's one rank, one pension (OROP) scheme for the armed forces.*

OROP

- The 'one rank, one pension' rule means that retired soldiers of the same rank and length of service will receive the same pension, regardless of when they retire.
- As of now, the date of retirement determines the amount of pension. With each Pay Commission coming up with its recommendations every 10 years, the military veterans who retire early, receive less pension as compared to those who retired later with the same rank and length of service.
- Ex-servicemen had been demanding for OROP for almost four decades, and that request came through in 2018 when Prime Minister Narendra Modi announced the 'One Rank One Pension' scheme for ex-servicemen.
- The then defence minister Manohar Parrikar had said, "In simple terms, OROP implies that uniform pension be paid to the Armed Forces personnel retiring in the same rank with the same length of service, regardless of their date of retirement. Future enhancements in the rates of pension would be automatically passed on to the past pensioners. This implies bridging the gap between the rate of pension of current and past pensioners at periodic intervals."
- "Under this definition, it has been decided that the gap between rate of pension of current pensioners and past pensioners will be bridged every five years," he had said.
- Ex-servicemen drawing pensions will benefit from the OROP scheme, especially those who retired before 2006.
- Why? Because at present, pensioners who retired before 2006 draw less pension than their counterparts and even their juniors. The scheme will benefit all three services — air force, navy and army.

OROP case in SC

- The OROP matter reached the Supreme Court through a petition filed by the Indian Ex-Servicemen Movement accused the government of reneging on its promise to implement OROP.
- The petitioner said OROP, despite assurances by the minister on the floor of the House and Executive decisions which had become final, had become 'One Rank Different Pension'.



- The bone of contention in the petition is the government's move on 7 November, 2015, that equalisation of pension would happen periodically every five years.
- The petition said the equalisation of pension should be automatic, that is whenever there is disparity.
- But the government has said the equalisation would happen every five years. The petitioners have said that a gap of five years would leave them at a great disadvantage.
- They said periodic equalisation would "cause great injustice to 24 lakh ex-servicemen, 6.5 lakh war widows and veteran widows and their families by creating a situation of One Rank Different Pension'.

Sealed cover jurisprudence

(Source: [The Hindu](#))

Context: While hearing a criminal appeal against the Bihar Government, Chief Justice of India (CJI) N.V. Ramana admonished a counsel for submitting a 'sealed cover report' to the court. The CJI asked the counsel to not submit the report in a sealed cover. "We will not accept it," Justice Ramana remarked. "I am very averse to what is called the 'sealed cover jurisprudence'," Justice Chandrachud said.

What is sealed cover jurisprudence?

- It is a practice used by the Supreme Court and sometimes lower courts, of asking for or accepting information from government agencies in sealed envelopes that can only be accessed by judges.
- While a specific law does not define the doctrine of sealed cover, the Supreme Court derives its power to use it from Rule 7 of order XIII of the Supreme Court Rules and Section 123 of the Indian Evidence Act of 1872.
- It is stated under the said rule that if the Chief Justice or court directs certain information to be kept under sealed cover or considers it of confidential nature, no party would be allowed access to the contents of such information, except if the Chief Justice himself orders that the opposite party be allowed to access it.
- It also mentions that information can be kept confidential if its publication is not considered to be in the interest of the public.
- As for the Evidence Act, official unpublished documents relating to state affairs are protected and a public officer cannot be compelled to disclose such documents.
- Other instances where information may be sought in secrecy or confidence are when its publication impedes an ongoing investigation, such as details which are part of a police case diary.

What is the criticism and what do the courts say?

- Critics of this practice contend that it is not favourable to the principles of transparency and accountability of the Indian justice system, as it stands against the idea of an open court, where decisions can be subjected to public scrutiny.
- It is also said to enlarge the scope for arbitrariness in court decisions, as judges are supposed to lay down reasoning for their decisions, but this cannot be done when they are based upon information submitted confidentially.
- What is further contested is whether the state should be granted such a privilege to submit information in secrecy, when existing provisions like in-camera hearings already provide sufficient protection to sensitive information.
- Besides, it is argued that not providing access to such documents to the accused parties obstructs their passage to a fair trial and adjudication.

- In the 2019 judgment in the case of P. Gopalakrishnan vs The State of Kerala, the Supreme Court had said that disclosure of documents to the accused is constitutionally mandated, even if the investigation is ongoing and said documents may lead to a breakthrough in the investigation.
- In the INX Media case in 2019, while granting bail to Congress leader P. Chidambaram, a Bench of the Supreme Court had criticised the Delhi High Court for basing its decision to deny bail to the former Union Minister on documents submitted by the Enforcement Directorate (ED) in a sealed cover.
- The three-judge Bench of Justices R. Banumathi, A. S. Bopanna, and Hrishikesh Roy had said: “Though it is held that it would be open for the Court to peruse the documents, it would be against the concept of fair trial if in every case the prosecution presents documents in sealed cover and the findings on the same are recorded as if the offence is committed and the same is treated as having a bearing for denial or grant of bail”.

Deep ocean gliders

(Source: [The Hindu](#))

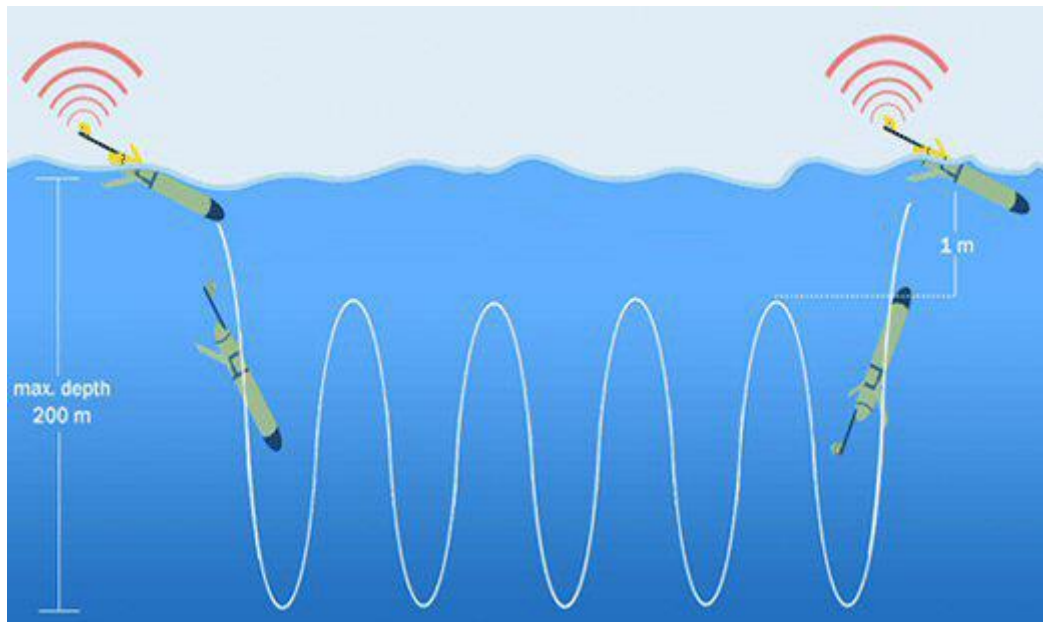
Context: India has plans to introduce eight deep ocean gliders that can travel 3,000 km-4,500 km, 48 deep Argo floats at 6,000-metre depth at 24 locations and another 150 wave drifters to strengthen the capacity of observations in the Indian Ocean as part of its ‘Deep Ocean Mission’.

Details:

- Also, manned submersible vehicles which can go to a depth of up to 6,000 metres, scientific cruises to scour the ocean and also a new multidisciplinary research vessel in the next three years are on the anvil, while Oceansat-3 is also scheduled to be launched next year.
- The policy will enunciate the way forward on sustainable ocean development in mining of deep sea and coastal resources, off-shore energy and climate services.
- An engineering design for ocean thermal energy conversion to generate power and others have been identified for further research for precise observations and predictions of future cyclones, ocean health through statistical and dynamic modelling and observation networks.

About Gliders

- A glider uses an internal pump to change its buoyancy, enabling it to move up and down in the water, where as conventional robotic vehicles or Autonomous Underwater Vehicles (AUVs, such as Autosub) are propeller-driven.
- The movement of internal weights back and forth enables the glider to angle itself to dive or climb in the water column. Like an aerial glider moving vertically through the air, underwater gliders use the lift generated by the wings moving through the water to convert vertical force into forward motion.
- Gliders are fitted with an inbuilt compass, which they use to steer a course. Gliders move very slowly, usually at less than a mile per hour, but can maintain this speed for months on end.
- Gliders have been around for around 20 years in one form or another, designed and built by universities and research institutes.



- To move up and down, the glider does not change its mass, but by pumping a fluid (oil in this case) from an internal reservoir to an external flexible bladder, so it can increase its volume.
- The density of a glider depends on both its mass and its volume; by pumping oil in and out of the bladder the glider is able to make itself alternately denser and lighter than the surrounding water – the glider can sink to a pre-programmed depth then float back to the surface.

POSH-the law against sexual harassment in India

(Source: [Indian Express](#))

Context: Kerala High Court asked organisations associated with the film industry to take steps to constitute a joint committee to deal with cases of sexual harassment of women, in line with the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act of 2013.

The law against sexual harassment

- The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act was passed in 2013.
- It defined sexual harassment, lay down the procedures for a complaint and inquiry, and the action to be taken. It broadened the Vishaka guidelines, which were already in place.
- The Vishaka guidelines were laid down by the Supreme Court in a judgment in 1997. This was in a case filed by women's rights groups, one of which was Vishaka. They had filed a public interest litigation over the alleged gangrape of Bhanwari Devi, a social worker from Rajasthan. In 1992, she had prevented the marriage of a one-year-old girl, leading to the alleged gangrape in an act of revenge.

