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G.S PAPER I

1. SOCIETY

Why the emergency response units are needed to ensure safety of sanitation workers in the country? Explain

KEY POINTS

PEMSR ACT, 2013

- The Prohibition of Employment as Manual Scavengers and their Rehabilitation (PEMSR) Act came into force in 2013. The law prohibits employing manual scavengers, manual cleaning of sewers and septic tanks without protective equipment and construction of insanitary latrines.

Emergency Response Sanitation Unit (ERSU)

- In its directive on the setting up of ERSUs, the state government said the municipal commissioner of the civic body concerned will be the Responsible Sanitation Authority (RSA).
- The ERSU should be headed by a senior civic officer and other civic officers should be on the ERSU advisory board to decide the standard operating procedure (SoP) for workers who enter manholes for cleaning purposes.
- The civic body will also have to set up a dedicated toll-free number for the ERSU. The unit will impart training to sanitation workers. Only workers trained and certified by an ERSU will be able to clean sewers, but the priority will be on using machines to get such work done.
- In case a worker dies while cleaning a sewer, the civic body will have to hold an inquiry and register a police complaint.

Workshop on creating awareness on the issue

- The workshops will have sessions on laws pertaining to sanitation workers, the establishment of ERSUs and their roles, presentations on the latest equipment, machines and protective gear.
- Sanitation workers, NGOs, social organisations, housing society members and government officials have to participate in the workshops.

Do you think that evidence from Indian experiments show that liquor ban does not lead to desired changes? Comment

KEY POINTS

- Maharashtra, which has archaic laws of permits to drink (bars are called 'permit rooms') despite the fact that it has never been enforced. It now intends to enforce permit for small private parties at home.
- It's not alcohol but excessive and irresponsible intake of alcohol that is a matter of concern and should be addressed.
- There is a lot to learn from the US experience with respect to prohibition during the first half of the 20th century. It almost established that prohibition leads to an increase in organised crime. It also drives up corruption amongst law enforcement agencies and gives rise to illicit liquor trade.

- Prohibition did not solve the problem of alcohol consumption—it only drove it underground. In recent times Meghalaya, Mizoram, Nagaland and Manipur have also overturned years old prohibition policy due to its failure.
- A careful analysis will show that prohibition also does not win elections. Demand for prohibition comes from a highly vocal and visible, but small group of voters.
- Tax revenues from alcohol is a major part of any government's revenues. These enable the government to finance several public welfare schemes. Absence of these revenues severely impacts state's ability to run public welfare programmes.
- Bihar introduced complete prohibition in April 2016. While it certainly has led to reduction in alcohol consumption, the related social, economic, and administrative costs have been far too much to justify gains. Prohibition crippled the judicial administration.
- Policy makers should focus on framing laws which encourage responsible behavior and compliance. Drinking age should be made uniform across the country and no person below that should be permitted to buy alcohol.
- Tough laws should be made against drunken behaviour in public, domestic violence under influence, and drinking and driving. Besides, governments should set aside part of revenue earned from alcohol for social education, de-addiction, and community support.

2. HISTORY

Do you think that The Royal Indian Navy strike acted as a deathknell to the British empire in India?
Comment

KEY POINTS

A section of non-commissioned officers and sailors known as Ratings, serving in the Royal Indian Navy, mutinied against the British Officers. The mutiny started as a strike by the ratings to protest against the hardships regarding pay, food and racial discrimination.

Significance of RIN Mutiny

- This revolt was different from the other revolts in the sense that, after 1857 it was the first time that the British realized that the Royal Indian forces were no more obedient to the British commands.
- However, this was the first instance when the entire service joined the revolt.
- Another different feature of the mutiny was that it was directed against the British government and not against superior officers – not a single officer.
- It was immediately after this revolt that PM Atlee dispatched the Cabinet Mission to India, so it is also inferred that the mutiny hastened the process of transfer of power to India.
- It displayed that the armed forces no longer obeyed the British authority rather it was the nationalist leaders who held sway over them. The RIN revolt was seen as an event marking the end of British rule.

Conclusion

- It is one of the most important events in India's struggle for freedom, convincing the British government that it could no longer hold on to India.



3. GEOGRAPHY

What are jet streams? Discuss major jet streams which play crucial role in influencing the climate of India.

KEY POINTS

Jet streams are narrow bands of strong winds that flow over thousands of kilometres from west to east. Major jet streams are found near the upper levels of the atmosphere, around 9 to 16 km from the earth's surface, and can reach speeds of over 320 kph.