Guidelines and the law

- The Visakha guidelines, which were legally binding, defined sexual harassment and imposed three key obligations on institutions — prohibition, prevention, redress. The Supreme Court directed that they should establish a Complaints Committee, which would look into matters of sexual harassment of women at the workplace.
- The 2013 Act broadened these guidelines.



- It mandated that every employer must constitute an Internal Complaints Committee (ICC) at each office or branch with 10 or more employees. It lay down procedures and defined various aspects of sexual harassment, including the aggrieved victim, who could be a woman “of any age whether employed or not”, who “alleges to have been subjected to any act of sexual harassment”.
- This meant that the rights of all women working or visiting any workplace, in any capacity, were protected under the Act.

Definition of sexual harassment

- Under the 2013 law, sexual harassment includes “any one or more” of the following “unwelcome acts or behaviour” committed directly or by implication:
 - Physical contact and advances
 - A demand or request for sexual favours
 - Sexually coloured remarks
 - Showing pornography
 - Any other unwelcome physical, verbal or non-verbal conduct of sexual nature.
- The Ministry of Women & Child Development has published a Handbook on Sexual Harassment of Women at Workplace with more detailed instances of behaviour that constitutes sexual harassment at the workplace. These include, broadly:
 - Sexually suggestive remarks or innuendos; serious or repeated offensive remarks; inappropriate questions or remarks about a person’s sex life
 - Display of sexist or offensive pictures, posters, MMS, SMS, WhatsApp, or emails
 - Intimidation, threats, blackmail around sexual favours; also, threats, intimidation or retaliation against an employee who speaks up about these
 - Unwelcome social invitations with sexual overtones, commonly seen as flirting
 - Unwelcome sexual advances.
- The Handbook says “unwelcome behaviour” is experienced when the victim feels bad or powerless; it causes anger/sadness or negative self-esteem. It adds unwelcome behaviour is one which is “illegal, demeaning, invading, one-sided and power based”.
- Additionally, the Act mentions five circumstances that amount to sexual harassment — implied or explicit promise of preferential treatment in her employment; implied or explicit threat of detrimental treatment; implied or explicit threat about her present or future employment status; interference with her work or creating an offensive or hostile work environment; humiliating treatment likely to affect her health or safety.

Procedure for complaint

- Technically, it is not compulsory for the aggrieved victim to file a complaint for the ICC to act. The Act says that she “may” do so — and if she cannot, any member of the ICC “shall” render “all reasonable assistance” to her to complain in writing. If the woman cannot complain because of “physical or mental incapacity or death or otherwise”, her legal heir may do so.
- Under the Act, the complaint must be made “within three months from the date of the incident”. However, the ICC can “extend the time limit” if “it is satisfied that the circumstances were such which prevented the woman from filing a complaint within the said period”.
- The ICC “may”, before inquiry, and “at the request of the aggrieved woman, take steps to settle the matter between her and the respondent through conciliation” — provided that “no monetary settlement shall be made as a basis of conciliation”.
- The ICC may either forward the victim’s complaint to the police, or it can start an inquiry that has to be completed within 90 days. The ICC has powers similar to those of a civil court in respect of summoning and examining any person on oath, and requiring the discovery and production of documents.
- When the inquiry is completed, the ICC must provide a report of its findings to the employer within 10 days. The report is also made available to both parties.



- The identity of the woman, respondent, witness, any information on the inquiry, recommendation and action taken, the Act states, should not be made public.

After the ICC report

- If the allegations of sexual harassment are proved, the ICC recommends that the employer take action “in accordance with the provisions of the service rules” of the company. These may vary from company to company. It also recommends that the company deduct from the salary of the person found guilty, “as it may consider appropriate”.
- Compensation is determined based on five aspects: suffering and emotional distress caused to the woman; loss in career opportunity; her medical expenses; income and financial status of the respondent; and the feasibility of such payment.
- After the recommendations, the aggrieved woman or the respondent can appeal in court within 90 days
- Section 14 of the Act deals with punishment for false or malicious complaint and false evidence. In such a case, the ICC “may recommend” to the employer that it take action against the woman, or the person who has made the complaint, in “accordance with the provisions of the service rules”.
- The Act, however, makes it clear that action cannot be taken for “mere inability” to “substantiate the complaint or provide adequate proof”.

INTERNATIONAL

United States Federal Reserve

(Source: [Indian Express](#))

Context: *The United States Federal Reserve raised its key interest rate by a quarter of a percentage point on Wednesday as the first decisive step to tame runaway inflation that has touched a 40-year high in that country.*

The role of the Federal Reserve

- The US central bank system performs five broad functions to promote the effective operation of the American economy. The Federal Reserve identifies these functions as follows:
 - conducting the US monetary policy to promote maximum employment and stable prices;
 - promoting the stability of the financial system and seeking to minimize and contain systemic risks through active monitoring and engagement in America and overseas;
 - promoting the safety and soundness of individual financial institutions and monitoring their impact on the financial system as a whole;
 - fostering safety and efficiency in the payment and settlement system through services to banks and the federal government that facilitate US-dollar transactions and payments;
 - promoting consumer protection and community development through consumer-focused supervision and examination, research and analysis of emerging consumer issues and trends, and the administration of consumer laws and regulations.

Parts of the Fed

- While the Federal Reserve has frequent communication with the executive branch and congressional officials, its decisions are made independently. The Federal Reserve System consists of three major entities:
 - The Federal Reserve Board of Governors (Board of Governors), the main governing body of the system. The chairman and governors of the Board are appointed by the President and confirmed by the Senate. The present chair of the Federal Reserve Board of Governors is Jerome H Powell, who was nominated to the board by President Barack Obama in 2012 and elevated to its 16th chair by President Donald Trump. The offices of the Board of Governors are headquartered in the Marriner S Eccles Federal Reserve Board Building in Washington DC.
 - The Federal Reserve Banks (Reserve Banks), are the regional operating arms of the Federal Reserve System, and are supervised by the Board of Governors. There are 12 Federal Reserve Banks (such as those of New York, Boston, Philadelphia, Atlanta, Chicago, San Francisco, etc.) corresponding to the 12 Federal Reserve Districts in the US.
 - The Federal Open Market Committee (FOMC) consists of the members of the Board of Governors and presidents of the Reserve Banks. The chair of the Board is the chair of the FOMC. The FOMC has 12 members at a time: seven members of the Board of Governors, the president of the Federal Reserve Bank of New York, and four of the remaining 11 Reserve Bank presidents, who serve one-year terms on a rotating basis.

Monetary policy

- Monetary policy refers to actions taken by the Fed to influence the availability and cost of money and credit to help promote national economic goals. The Federal Reserve controls the three tools of monetary policy: open market operations, discount rate, and reserve requirements.



- The Board of Governors is responsible for the discount rate and reserve requirements, and the FOMC is responsible for open market operations.
- The federal funds rate is the interest rate at which depository institutions lend balances at the Federal Reserve to other depository institutions overnight.
- Changes in the federal funds rate trigger a chain of events that affect other short-term interest rates, foreign exchange rates, long-term interest rates, the amount of money and credit, and, ultimately, a range of economic variables, including employment, output, and prices of goods and services, the Fed says on its website.

Great Barrier Reef

(Source: [The Hindu](#))

Context: *Australia's Great Barrier Reef is suffering widespread and severe coral bleaching due to high ocean temperatures two years after a mass bleaching event.*

Details:

- The reef has suffered significantly from coral bleaching caused by unusually warm ocean temperatures in 2016, 2017 and 2020. The previous bleaching damaged two-thirds of the coral.
- The environmental group Greenpeace said the severe and widespread coral bleaching suffered during a La Niña weather pattern that is associated with cooler Pacific Ocean temperatures was evidence of the Australian government's failure to protect the coral from the impacts of climate change.
- In July last year, Australia garnered enough international support to defer an attempt by UNESCO, the United Nations' cultural organisation, to downgrade the reef's World Heritage status to "in danger" because of damage caused by climate change.

Great Barrier Reef:

- It is the world's most extensive and spectacular coral reef ecosystem composed of over 2,900 individual reefs and 900 islands.
- The reef is located in the Coral Sea (North-East Coast), off the coast of Queensland, Australia.
- It can be seen from outer space and is the world's biggest single structure made by living organisms.
- This reef structure is composed of and built by billions of tiny organisms, known as coral polyps.
 - They are made up of genetically identical organisms called polyps, which are tiny, soft-bodied organisms. At their base is a hard, protective limestone skeleton called a calicle, which forms the structure of coral reefs.
 - These polyps have microscopic algae called zooxanthellae living within their tissues. The corals and algae have a mutualistic (symbiotic) relationship.
- It was selected as a World Heritage Site in 1981.

Ukraine's new law on cryptocurrencies

(Source: [Indian Express](#))

Context: *Ukraine, which is at war with Russia, has decided to establish a legal framework through which cryptocurrencies can be operated in the country in a regulated ecosystem. The country's parliament had in*

February passed the law to legalise cryptocurrencies, and its President Volodymyr Zelenskyy signed it into a law.

What is Ukraine's new law on cryptocurrencies?

- According to CoinDesk, the new Ukrainian law on cryptocurrencies determines the legal status, classification, ownership and regulators of virtual assets, in addition to establishing registration requirements for cryptocurrency service providers.
- In a tweet, Ukraine's digital ministry said: "From now on, foreign and Ukrainian cryptocurrencies exchanges will operate legally and banks will open accounts for crypto companies. It is an important step towards the development of the VA (virtual assets) market in Ukraine".

How will cryptocurrencies be regulated in Ukraine?

- The cryptocurrency market in Ukraine will be regulated by its National Securities and Stock Market Commission — the equivalent of India's Sebi.
- The Ukrainian securities regulator will also have powers, under the new law, to determine policies on digital assets, issue licenses to businesses dealing with cryptocurrencies, and act as a financial watchdog.

Why has Ukraine legalised cryptocurrency?

- Ukrainians have been one of the most active retail users of cryptocurrencies, and there had been discussions in the country earlier to legalise these digital assets, but the latest trigger has been Russia's military action in Ukraine.
- In light of the war, Ukraine has reportedly received more than \$100 million in donations in the form of cryptocurrencies since the crisis began last month.
- A report by TechCrunch said that with the new law in place, Ukraine's first crypto exchange, Kuna, will no longer be limited to helping the country spend the donations directly with crypto-friendly suppliers, but help convert crypto to much-needed fiat.
- It added that the country has also partnered with the Bahamas-based exchange FTX to convert crypto contributions to Ukraine's war effort into fiat for deposit at the National Bank of Ukraine.
- Incidentally, an earlier law to legalise cryptocurrencies was passed by Ukrainian parliament back in September as well, but was vetoed by Zelenskyy saying the country couldn't afford a new regulatory body.

Global experiences in legalising cryptocurrencies?

- The most significant example of legally adopting crypto into a nation's economy has been that of El Salvador, which made Bitcoin a legal tender in September 2021. But the initiative has since been marred with problems such as technical glitches and identity fraud, in addition to a conflict between the decentralised nature of Bitcoin and an authoritarian government in El Salvador.
- Other than the Central American country, several other jurisdictions are attempting to legalise private cryptocurrencies, like Bitcoin and Ethereum, or are launching **Central Bank Digital Currencies** (CBDC) that are digital currencies backed by the state.

Where does India stand on cryptocurrencies?

- In the Union Budget for 2022-23 presented last month, the Centre proposed a 30 per cent tax on virtual assets, including cryptocurrencies, effectively legitimising trading of private cryptocurrencies and non-fungible tokens.
- This was broadly in line with the Centre's plans to have a fiat digital currency, while disallowing use of private virtual coins as legal tender.
- The government is also separately working on a law to regulate private cryptocurrencies, while the Reserve Bank of India is planning to launch the pilot of its CBDC — the Digital Rupee — this year.

- Like many other jurisdictions, India is also faced with the question of who would regulate cryptocurrencies in the country — the central bank, the securities watchdog, or a new regulatory body.

War Crimes

Context: Amid mounting calls to prosecute Russian president Vladimir Putin, the International Criminal Court (ICC) earlier this month launched an investigation into the alleged war crimes committed following Russia's invasion of Ukraine.

What is a war crime?

- Following requests from 40 member states, the ICC's Chief Prosecutor Karim Khan on March 2 announced that he would be launching an investigation into possible war crimes committed in Ukraine.
- The ICC lays down clear definitions of what qualifies as a genocide, war crime, crimes against humanity and the crime of aggression. These definitions are included in a treaty called the Rome Statute, which forms the foundation of the ICC.
- As per its guidelines, targeting civilian populations, violating the Geneva Conventions, and targeting specific groups of people all qualify as war crimes. War crimes also include murder, mutilation, cruel treatment, taking hostages, rape and sexual slavery, the ICC's guidelines state.
- International humanitarian law also prohibits the use of weapons that can cause indiscriminate suffering, such as anti-personnel landmines and chemical or biological weapons.

How does the ICC function?

- The ICC, which is based in the Hague in the Netherlands, operates independently and can prosecute individuals for four primary offences: war crimes, crimes against humanity, genocide, and the crime of aggression.
- Nearly every country in the world — 123 in all — fall under the ICC's jurisdiction and have signed the Rome Statute.
- But there are some notable exceptions. Around 31 countries — including the US, Russia and Ukraine — have signed the treaty but have not ratified it. Russia pulled out of the court in 2016 after the ICC's verdict on Russia's occupation of Crimea in 2014.
- The court tries individuals and not countries. Any individual accused of a crime from a country that falls under the ICC's jurisdiction can be tried. The ICC generally tries top officials and leaders who hold the most responsibility.
- In the case of the war in Ukraine, investigators will look into both past and present allegations. This is likely to include the war crimes that Putin ordered during Russia's annexation of Crimea from Ukraine.
- If there is enough evidence, ICC judges will issue arrest warrants to bring the accused to trial. It cannot conduct a trial in absentia. Since Russia is not a member of the court, it is unlikely that he will show up on his own. He would either have to be handed over by Russian forces or taken into custody outside Russia.
- Either a national government or the UN Security Council can refer cases to the ICC for investigation. Since Russia is a permanent member of the UNSC, it has veto power and can thus stall its actions.

Man-Portable Air-Defence Systems

(Source: [The Hindu](#))

Context: On March 13, United States President Joe Biden approved a \$200-million arms package for Ukraine, which would include U.S. made Stinger Missiles, which are a type of shoulder-fired Man-Portable Air-Defence Systems (MANPADS). More than 17,000 anti-tank weapons and 2,000 Stinger missiles have already been sent by the U.S. and NATO in the first week of March itself. Analysts have said that anti-tank and anti-aircraft missiles have been effective in countering Russian military advances in the air and on the ground.

What are MANPADS?

- Man-Portable Air-Defence Systems are short-range, lightweight and portable surface-to-air missiles that can be fired by individuals or small groups to destroy aircraft or helicopters.
- They help shield troops from aerial attacks and are most effective in targeting low-flying aircrafts. MANPATs or Man-Portable Anti-Tank Systems work in a similar manner but are used to destroy or incapacitate military tanks.
- MANPADS can be shoulder-fired, launched from atop a ground-vehicle, fired from a tripod or stand, and from a helicopter or boat. Weighing anywhere between 10 to 20 kilograms and not being longer than 1.8 metres, they are fairly lightweight as compared to other elaborate weapon systems, making them easy to operate by individual soldiers. Operating MANPADS requires substantially less training.
- According to U.S.-based policy think-tank, the RAND Corporation, MANPADS have a maximum range of 8 kilometres and can engage targets at altitudes of 4.5 km.
- Most MANPADS have passive or 'fire and forget' guidance systems, meaning that the operator is not required to guide the missile to its target, enabling them to run and relocate immediately after firing.
- The missile stays locked-on to the targeted object, not requiring active guidance from the soldier.
- The missiles are fitted with infrared (IR) seekers that identify and target the airborne vehicle through heat radiation being emitted by the latter.

When were MANPADS used in the past?

- The first MANPADS were introduced by the United States and Soviet Union in the 1960s. Russian and U.S. MANPADS were also used during the Vietnam war.
- The U.S. supplied MANPADS to the Mujahideen in Afghanistan in the 1980s, which the latter used against the Soviet forces. Countries such as India, Pakistan, Germany, U.K., Turkey and Israel have also used MANPADS in their defence efforts.
- As of 2019, 20 countries had developed the wherewithal to manufacture MANPADS and have together made 1 million such systems for defence and export purposes.
- Over time, non-state actors such as rebel and terrorist groups have also illicitly acquired MANPADS, using them during civil wars and other high-intensity conflicts. MANPADs have been used in the Syrian war and in Libya. Non-state groups in African countries like Sudan, South Sudan, Angola, Somalia and Congo have also acquired and used MANPADs.
- Russia is by far the biggest exporter of MANPADs, having sold over 10,000 such systems between 2010 and 2018 to various countries including Iraq, Qatar, Kazakhstan, Venezuela, and Libya.

What are the common variants of MANPADs?

- The most common make of MANPADs is the U.S.-made Stinger missiles. These weigh about 15 kg, have a range of 4,800 metres or 4.8 km, and can engage low-flying aircrafts at an altitude of 3,800 metres.



- They have a passive guidance system, which uses infrared technology. Stingers have been sent or are currently being sent to Ukraine by the U.S., Germany, the Netherlands and Denmark.
- In January, the U.S. State Department gave clearance to Baltic countries Estonia, Lithuania and Latvia to provide U.S.-made stingers to Ukraine.
- Stinger's Russian or Soviet-made counterparts are the Igla MANPADS, which also employ infrared technology.
- They were used in Iraq when it was invaded by the U.S. in 2003. They have also been used by India, for instance, as part of Operation Trishul Shakti of 1992, during the Siachen conflict.
- Starstreak, the British army's equivalent of the Stinger missiles, have also been used in the past and the U.K.'s Secretary of State for Defence, Ben Wallace, said recently that the U.K. is formulating a plan to provide Ukraine with a shipment of Starstreaks.
- Sweden makes the RBS-70 MANPADS series while China's version, FN-6, is akin to the Stinger.

Daylight Saving Time

(Source: [Indian Express](#))

Context: *The United States Senate unanimously passed a law making daylight saving time (DST) permanent, scrapping the biannual practice of putting clocks forward and back coinciding with the arrival and departure of winter.*

Why have Daylight Saving Time?

- The key argument is that DST is meant to save energy. It involves resetting clocks ahead by an hour in spring, and behind by an hour in autumn, and those in favour of DST argue that it means a longer evening daytime.
- Individuals will complete their daily work routines an hour earlier, and that extra hour of daylight means — or is supposed to mean — a lower consumption of energy.
- Written accounts suggest that a group of Canadians in Port Arthur (Ontario) were the first to adopt the practice on July 1, 1908, setting their clocks an hour ahead. Other parts of Canada followed suit.
- In April 1916, during World War I, Germany and Austria introduced DST to minimise the use of artificial lighting. It gradually caught on in many countries. In the EU, clocks in the 28 member states move forward on the last Sunday in March and fall back on the last Sunday in October. India does not follow daylight saving time.

What is the problem with this?

- In a recent article, Popular Science magazine cited studies to list out the disadvantages of DST. One hour of lost sleep in the US, one study calculated, increases the fatal crash rate by 5.4% to 7.6% for six days following the transition.
- The New York Times report on the law passed by Senate started with a reference to the shortened sleep time: "After losing an hour of sleep over the weekend, members of the United States Senate returned to the Capitol this week a bit groggy and in a mood to put an end to all this frustrating clock-changing."
- Other studies found a higher rate of workplace injuries after the switch, leading to lost days of work; a slight drop in stock market performance; health problems as a result of disruption of the circadian rhythm (body clock) — and even longer sentences ordered by judges deprived of sleep.
- The vote in European Parliament in 2019 followed a survey by the European Commission. Out of 4.6 million responses, 84% voted in favour of scrapping DST, The Guardian reported.