Influence of jet streams

- The western cyclonic disturbances which enter the Indian subcontinent from the west and the northwest during the winter months, originate over the Mediterranean Sea and are brought into India by the westerly jet stream.
- Meteorologists have found an interrelationship between the northward shift of the equatorial trough (ITCZ) and the withdrawal of the westerly jet stream from over the North Indian Plain.
- The easterly jet stream steers the tropical depressions into India. These depressions play a significant role in the distribution of monsoon rainfall over the Indian subcontinent. The tracks of these depressions are the areas of highest rainfall in India.
- The frequency at which these depressions visit India, their direction and intensity, all go a long way in determining the rainfall pattern during the southwest monsoon period.
- The easterly jet stream sets in along 15°N latitude only after the western jet stream has withdrawn itself from the region. This easterly jet stream is held responsible for the burst of the monsoon in India.

Recently Indian Scientists were on a expedition to Southern Ocean. Discuss the significance of the expedition. What are its implications for world climate and Indian monsoon?

KEY POINTS

Lessons on environment

The team from the Indian Institute of Tropical Meteorology, Pune, are collecting air and water samples from around 60 stations along the cruise track.

Significance

- A key objective of the mission is to quantify changes that are occurring and the impact of these changes on large-scale weather phenomenon, like the Indian monsoon, through tele-connection.
- Our study mainly aims to understand the influence of the Southern Ocean across eco-system and atmospheric changes and how it affects the tropical climate and weather conditions.
- To estimate how much carbon dioxide is going to those arctic regions, and how much is coming back.

World climate

- Study hydrodynamics and biogeochemistry of the Indian Ocean sector of the Southern Ocean; involves sampling sea water at different depths. This will help understand the formation of Antarctic bottom water.



- Observations of trace gases in the atmosphere, such as halogens and dimethyl sulphur from the ocean to the atmosphere. Will help improve parameterisations that are used in global models.
- Study of organisms called coccolithophores that have existed in the oceans for several million years; their concentrations in sediments will create a picture of past climate.
- Investigate atmospheric aerosols and their optical and radiative properties. Continuous measurements will quantify impact on Earth's climate.

Indian Monsoon

- Study the Southern Ocean's impact on Indian monsoons. Look for signs in sediment core taken from the bottom of the ocean.
- Dynamics of the food web in the Southern Ocean; important for safeguarding catch and planning sustainable fishing.

GS PAPER II

4. INDIAN POLITY

Not every disagreement between States and the Union is the same, and the Union must develop newer conventions to foster cooperation. In this context, analyse the implementation of National Register on Citizens.

KEY POINTS

- The Chief Ministers of at least 11 States have expressed their unwillingness to implement the National Register of Citizens (NRC).
- Two of these States, West Bengal and Kerala, have stayed all work on the National Population Register (NPR), which is the foundational register from which the NRC will be built.
- State governments have sufficient grounds to be concerned about the validity of the NPR.
- For example, Article 355 enjoins the Union to "... ensure that the government of every State is carried on in accordance with the provisions of this Constitution".
- When State governments raised concerns about the NPR, the Union insisted that States are under a constitutional duty to implement **laws** passed by Parliament – a position that a superficial reading of the Constitution may support.
- The NPR-NRC exercise is likely to place an undue burden on every single citizen of India.
- Compelling the most marginalised Indians to prove their citizenship under an arbitrary and obscure process is likely to cause widespread challenges to law and order.
- The Union, in compelling States to implement the NPR by ignoring the widespread dissent against it will be interfering with these exclusive powers of States.
- States, therefore, are entitled to more deference than mere reminders of their duty to obey Central laws.
- In abiding by their oaths, States may require the Union to find a constitutional way to fulfil its purported objective, by withholding cooperation in a federal scheme.
- The Union government can include States in how decisions are made and enforced, or it can depend on archaic emergency provisions to enforce its will.



The Election Commission of India's (ECI) new mechanism to allow voters to exercise their democratic right through a digital device is a leap forward in electoral reforms. Do you agree with this view? Comment

KEY POINTS

- The Election Commission of India (ECI) is collaborating with the Indian Institute of Technology, Madras (IIT-M), to work on technology that would allow voters to exercise their democratic right through a digital device..
- The current dispensation at the Centre has talked of making it easier for NRIs eligible to vote in Indian elections to register their electoral opinion—at present, they can only cast their vote at the Indian embassy in the country of their residence.
- A legislation to allow proxy voting for NRIs also didn't get much traction in Parliament. Digital voting will help overcome the problems of distance for NRI voters, and hesitations over proxy on part of the Indian legislature.
- It could even allow migrant workers within the country to cast their votes in polls in their native constituencies.
- Blockchain technology will ensure that voter identity is established while the vote is anonymised. This is the first time India will be experimenting with such technology.
- India can tap into the Aadhaar database, which has biometric information if voter ID cards are linked to the unique ID.
- The level of representation such digitally-mediated voting can facilitate, and the cost savings this could mean—from the drastically reduced need for security and other personnel deployment, booths, voting machines, power back-up, etc, especially in remote areas—make this an attractive proposition.
- However, the ECI must ensure that the system inspires the voters' faith; there will be doubts about whether the system is hack-proof and doesn't allow interference by enemy interests, whether it will preserve anonymity of the vote, and perhaps even whether the system will function as envisioned.

5. GOVERNMENT POLICIES

The Pradhan Mantri Fasal Bima Yojana must undergo a cost-benefit audit and be updated to allow for better crop insurance coverage. Examine

KEY POINTS

Despite large payouts, there is a negative perception regarding crop insurance schemes, primarily because there have been issues regarding claims assessment, settlement and quantum.

Quicker claims settlement

- There is a need to focus further on using technology to the desired extent through GPRS-enabled phones for conducting and managing large number of crop cutting experiments (CCEs) in a limited time period.
- Satellite imagery used systematically as in a pilot scheme can enable a reduction in the number of CCEs required.

Distribution and intermediation

- In the current top-down approach, the engagement of the farmers is limited while obtaining the coverage.
- By utilising a distribution network of the insurers and intermediaries, a better understanding can be developed and expectations rationalised.

Process improvements

- Mobile money and all payments systems should be integrated with the crop insurance coverage to enhance the ability of a farmer to take a crop insurance cover directly with some measure of flexibility.



Price risk

- Development of warehousing and cold chains and providing insurance coverage for the storage and deterioration of stocks can also contribute effectively to the reduction of price risk for farmers.

Utility for farmers

- The Rs 6000-payment under the PM-Kisan can additionally reimburse the insurance premium payment as an add-on, so that the farmer takes direct responsibility for obtaining the insurance coverage and protecting his income.

Small enterprises need other forms of support to play their vital role in increasing employment and incomes at the bottom of the pyramid. Discuss

KEY POINTS

- In India, which currently faces an unemployment problem, the informal sector provides the vast majority of opportunities both for its youth and for people coming off the farm to earn incomes.
- Small entrepreneurs gain from forming effective associations with their peers. They also benefit greatly from 'mentoring'. And, skills of small entrepreneurs and their employees are best developed on-the-job.

Reorienting policies

- The government and its policy advisers must stop denigrating the informal sector and trying to reduce its size. Informal enterprises provide the transition space for people who have insufficient skills and assets to join the formal sector.
- Policymakers must learn to support informal enterprises on their own terms. And they should not impose their own versions of formality on them for their own convenience.
- Therefore, voices of tiny entrepreneurs in the rural heartlands and on the fringes of Indian cities must be listened to while developing policies for 'ease of doing business'.
- Policymakers must learn how to speed up the process of learning within informal enterprises by developing their 'soft' skills.
- Raising of the size of enterprises (in terms of numbers of employees), hire and fire laws are already not applicable to the small sector, where the vast majority of enterprises employ less than 10 persons. Hence, there is an urgent need for labour reforms in other ways.
- The social security framework for all citizens must be strengthened, especially for those who have to scramble for work in the informal sector. Health insurance and availability of health services must be improved, and disability benefits and old-age pensions must be enhanced.

Do you think that there is a need to make crucial changes in National food security act to provide food security to desired population? Comment

KEY POINTS

- The counsel by a committee of secretaries to restrict the application of the National Food Security Act (NFSA) chiefly to the deserving sections of the population seems sound and logical.
- The most imprudent of these is the arbitrarily determined norm of covering about two-thirds of the entire population (75 per cent rural and 50 per cent urban) under this law. This seems too high considering that the poverty level is now much lower.
- Equally questionable is the stipulation of supplying foodgrains to the beneficiaries at just Rs 3 per kg for rice, Rs 2 for wheat and Rs 1 for coarse cereals and putting down these rates in the law itself.
- The recently released Economic Survey 2019-20 has also suggested such a move, acknowledging the shortcomings of the food security law and its adverse impact on the food economy.