Mains

GS I

Sanskritisation

(Source: [The Hindu](#))

Context: *Sanskritization is a long-drawn phenomenon that is not restricted to caste hierarchy, but also encompasses a wider social and cultural process*

Introduction:

- Coined and popularised by M.N. Srinivas, an eminent social anthropologist in his book *Religion and Society Among the Coorgs of South India* (Oxford, 1952), Sanskritisation refers to a change in the hierarchical caste system when certain castes that are ranked low in the caste hierarchy are able to elevate and enhance their position by adopting and emulating the socio-cultural beliefs, values, habits, customs and rituals of castes that are ranked higher than them.
- Based on his ethnographic research in Rampura village in Karnataka, Srinivas produced a detailed explanation of the phenomenon of Sanskritisation in 'A Note on Sanskritisation and Westernisation (Far Eastern Quarterly, 1956)'. Initially, 'Sanskritisation' referred to the lower castes' adoption of the "Brahmanical" ways of life.
- But gradually, the process also involved the adoption of the practices and rites of the locally dominant caste in a particular region, which included non-Brahmin castes which were politically powerful, socio-economically influential and ritually higher in the local caste hierarchy.

To gain social mobility

- Srinivas pointed out how in a caste structure with rigid and hereditary placements/ranks, Sanskritisation became a process through which mobility in caste positions/roles became possible for certain castes.
- He also warned that the process itself did not always result in higher social status for such castes. Other factors such as economic well-being, political power, education, and establishment of literary/historical evidence for their affiliation to/descent from a particular caste/caste lineage were also important for their aspirations for higher social positions, he said.
- Most importantly, for the Dalits, Sanskritisation did not guarantee higher social stature and did not lead to improvement in their everyday life, he said.
- This showed how the caste system continued to be particularly exclusionary for the Dalits, and efforts to raise their social status were opposed and stopped by castes ranked above them.
- A. M. Shah in 'Sanskritisation Revisited (Sociological Bulletin, 2005)' wrote how a closer reading of Srinivas' explanation of Sanskritisation informs us of it being a long-drawn phenomenon that is not restricted to the caste hierarchy/religious structure alone, but also encompasses a wider social and cultural process that is integrative of, and not limited to, the Hindu caste order.
- He referred to the operation of non-religious/caste values and institutions in influencing communities that are part of the Hindu caste structure.
- Research in the field of caste studies traversing various disciplines such as political science, sociology, economics, anthropology, intellectual history, cultural/religious studies have dealt comprehensively with the aspect of Sanskritisation, studying how castes (lower castes and Dalits) in different regions of India have gone through the process of "getting Sanskritised" in their efforts towards establishing an equal,

honourable, and dignified social life for themselves, and have brought forth mixed narratives of success in this process.

Multiple angles

- While some studies brought about narratives of ‘Sanskritisation’ as civil campaigns of dissent, resistance and challenge to/against the hierarchical and hereditary nature of the caste structure, other research in caste studies took note of the developments happening in Indian socio-polity, which opened up a range of socio-political issues/changes not entirely related to Sanskritisation.
- These explained how modernity, political independence, social reform movements, agrarian class relations, market forces, family structure, electoral politics and power, constitutional provisions and legislations, civil society actions, anti-caste struggles, globalisation and other such factors have become significant in studying and understanding the caste system and social relations in the Indian society.
- Srinivas himself had hinted at the impact that some of these factors may have on caste relations in the changing Indian society.
- Such social and political developments in the Indian society have indicated the problems in assessing and analysing caste relations and the Hindu social structure through the exclusive prism of Sanskritisation.
- They convey how, even when Sanskritisation allows for social mobility through elevation to a relatively higher position in the caste hierarchy, it only modifies the rank/position of communities in the caste hierarchy and reinforces graded inequalities and practices in the name of caste, while not offering a strong critique and denunciation of the caste system as a whole.
- To understand caste relations through Sanskritisation alone is to ignore and invisibilise the existence of a pre-/non-caste, egalitarian society and the role of the anti-caste struggles which did not follow the cultural-ritual trajectory of Sanskritisation.
- On the other hand, these struggles aimed at not imitating or adapting the supposedly ‘superior’ socio-cultural values of the higher castes — values and practices that are casteist, discriminatory and exploitative. Instead, they aimed at contesting caste norms and practices and at destroying the very structure of caste and instituting a casteless, caste-free society.

The rise of anti-caste politics

- Unlike the Sanskritisation model that reifies the unequal and differential caste relations that upholds the Hindu caste order and advances the interests of the ‘caste privileged’, the discourse of anti-caste/casteless socio-politics emphasises the destruction of the caste system and all the other undemocratic/inegalitarian values, customs and institutions associated with it.
- The importance of these struggles lies in moving away from ‘caste-embodied individuals/groups’ to one of ‘casteless humans’.
- Indian society continues to witness movements of both the types – Sanskritisation as well as anti-caste struggles. Each of these processes requires a separate and also integrated study and analysis, taking into consideration socio-economic, cultural and political factors.



GS II

Geneva Conventions and the Russia-Ukraine war

(Source: [The Hindu](#))

Context: Russia's armed invasion of Ukraine starting February 24 has set off a steady escalation in hostilities on Ukrainian soil, and in many cases civilian infrastructure and non-combatants have been impacted. As the Russian military continues to sweep through the country marching on to the capital, Kyiv, there is growing concern surrounding the issue of human rights violations. Russian President Vladimir Putin has denied any responsibility for harm to civilians. However, as the evidence of casualties in the civilian population continues to mount, the world will increasingly look to the Geneva Conventions, a set of principles outlining norms for combatant behaviour during a war, for standards to which the invading Russian forces can be held. Ultimately, if there is a compelling case for prosecuting combatants for war crimes, crimes against humanity, genocide, and the crime of aggression, evidence could be collected for an investigation and trial at the International Criminal Court (ICC).

What are the Geneva Conventions guidelines during wartime?

- The Geneva Conventions are a set of four treaties, formalised in 1949, and three additional protocols, which codify widely accepted ethical and legal international standards for humanitarian treatment of those impacted by war.
- The focus of the Conventions is the treatment of non-combatants and prisoners of war, and not the use of conventional or biological and chemical weapons, the use of which is governed respectively by the Hague Conventions and the Geneva Protocol.
 - The First Geneva Convention protects wounded and sick soldiers on land during war. This convention extends to medical and religious personnel, medical units, and medical transport. While recognising distinctive emblems of these organisations, the convention has two annexes containing a draft agreement relating to hospital zones and a model identity card for medical and religious personnel.
 - The Second Geneva Convention protects wounded, sick and shipwrecked military personnel at sea during war. This convention also extends to hospital ships and medical transports by sea, with specific commentary on the treatment and protections for their personnel.
 - The Third Geneva Convention applies to prisoners of war, including a wide range of general protections such as humane treatment, maintenance and equality across prisoners, conditions of captivity, questioning and evacuation of prisoners, transit camps, food, clothing, medicines, hygiene and right to religious, intellectual, and physical activities of prisoners.
 - The Fourth Geneva Convention, which most imminently applies to the invasion of Ukraine by Russian military forces, protects civilians, including those in occupied territory. The other Geneva Conventions were concerned mainly with combatants rather than civilians. However, based on the experience of World War II, which demonstrated the horrific consequences of having no convention for the protection of civilians in wartime, the Fourth Convention comprising 159 articles outlines the norms for this critical dimension of conflict.
- Along with the Additional Protocols of 1977, the Fourth Convention expounds upon the general protection of populations against certain consequences of war, the conduct of hostilities and the status and treatment of protected persons, distinguishing between the situation of foreigners on the territory of one of the parties to the conflict and that of civilians in occupied territory.
- This convention also spells out the obligations of the occupying power vis-à-vis the civilian population and outlines detailed provisions on humanitarian relief for populations in occupied territory. As the

International Committee for the Red Cross, a key medical intermediary in such situations, explains, this convention also contains a specific regime for the treatment of civilian internees, including three annexes on hospital and safety zones, and model regulations on humanitarian relief.

Which countries are signatories?

- The Geneva Conventions have been ratified by 196 states, including all UN member states.
- The three Protocols have been ratified by 174, 169 and 79 states respectively.
- In 2019, perhaps anticipating the possibility of its invading Ukraine in the near future, Russia withdrew its declaration under Article 90 of Protocol 1, which states that “The High Contracting Parties may at the time of signing, ratifying or acceding to the Protocol, or at any other subsequent time, declare that they recognize ipso facto and without special agreement, in relation to any other High Contracting Party accepting the same obligation, the competence of the [International Fact-Finding] Commission to enquire into allegations by such other Party, as authorized by this Article.”
- By withdrawing this declaration, Russia has pre-emptively left itself with the option to refuse access by any international fact-finding missions to Russian entities, individuals or resources that might potentially, in Moscow’s reckoning, find Russia responsible for violations of the Geneva Conventions standards.
- Further, the four conventions and first two protocols of the Geneva Conventions were ratified by the Soviet Union, not Russia, hence there is a risk of the Russian government of the day disavowing any responsibility under the Conventions in toto.

What would be the steps for potential prosecution under the Conventions?

- Under Article 8 of the Rome Statute of the ICC, it is the ICC that has jurisdiction in respect of war crimes, in particular “when committed as part of a plan or policy or as part of a large-scale commission of such crimes.”
- Under the statute, ‘war crimes’ refers to “Grave breaches of the Geneva Conventions... [including] wilful killing, torture or inhuman treatment, including biological experiments; wilfully causing great suffering, or serious injury to body or health; extensive destruction and appropriation of property, not justified by military necessity and carried out unlawfully and wantonly; compelling a prisoner of war or other protected person to serve in the forces of a hostile Power; wilfully depriving a prisoner of war or other protected person of the rights of fair and regular trial; unlawful deportation or transfer or unlawful confinement; taking of hostages.”

What evidence of war crimes has been accumulated so far?

- U.S. Vice President Kamala Harris called for an investigation into allegations of Russia committing war crimes in Ukraine, citing as example the bombing of a maternity hospital in the southern city of Mariupol. Similarly, there has been photographic and video evidence of lethal firing on civilians trying to escape across a damaged bridge in Irpin, near Kyiv; and hours of cell phone videos of bombed-out schools, houses, and apartment buildings across Ukraine.
- However, analysts have argued that much of such evidence does not answer the central question of any war crime prosecution: who ordered which crime? The evidence that is required to answer this question, if it is recoverable, will come from the mobile phones and other communications equipment of Russian soldiers, which would typically include information on orders received from commanding officers, and video or audio evidence of attacks executed and the aftermath.
- To examine any such evidence emerging, on February 28 the ICC opened a war crimes investigation under its prosecutor, Karim Khan.

To what extent have Geneva Conventions been upheld worldwide in recent years?

- On the 70th anniversary of the Conventions’ adoption, Amnesty International, a human rights advocacy group, noted in 2019 that there has been a “blatant disregard for civilian protection and international

humanitarian law in armed conflicts where four of the five permanent members of the UN Security Council are parties – Russia, the U.S., the U.K. and France.”

- Specifically, Amnesty cited the U.S.-led coalition’s bombing of Raqqa in Syria, which left more than 1,600 civilians dead; destruction of civilian infrastructure and lives in Aleppo and Idlib by Russian forces, leading to mass displacement of millions; and the war in Yemen where the Saudi Arabia and the UAE-led coalition, backed by the West, killed and injured thousands of civilians, fuelling a full-blown humanitarian crisis.
- These cases underscore the grim fact that the Geneva Conventions, even when backed by rulings of the ICC, cannot be enforced by third parties to any conflict. However, they have in the past proved effective at raising global awareness of human rights violations across conflict zones, and in some cases led to sanctions or trade embargoes against the belligerents.

Fragmenting world order, untied nations

(Source: [The Hindu](#))

Context: *Nearly three weeks into the Russian war on Ukraine, the cost to India is still to be counted. While some are focusing on how India’s refusal to criticise Russia’s actions, and the string of abstentions at the United Nations, would affect its relations with the West and its Quad partners (the United States, Australia and Japan), others are watching the economic costs that the unprecedented sanctions of the U.S. and the European Union will have on Indian trade, energy and defence purchases. However, the outcome that should worry New Delhi and other like-minded countries the most, apart from the devastating consequences for the Ukrainian nation, is the impact the Ukraine crisis is having on the global world order, which is fragmenting in every respect of global interconnectedness — in terms of international cooperation, security, military use, economic order, and even cultural ties.*

The UN and Security Council

- To begin with, the global order has broken down and events in Ukraine have exposed the United Nations and the Security Council for their complete ineffectiveness.
- Russia’s actions in Ukraine may, in terms of refusing to seek an international mandate, seem no different from the war by the United States in Iraq in 2003, Israel’s bombing of Lebanon in 2006 and the Saudi-coalition’s attacks of Yemen in 2015.
- But Ukraine is in fact a bigger blow to the post-World War order than any other. The direct missile strikes and bombing of Ukrainian cities every day, exacting both military and civilian casualties, and the creation of millions of refugees, run counter to every line of the UN Charter preamble, i.e. “to save succeeding generations from the scourge of war...”, “to practice tolerance and live together in peace with one another as good neighbours”, as well as Articles 1 and 2 of the ‘Purposes and Principles’ of the United Nations (Chapter 1).
- The fact that Russian President Vladimir Putin broadcast his decision to “launch military operations” on Ukraine at the same time the Russian envoy to the United Nations was presiding over a UN Security Council discussion on the Ukraine crisis, speaks volumes for the respect the P-5 member felt for the proceedings.
- A vote of the international commons, or the UN General Assembly (UNGA), that decried Moscow’s actions, was brushed off in a way that was even easier than when the U.S. did when it lost the UNGA vote in 2017 over its decision to move the U.S. Embassy to Jerusalem.
- Meanwhile, in their responses, other P-5 members such as the United States, the United Kingdom and France did not seek to strengthen the global order either, imposing sanctions unilaterally rather than attempting to bring them to the UN.

- Clearly, Russia would have vetoed any punitive measures, but that should not have stopped the attempt. Nor are the surge in weapons transfers to Ukraine a vote of confidence in the UN's power to effect a truce.

Whither nuclear safeguards

- The next point is Russian recklessness with regard to nuclear safety in a country that has suffered the worst impacts of poor safety and planning following the 1986 Chernobyl disaster (when Ukraine was part of the Soviet Union), which is a challenge to the global nuclear order.
- Russian military's moves to target areas near Chernobyl and shell buildings near the Zaporizhzhia nuclear power plant (also Europe's largest), show an alarming nonchalance towards safeguards in place over several decades, after the U.S.'s detonation of atomic bombs over Hiroshima and Nagasaki in 1945 led to the establishment of the International Atomic Energy Agency (IAEA) in 1956.
- The world must also consider the cost to the nuclear non-proliferation regime's credibility: Ukraine and Libya that willingly gave up nuclear programmes have been invaded, while regimes such as Iran and North Korea can defy the global order because they have held on to their nuclear deterrents.
- There are also the covenants agreed upon during the global war on terrorism, which have been degraded, with the use of non-state actors in the Ukraine crisis. For years, pro-Russia armed militia operated in the Donbas regions, challenging the writ of the government in Kyiv.
- With the arrival of Russian troops, the Ukrainian President, Volodymyr Zelensky, has invited all foreign fighters who are volunteering to support his forces to the country. This seeks to mirror the "International Brigades" in the Spanish Civil War of the 1930s, comprising foreign volunteers from about 50 countries against forces of Spanish military ruler Francisco Franco.
- However, the role of foreign fighters has taken on a more sinister meaning after 2001 and al Qaeda, when western recruits joined the Islamic State to fight Syrian President Assad's forces.
- British Foreign Secretary Liz Truss's recent statement that she would "absolutely support" British veterans and volunteers joining the Ukraine war against Russia has since been reversed by the British Foreign Office, and it is hoped that other countries around the world, including India, make firm efforts towards preventing such "non-state actors" from joining a foreign war.

Economic actions

- Economic sanctions by the U.S., the U.K. and the European Union (EU) also point to a fragmentation of the global financial order. While analysts have pointed out that the sanctions announced so far do not include some of Russia's biggest banks such as Sberbank and Gazprombank and energy agencies (in order to avoid the disruption of oil and gas from Russia), the intent to cut Russia out of all monetary and financial systems remains.
- From the eviction of Russia from SWIFT payments, to the cancellation of Mastercard, Visa, American Express and Paypal, to the sanctioning of specific Russian businesses and oligarchs and pressure on Western businesses (McDonalds, Coca-Cola, Pepsi, etc.) operating in Russia to shut down, the arbitrary and unilateral nature of western sanctions rub against the international financial order set up under the World Trade Organization (that replaced the General Agreement on Tariffs and Trade, or GATT).
- The obvious fallout of this "economic cancel culture" will, without doubt, be a reaction — a pushback from Russia and an exploration of alternative trading arrangements with countries such as China, India and much of the Eastern Hemisphere which continue to trade with Moscow.
- For the S-400 missile defence deal, for example, New Delhi used a rupee-rouble mechanism and banks that were immunised from the U.S.'s CAATSA sanctions (or Countering America's Adversaries Through Sanctions Act) for advance payments. Russian banks will now use the Chinese "UnionPay" for online transactions.
- Gradually, the world may see a "non-dollar" system emerge which would run banking, fintech and credit systems separately from the "dollar world".



Isolation by culture

- Finally, there is the western objective, to “isolate” Russia, socially and culturally, that rails against the global liberal order. While several governments including the U.S., the U.K. and Germany have persistently said that their quarrel is not with Russian citizens but with their leadership, it is clear that most of their actions will hurt the average Russian citizen.
- The EU’s ban of all Russian-owned, Russian-controlled or Russian-registered planes from EU airspace, and Aeroflot’s cancellation of international routes, will ensure that travel to and from Russia is severely curtailed. Some of this isolation of its citizens will work to the favour of an increasingly authoritarian Kremlin.
- Mr. Putin’s response to the banning of Russian channels in Europe and its allies has been to use the western media ban as a pretext to ban opposition-friendly Russian channels as well.
- The “isolation” extends to art and music: in the past two weeks the Munich Philharmonic fired its chief conductor and New York’s Metropolitan Opera let a Russian soprano, Anna Netrebko, go because they would not criticise the war. The Bolshoi Ballet’s performances in London and Madrid were similarly cancelled.
- The perils of this comprehensive boycott of Russia are not without historical precedent. Speaking to his Parliament this week, Mr. Zelensky invoked British Prime Minister Winston Churchill’s “Fight to the End” speech, delivered at the House of Commons in June 1940, to speak about Ukraine’s commitment to fight Russia.
- European onlookers would do well to also remember Churchill’s other famous speech, “The Sinews of Peace”, delivered in the United States in 1946, when he first referred to the “Iron curtain coming down” between Soviet Russia and Western Europe.
- “The safety of the world requires a new unity in Europe, from which no nation should be permanently outcast,” Churchill had warned, although his words went in vain and the world suffered the consequences of the Cold War for the next four decades.

New Delhi needs to ponder

- The events over the past two weeks, set in motion by Russia’s declaration of war on Ukraine, have no doubt reversed many of the ideas of 1945 and 1990, fragmenting the international order established with the UN, ushering in an era of deglobalisation and bringing down another Iron Curtain.
- India’s abstentionist responses and its desire not to be critical of any of the actions taken by the big powers might keep Indians safe in the short term.
- But in the long term, it is only those nations that move proactively to uphold, strengthen and reinvent the global order that will make the world a safer place, even as this war that promises few winners rages on.

Towards inclusive education

(Source: [The Hindu](#))

Context: *The Rights of Persons with Disabilities Act, 2016 guarantees to every disabled person a large bouquet of rights and entitlements. But the reality that disabled persons confront in their everyday lives is far removed from the law’s progressive vision. The Supreme Court judgment in Avni Prakash v. National Testing Agency (2021) is emblematic of this gap. As the appellant’s answer book during an exam was snatched away, due to the testing authority’s confusion and the centre’s callousness, she did not get an hour of extra time to which she was legally entitled. The Court had to remind the competent authorities about their duty to provide her reasonable accommodation and inclusive education. Against this backdrop, the draft accessibility guidelines and standards for Higher Education Institutions (HEIs) and Universities released by the University Grants Commission (UGC) are a welcome intervention.*



A procedural flaw

- The way in which the guidelines were released, however, left much to be desired. The public notice preceding the guidelines was inaccessible to persons with visual disabilities. This was because the notice appears to have been printed and poorly scanned.
- If the document had been a digital document, authenticated by the digital signature of the competent authority, it would have been fully accessible.
- Worse still, the same problem was seen late last year in the public notice released by the Union Home Ministry with respect to its guidelines on creating disabled-friendly infrastructure and the guidelines released by the Civil Aviation Ministry on making air travel more disabled-friendly.
- The suggestions in the guidelines are capacious in scope and breathtaking in ambition. What the guidelines ignore, however, is that disabled students are neglected and sidelined at worst or grudgingly accepted at best in universities. The guidelines have to be realistic.
- Crucially, each chapter of the guidelines should be followed by a checklist that distils the key action items contained in that chapter. Further, the checklist should divide these action items into those that must be immediately implemented (for example, accessibility to Information and Communication Technologies and making learning materials available in accessible formats) and those that must be implemented progressively (for example, accessibility to extracurricular activities).
- Further, the compliance of HEIs with this checklist must be monitored by the UGC, by requiring HEIs to submit a compliance report on an annual basis (instead of a self-certification mechanism). The UGC should also be empowered to take disciplinary action against HEIs not complying with the guidelines.

Assessment of disability-based needs

- An assessment of the needs of persons with diverse disabilities should be conducted on an annual or biannual basis by the Equal Opportunity Cell/Enabling Unit to devise and thereafter revise the institutional plan for inclusion of students with disabilities.
- Such an assessment will equip the administration to undertake specific need-based interventions. The assessment must be in the form of hearings in which the plan's content or implementation can be discussed.
- Further, when a student with a disability joins an HEI, the HEI should conduct an assessment of their disability-based needs. On this basis, a plan should be drawn up to fulfil those needs.
- Each HEI must maintain data on students with disabilities, on the basis of parameters such as applications, enrolment, retention and participation of students in academic and non-academic activities.
- Finally, the guidelines should provide for a redress mechanism along the lines of the Rights of Persons with Disabilities Rules, 2017. The mechanism may be resorted to by aggrieved persons with disabilities in case the concerned HIE does not implement or violates the UGC guidelines.
- The District Education Officer referred to in Rule 7 of the Rules can be empowered to deal with any such infractions. Likewise, the UGC can consider instituting a mechanism for affected persons with disabilities to file complaints about the violation of these guidelines. Such complaints must be dealt with within a time-bound fashion.
- A separate chapter should be added to the guidelines which comprehensively outlines the modalities of the grievance redress mechanism.
- In sum, for the disabled, high-quality education represents a unique pathway for empowerment and meaningful participation in society. If modified suitably, these guidelines can serve as a catalyst to unlock this transformative potential for every student with disability pursuing higher education.

GS III

Clean energy must use the battery of a circular economy

(Source: [The Hindu](#))

Context: In the Budget speech this year, the Finance Minister, Nirmala Sitharaman, emphasised the role of cleaner technologies such as solar energy and batteries in India's future economic growth. In addition, she mentioned the importance of transitioning to a circular economy from the existing linear one.

Market estimates

- The call for a creation of a circular economy is significant since an efficient waste management ecosystem would be necessary to manage the enormous waste generated by renewable energy projects in the coming decades.
- According to the International Renewable Energy Agency (IRENA) — an intergovernmental organisation that supports countries in their transition to a sustainable energy future — the cumulative waste generated by India's total installed solar capacity could be as high as 325 kilotonnes by 2030.
- A consulting firm, JMK Research and Analytics, estimates that the market for battery recycling will be around 23 Gigawatt hours (GWh) by 2030. The prevalence of a circular economy could also partially insulate these industries from potential supply chain shocks triggered by extraneous developments.
- A study by the Council on Energy, Environment and Water (CEEW) has estimated that India would need over 5,630 GW of solar and 1,792 GW of wind energy to achieve its net-zero target in the year 2070.
- A robust renewables waste management and recycling ecosystem could help people and India reduce environmental harm, provide energy security, and also create new jobs. So, here are six steps to nurture a circular economy in the Indian renewable energy industry.

A clear framework

- First, policymakers should revise existing electronic waste management rules to bring various clean energy components under their ambit.
 - These rules are based on extended producer responsibility that identifies component producers as responsible entities to manage their waste products. The Indian renewable energy industry has a complex structure that comprises various manufacturers, assemblers, importers and distributors.
 - Hence, the revised regulations should clearly define the responsibilities of various stakeholders involved in the renewable energy value chain and provide annual targets for the collection and the recycling of waste.
- Second, dumping and burning of different components should be banned. Currently, in the absence of any regulation, landfilling is the cheapest and most common practice to manage renewable energy waste.
 - However, it is not environmentally sustainable. All clean energy technologies thrive on metals and non-metals with different levels of toxicity.
 - If the waste equipment is dumped in the open, then these elements could leach into the environment and enter the food chain.
 - Studies show that the leaching of heavy metals such as lead and cadmium from solar photovoltaic modules could increase by 90% and 40%, respectively, under acidic conditions.
 - Further, burning the polymeric encapsulant layer in solar photovoltaic modules releases toxic gases such as sulphur dioxide and some volatile organic compounds.
- Third, the renewable energy industry should invest in the research and development of recycling technologies. Recycling is a multistep process that includes dismantling, disassembly, and extraction. Dismantling is largely a manual process that is sometimes automated.



- Disassembly can be done mechanically, thermally or chemically.
- Besides these traditional methods, investments in research and development could help discover new ways of recycling that result in higher efficiency and a less environmentally damaging footprint.
- Industries should also explore technology transfers with global recycling firms for establishing domestic waste recycling facilities. For instance, efficient metal recovery from waste provides a resilient supply of raw material for the renewable energy manufacturing industry.
- Fourth, there has to be a creation of innovative financing routes for waste management. Access to finance is a major roadblock for players in the recycling ecosystem.
 - The central government should nudge public and private sector banks to charge lower interest rates on loans disbursed for setting up renewable energy waste recycling facilities. Assurance of a minimum waste quantum to run these facilities and issuing performance-based green certificates to recyclers that could be traded to raise money for waste management would also help ease the financial burden.
 - A market for recycled materials could also be created through mandatory procurement by the renewable energy and other relevant manufacturing industries.
- Fifth, there needs to be an improvement in product design and quality.
 - Renewable energy component manufacturers should find substitutes for toxic metals such as cadmium and lead used in their products and simplify product designs to reduce recycling steps.
 - Such improvements in process efficiencies could go a long way in curbing waste creation at the source and its subsequent impact on the environment.
- Six, the Union and State governments should set stringent quality control standards for components used in their tenders. This will prevent premature end-of-life of components, and consequent waste creation.
 - Substandard components generate considerable waste due to early life damage that is often irreplaceable, and the components often have to be discarded. Such quality enforcement could also position India's renewable energy industry as a global supplier of quality products.

Largely in the informal sector

- The renewable energy recycling ecosystem has a complex structure where there are multiple actors involved, but it would be an integral part of our journey toward a sustainable future.
- Beyond sustainability, it would also offer quality employment opportunities for the future generations as new jobs would be created across the entire value chain of waste management and recycling.
- Further, workers in the informal sector could access various socio-economic benefits and look forward to an improved quality of life.
- We ought to remember that the majority of India's recycling sector is informal and workers have to work in unsafe environments without standardised wages.
- Therefore, developing an efficient renewable energy waste management and circular ecosystem is imperative rather than a choice. We can ignore this, but only at our own peril.

The functioning of the ISS after sanctions

(Source: [The Hindu](#))

Context: *The story so far: After Russia invaded Ukraine on February 24, the U.S. imposed sanctions on Russia including a ban on transfer of technology and on Russian banks. Following this, on March 3, the Russian space agency Roscosmos tweeted the following, "The State Corporation will not co-operate with Germany on joint experiments in the Russian segment of the International Space Station. Roscosmos will conduct them independently. The Russian space programme against the backdrop of sanctions will be*

adjusted, the priority will be creation of satellites in the interests of defence. Roscosmos will not service the remaining 24 R-180 engines in the United States, and stop supplying the R-181.

Details:

- According to a Reuters report, this was followed by a statement from the head of the Russian Space Agency — Roscosmos — Dmitry Rogozin on Telegram, where he demanded the lift of the sanctions, some of which predate Russia's invasion of Ukraine.
- He said that the sanctions could disrupt the functioning of the Russian spacecraft that serviced the International Space Station.
- This could lead to the Russian segment of the ISS, which helps in correcting the orbit of the ISS being affected. He said that this meant the ISS could fall into the sea or on the land.
- He further said that the Russian segment ensures that the space station's orbit is corrected to keep it away from space debris, roughly 11 times a year. He pointed out, publishing a map, that the ISS would likely crash down on some country, but most probably not Russia itself.

What is Russia's role in maintaining the ISS?

- The ISS is built with the co-operation of scientists from five international space agencies — NASA of the U.S., Roscosmos of Russia, JAXA of Japan, Canadian Space Agency and the European Space Agency. Each agency has a role to play and a share in the upkeep of the ISS.
- Both in terms of expense and effort, it is not a feat that a single country can support. Russia's part in the collaboration is the module responsible for making course corrections to the orbit of the ISS. They also ferry astronauts to the ISS from the Earth and back.
- Until SpaceX's dragon spacecraft came into the picture the Russian spacecrafts were the only way of reaching the ISS and returning.

Why does the orbit of the ISS need to be corrected?

- Due to its enormous weight and the ensuing drag, the ISS tends to sink from its orbit at a height of about 250 miles above the Earth. It has to be pushed up to its original line of motion every now and then.
- This is rather routine, even for smaller satellites, says Dr. Mylswamy Annadurai, former director of ISRO and presently Vice President of Tamil Nadu State Council for Science and Technology.
- Approximately once a month this effort has to be made. It is not necessarily a regular operation, and may be missed once and compensated for later.
- The other reason for altering the path of the ISS is to avoid its collision with space debris, which can damage the station.
- These manoeuvres need to be done as and when the debris is encountered.

What is the extent of effort and expense involved in this?

- Manoeuvring the ISS is expensive. In a year, 7-8 tonnes of fuel may need to be spent, with each manoeuvre costing nearly a tonne of fuel.
- If a manoeuvre is put off for later, the ISS may sink a little more and the delayed operation would cost more as a larger correction needs to be made.

If Russia should back out of the effort, are there spacecrafts that can substitute?

- There are right now two possibilities. SpaceX's dragon module and Boeing's Starliner can dock with the ISS. Starliner also has the capacity to carry, say, ten tonnes of fuel.

What is the likelihood of Russia backing out?

- Though there have been previous occasions when conflicts have risen between Russia and the U.S., the operation of the ISS has not been interrupted.

- Dr. Annadurai points out that there are two missions planned for March 18, and one astronaut is already there on site.
- The mission means to take up two Russians and an American astronaut, and the preparatory work is in progress. On March 30, it is planned that the mission will return an American astronaut to Earth from the ISS. These seem to be going on as per plan.
- “Going by the scientists’ mindset and that such a significant global effort must not go down the drain, my feeling is that scientists from both sides will work together and that this effort will not be in vain,” says Dr. Annadurai.

Is it true that Russia does not have the risk of the ISS crashing down on their country?

- The orbit of the ISS does not fly over the Russian territory mostly. Places that are closer to the equator run a greater risk of it falling in their domain.
- The orbit is at about 50 degrees and so most probably, the ISS will fall in that level. But this is only a probability, as it can move or disintegrate.
- But in case of this eventuality, people in the ISS will be brought back, modules can be detached thereby making it much smaller which will ensure that it disintegrates before touching the earth.

India’s solar capacity: Milestones and challenges

(Source: [The Hindu](https://www.thehindu.com/news/national/india-solar-capacity-milestones-and-challenges/article17444444.html))

Context: India added a record 10 Gigawatt (GW) of solar energy to its cumulative installed capacity in 2021. This has been the highest 12-month capacity addition, recording nearly a 200% year-on-year growth. India has now surpassed 50 GW of cumulative installed solar capacity, as on 28 February 2022. This is a milestone in India’s journey towards generating 500 GW from renewable energy by 2030, of which 300 GW is expected to come from solar power. India’s capacity additions rank the country fifth in solar power deployment, contributing nearly 6.5% to the global cumulative capacity of 709.68 GW.

Even as India continues down this impressive journey, there are some areas of concern to highlight. First, of the 50 GW installed solar capacity, an overwhelming 42 GW comes from ground-mounted solar photovoltaic (PV) systems, and only 6.48 GW comes from roof top solar (RTS); and 1.48 GW from off-grid solar PV.

Why is India falling short in roof-top solar installations?

- The steep rise in large, ground-mounted solar energy is indicative of the strong push towards increasing the share of utility-scale solar projects across the country.
- RTS deployment stands at 6.48 GW in 2021, far short on the Union Government’s target of 40 GW of RTS by end 2022.
- The large-scale solar PV focus fails to exploit the many benefits of decentralised renewable energy (DRE) options, including reduction in transmission and distribution (T&D) losses.
- One of the primary benefits of solar PV technology is that it can be installed at the point of consumption, significantly reducing the need for large capital-intensive transmission infrastructure. This is not an either/or situation; India needs to deploy both large and smaller-scale solar PV, and particularly needs to expand RTS efforts.
- However, there is limited financing for residential consumers and Small and Medium Enterprises (SMEs) who want to install RTS. Coupled with lukewarm responses from electricity distribution companies (DISCOMS) to supporting net metering, RTS continues to see low uptake across the country.

Governments, utilities, and banks will need to explore innovative financial mechanisms that bring down the cost of loans and reduce the risk of investment for lenders.

- Increased awareness, and affordable finance for RTS projects could potentially ensure the spread of RTS across the scores of SMEs and homes around the country. Aggregating roof spaces could also help reduce overall costs of RTS installations and enable developing economies of scale.

What are the challenges to India's solar power capacity addition?

- Despite significant growth in the installed solar capacity, the contribution of solar energy to the country's power generation has not grown at the same pace.
- In 2019-20, for instance, solar power contributed only 3.6% (50 billion units) of India's total power generation of 1390 BU.
- The utility-scale solar PV sector continues to face challenges like land costs, high T&D losses and other inefficiencies, and grid integration challenges.
- There have also been conflicts with local communities and biodiversity protection norms. Also, while India has achieved record low tariffs for solar power generation in the utility-scale segment, this has not translated into cheaper power for end-consumers.

What's the state of India's domestic solar module manufacturing capacity?

- Domestic manufacturing capacities in the solar sector do not match up to the present potential demand for solar power in the country. Crisil's report on the subject highlights that as on March 31, 2021, India had 3 GW capacity for solar cell production and 8 GW for solar panel production capacity.
- Moreover, backward integration in the solar value chain is absent as India has no capacity for manufacturing solar wafers and polysilicon. In 2021-22, India imported nearly \$76.62 billion worth solar cells and modules from China alone, accounting for 78.6% of India's total imports that year.
- Low manufacturing capacities, coupled with cheaper imports from China have rendered Indian products uncompetitive in the domestic market.
- This situation can, however, be corrected if India embraces a circular economy model for solar systems. This would allow solar PV waste to be recycled and reused in the solar PV supply chain.
- By the end of 2030, India will likely produce nearly 34,600 metric tonnes of solar PV waste. The International Renewable Energy Agency (IRENA) estimates that the global value of recoverable materials from solar PV waste could exceed \$15 billion.
- Currently, only the European Union has taken decisive steps in managing solar PV waste. India could look at developing appropriate guidelines around Extended Producer Responsibility (EPR), which means holding manufacturers accountable for the entire life cycle of solar PV products and creating standards for waste recycling.
- This could give domestic manufacturers a competitive edge and go a long way in addressing waste management and supply side constraints.

What are the key takeaways from India's solar story?

- India has grown from strength to strength in overcoming barriers to achieve the 50 GW milestone in Feb 2022. The destination is clear, and the journey is progressing.
- As India attempts to deal with some of the shortcomings identified above, India's solar story will continue to provide important lessons for other developing countries that are looking to transition to clean energy.
- In addition to an impressive domestic track record, through the International Solar Alliance (ISA) established by India and France at COP-21 in 2015, there is a global platform to bring countries together to facilitate collaboration on issues such as mobilising investments, capacity building, program support and advocacy and analytics on solar energy.
- Technology sharing and finance could also become important aspects of ISA in the future, allowing a meaningful cooperation between countries in the solar energy sector.

Yuan as a reference currency for interim oil trade

(Source: [The Hindu](#))

Context: *India and Russia are said to be considering the use of the Chinese yuan as the reference currency to facilitate oil trade between the two countries. This news comes in the backdrop of economic sanctions imposed by the West against Russia after the Russian military invaded Ukraine late last month.*

Why is Russia trying to sell oil to India?

- Russia has been trying to sell oil at a significant discount to India as demand for Russian oil has dropped since the U.S. and Europe imposed sanctions last month.
- Although there is no outright ban yet on the purchase of Russian energy exports, many energy traders have been reluctant to purchase Russian energy and sell it. Traders fear that the United States may impose further sanctions if the war in Ukraine intensifies and that this may leave them holding energy inventory that they cannot sell.
- As part of Western sanctions, certain Russian banks were removed from the SWIFT payments system, thus affecting Russia's ability to trade with the rest of the world. Russian businesses have been unable to pay for imports and Russian consumers have been unable to purchase goods.
- The Russian central bank's foreign reserves were also frozen, which in turn has dented the Bank of Russia's ability to use its foreign reserves to defend its currency.
- The Russian rouble has lost about a quarter of its value against the U.S. dollar since the invasion. U.S. President Joe Biden, earlier this month, also banned Russian energy imports into the United States.

Why use the Chinese yuan instead of the U.S. dollar for oil trade?

- Major oil producers have for decades sold their produce to foreign buyers in exchange for U.S. dollars. Oil sellers have been willing to accept U.S. dollars for their oil because the currency is widely accepted in the global market for goods and services.
- It should be noted that the value and the acceptability of any currency depend mainly on its purchasing power, that is, the amount of goods and services that can be bought using it. For a long time, the U.S. has been an economic powerhouse creating valuable goods and services.
- So, people around the world have been willing to sell their goods and services for U.S. dollars in the hope that they can use these dollars to purchase valuable American goods and services.
- The U.S. government has made use of this economic advantage to further its foreign policy goals. Since global trade that is carried out using dollars is cleared by banks located in the United States, the U.S. government has the power to freeze dollars that belong to its adversaries which then debilitates economies.
- To avoid this risk, many countries have been looking at alternatives to the U.S. dollar to carry out international trade. Of late, China has emerged as a significant economic power and this in turn has boosted the value of the yuan in the eyes of people and made it an increasingly acceptable currency for global trade.
- However, it should be noted that only about 3% of global trade is facilitated by the Chinese yuan while almost 90% of global trade still happens through the use of U.S. dollars.

What lies ahead?

- It is unclear at the moment what using the Chinese yuan as reference currency would entail. It could simply just mean that the value of trade that happens between Russia and India will be quoted in terms of the yuan without the Chinese currency actually being used in bilateral trade.



- Or it could mean the yuan is actually used to facilitate trade between the two countries. Since neither the rouble nor the Indian rupee is widely accepted as a global currency for trade, this can lead to problems when there is a trade imbalance.
- In 2021, Russia's exports to India were valued at \$6.9 billion while India's exports to Russia stood at only \$3.3 billion. This represents a trade surplus of over \$3 billion in favour of Russia.
- If Russia were to accept the rupee instead of the dollar in bilateral trade, it would be hard for it to get rid of its excess rupee holdings. This is since the rupee's acceptability in global trade is minuscule compared to that of the dollar. The use of the yuan, which is more widely accepted, can help solve the problem.
- The use of the dollar as a financial weapon against Russia, as was evident with the freezing of dollar assets held by the Bank of Russia last month and other sanctions on Russian banks, can also accelerate efforts by countries to reduce their dependence on the U.S. dollar.
- Countries may want to hold fewer dollars and euros and instead opt for alternative trade arrangements that involve the use of emerging currencies such as the yuan.
- This could portend a fall in the status of the dollar over time unless the U.S. manages to maintain its current status as the most dominant economic superpower.

Current Affairs Quiz

1) Consider the following statements with respect to cellulose:

1. Cellulose is a naturally occurring polymer obtained only from, lintens adhering to cotton seeds.
2. Cellulose acetate a semi-synthetic polymer is the major component of cigarette butts.

Which of the above statements is/are correct?

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

Answer : c

2) Which of the following statements is/are correct regarding Manual Scavenging?

1. The definition of manual scavengers also include people employed to clean septic tanks, ditches, or railway tracks.
2. The Manual Scavengers and their Rehabilitation Act bans the use of any individual for manually handling the human excreta for its disposal.

Codes:

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

Answer : c

3) Consider the following statements with respect GDP:

1. Higher levels of fiscal deficit results in fewer loanable funds being available in the market for the private sector to get a new loan.
2. The investments by private firms and governments to build new productive assets are the second-biggest engine of GDP growth in India.

Which of the above statements is/are correct?

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

Answer : c

4) Which of the following statements is/are correct with respect to the Man-Portable Air Defence Systems (MANPADS)?

1. It is a long-range, lightweight, and portable air-to-surface missile, that can be shoulder-fired by an individual.
2. They have a maximum range of 30kms and can engage targets at altitudes of 4.5kms.
3. They have a fire and forget guidance system, meaning the operator is not required to guide the missile to its target.

Which of the above statements is/are correct?

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

Answer : c

They are short-range, lightweight, and portable surface-to-air missiles that can be fired by individuals or small groups to destroy aircraft or helicopters.

5) Consider the following statements with respect to floodplain zoning policy:

1. The policy aims to delineate and demarcate the flood plains in the country.
2. Only the states of Manipur, Rajasthan, Uttarakhand, and the erstwhile State of Jammu and Kashmir had enacted the policy.

Which of the above statements is/are correct?

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

Answer : c

6) Consider the following statements:

1. The Mandakini river in Uttarakhand is a tributary of the Alaknanda River.
2. The Mandakini river passes through the Kedarnath and Badrinath temples.
3. The Chorabari glacier is the single source of the Mandakini river.

Which of the above statements is/are correct?

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

Answer : b

Alaknanda is one of the two main streams of the Ganges River and it joins the Ganges in Devprayag, along with the river Bhagirathi. It is considered sacred as the river passed through Kedarnath temple only.

7) Consider the following statements regarding the (PMMSY):

1. The Pradhan Mantri Matsya Sampada Yojana is implemented by the Ministry of fisheries, Animal Husbandry, and Dairying.
2. It will be implemented as an umbrella scheme with both forms such as central sector scheme and centrally sponsored scheme.

Which of the above statements is/are correct?

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

Answer : c

8) Consider the following statements:

1. Gallium Nitride is used as a component in the Cathode Ray Tube (CRT) in LED Televisions.
2. China is the world's largest producer of raw Gallium.
3. Raw Gallium is a liquid fuel used as a coolant in space flights and emits blue colour vapours when heated.

Which of the above statements is/are correct?

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

Answer : c

Raw gallium, a soft, bluish metal used in making chipsets for generating high-frequency radio waves in 5G base stations.

Gallium Nitride is used in semiconductor power devices, RF components, lasers, and photonics.

9) Consider the following statements:

1. The Centre should consult states before introducing bills on items in the concurrent list through inter-state council.
2. Article 365 should be sparingly used only at events of political crisis, internal subversion, physical breakdown, and non-compliance with the constitutional directives of the Centre.
3. The pre-poll alliance is to be regarded as one single political party.

Which of the above are the recommendations of the Punchii Commission?

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

Answer : b

The Commission recommended that:

- There should be clear guidelines on the chief ministers' appointment so that the discretionary powers of the governor are limited in this regard.
- A pre-poll alliance is to be regarded as one political party.
- Order of precedence informing state government:
- The group/alliance with the largest pre-poll alliance with the highest number.
- The single largest party with support from others.
- The post-poll alliance with a few parties joining the government.
- The post-poll alliance with a few parties joining the government and remaining including independents giving outside support.

10) Which of the following statements is/are correct with respect to PM-DAKSH Yojana?

1. The scheme was launched by the Ministry of Social Justice and Empowerment.
2. It aims to make the skill development schemes accessible to the target groups - Backward Classes, Scheduled Castes, and Safai Karamcharis.

Codes:

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

Answer : c

11) Consider the following statements with respect to the Consumer Price Index:

1. The Consumer Price Index (CPI) does not measure things like savings and investments and spending by foreign visitors.
2. Recreation and Transportation are also covered when calculating the CPI.

Which of the above statements is/are correct?

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

Answer : c

12) Which of the following statements is/are correct regarding a war criminal?

1. The term applies to anyone who violates a set of rules under the law of armed conflict.

2. The law of armed conflict governs how countries behave in times of war, is part of the Geneva Conventions.
3. Both the International Court of Justice and the International Criminal Court have jurisdiction over war crimes.

Code:

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

Answer : a

Only the International Criminal Court (ICC) has jurisdiction over war crimes.

13) Which of the following statements is/are correct regarding Daylight Saving Time (DST)?

1. It is a mechanism observed biannually on World Earth Day and on World Environment Day, to reduce consumption of energy.
2. It involves resetting clocks behind by an hour in spring, and ahead by an hour in autumn.

Codes:

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

Answer : d

It involves resetting clocks ahead by an hour in spring, and behind by an hour in autumn, and those in favor of DST argue that it means a longer evening daytime. Daylight Saving Time (DST) in the USA starts on the second Sunday in March and ends on the first Sunday in November.

14) Breach of the inflation target implies-

1. The average inflation is more than the upper tolerance level of the inflation target for any three consecutive quarters.
2. The average inflation is less than the lower tolerance level for any three consecutive quarters.

Choose the correct option.

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

Answer : c

15) Consider the following statements with respect to the Convention on Biological Diversity (CBD):

1. The Cartagena protocol under this convention governs the movement of living modified organisms (LMOs) from one country to another.
2. The CBD is a legally binding treaty, and except for the US, all other countries have ratified the treaty.
3. The CBD operates under the aegis of the United Nations Environment Programme (UNEP).

Which of the above statements is/are correct?

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

Answer : d

16) Consider the following statements:



1. Sealed Cover Jurisprudence is the practice of accepting the information in a sealed envelope from the government agencies.
2. Sealed Cover Jurisprudence can only be initiated by the Supreme Court of India.
3. Such envelopes can only be accessed by the judges, and there is a specific law that defines the doctrine of sealed covers.

Which of the above statements is/are correct?

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

Answer : b

It is a practice used by the Supreme Court and sometimes lower courts.

A specific law does not define the doctrine of sealed cover.

17) The Digital Payments Index (DPI) is released by

- a) NITI Aayog
- b) Ministry of Statistics
- c) Reserve Bank of India
- d) World Bank

Answer: c)

18) Consider the following statements regarding Exercise Milan.

1. It is held annually at Port Blair in Andaman and Nicobar.
2. Milan 2022 was the largest edition of the exercise.

Which of the above statements is/are correct?

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

Answer: b)

Earlier, the exercise was held at Port Blair in Andaman and Nicobar but this edition was shifted to Visakhapatnam.

19) Which of the following statements is/are correct regarding the Delimitation Commission?

1. The Delimitation Commission is appointed by the President of India and works in collaboration with the Election Commission of India.
2. It aims to determine the number and boundaries of constituencies to make population of all constituencies nearly equal.
3. Its orders are not final and it can be questioned only before Supreme Court of India.

Codes:

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

Answer: b)

The Constitution mandates that its orders are final and cannot be questioned before any court as it would hold up an election indefinitely.

20) Consider the following statements regarding Exchange Traded Funds (ETF).

1. ETFs are passive funds listed and traded on stock exchanges like shares.



2. In an ETF, one can buy and sell units at prevailing market price on a real time basis during market hours.

Which of the above statements is/are correct?

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

Answer: c)