- It wants the law to be confined to the bottom 20 per cent of the population. The others could be supplied grains under the normal public distribution system (PDS) at the prices linked to the cost of procurement.
- Another high-level committee, headed by former food minister Shanta Kumar, appointed in 2014 by the Narendra Modi government, had also gone into this issue.
- Its report had categorically stated that a 67 per cent population coverage under the NFSA was on the higher side and should be trimmed to around 40 per cent. That would suffice to cover all the BPL families and, perhaps, some non-poor as well, it had maintained.
- For it entitled them only to 5 kg of subsidised cereals per head per month, against 7 kg per person they were getting earlier under the targeted PDS.
- Therefore, need to supplement the supplies by purchasing food from the market at high prices. The committee also suggested keeping the grain prices for the priority sector households under the NFSA at 50 per cent of the minimum support prices.

A direct transfer scheme like PM-KISAN is a game-changer and can have significant effects if it is provided with complementary inputs. Explain

KEY POINTS

Pradhan Mantri Kisan Samman Nidhi, popularly known as PM-KISAN, scheme was aimed at addressing the liquidity constraints of farmers for meeting their expenses for acquisition of agricultural inputs and services.

Empirical study

- The International Food Policy Research Institute (IFPRI) in association with the Indian Council of Agriculture Research (ICAR) embarked on a study to empirically assess technology choices and adoption of practices following the rollout of PM-KISAN.
- Taking the primary objective of fostering timely usage of inputs, that is, technology, the study, based on primary survey, evaluated the implementation of PM-KISAN and the role of Krishi Vigyan Kendras with strategic complementarity for magnifying its impact.
- Banking infrastructure created through Pradhan Mantri Jan Dhan Yojana (PMJDY) played a key role in the fund disbursement.
- What is not so commonly known but is critical for the fast uptake is that the State government had digitised the complete database of farmers who were now registered in the system with their credentials.
- Further, 93 per cent non-beneficiary farmers had already applied for the scheme, depicting awareness and potential uptake. When augmented with extension through KVKs, the adoption of modern inputs is significantly higher (to the tune of 36 per cent).
- Moreover, the study establishes that KVKs have stimulated the impact of PM-KISAN for the adoption of modern agricultural technologies.
- Thus, by investing more in agricultural advisory services, the government can encourage farmers to invest some or all part of the income support in productive assets for achieving the multiplier effect of PM-KISAN.
- Therefore, PM-KISAN along with agricultural advisory services has the potential to break the cycle of intergenerational poverty and low income of farmers through investment in modern technology.

Do you think that financing problems in highways construction sector is one of the major problems in construction of new projects? Comment

KEY POINTS

- The highways construction sector was one of the successes of the first term (2014-19) of the government. The government took on the task of reviving the sector and largely succeeded. However, that momentum is now being lost. Previously, the pace of highway construction had increased in every year of the government's term.



- But the data from April to January of the ongoing financial year suggests this pace of highway building has fallen by 9 per cent in this period as compared to the previous year.
- This interpretation would be supported by the fact that new projects are not being awarded at the rate that they were previously. The target for new projects in the ongoing fiscal year is 10,000 km and it is likely that only a fraction of that will be awarded.
- Much of the building is being financed by the NHAI using debt. This has led to a steady increase in its debt burden and the related interest payments. This burden, which is approaching Rs 2 trillion, is one reason why the NHAI is awarding fewer projects.
- And many project developers have found that the shortage of cash means that their payments from the government are constantly being delayed.
- Given that roads are increasingly being built either through the direct procurement route or the hybrid annuity method, in which the NHAI pays developers 40 per cent upfront and the remainder over 15 years, developers are right to be concerned about the NHAI sitting on payments.
- This is what threatens to reverse whatever progress has been made on the highway-building programme over the past six years. The government will have to ensure that the NHAI's finances are sound enough for project developers to be confident once again that they will be paid on time.
- Roads can neither be built nor maintained on the cheap. The landmark achievement was the rural roads scheme, which built half a million kilometres.
- But many of these roads are now in poor condition, as two-thirds of them are past the period when the original contractor must repair them, and Union budgetary support for their repair has declined since 2015.
- While this is an issue for states and local bodies to resolve, it is clear that the Union government must take responsibility, since local governments are usually short of funds. A direct transfer from the Union government to local bodies is one option.

6. INTERNATIONAL RELATIONS

Do India's negligible presence and interventions in the International Maritime Organization is affecting its interests? Comment

KEY POINTS

The IMO currently lists India as among the 10 states with the "largest interest in international seaborne trade". But India's participation in the IMO to advance its national interests has been desultory and woefully inadequate.

A feeble voice

- To ensure that their maritime interests are protected, the European countries move their proposals in unison and voting or support are given altogether.
- While these countries have fiercely protected their interests, India has not. For example, its permanent representative post at London has remained vacant for the last 25 years.
- Representation at meetings is often through a skeletal delegation, approved by the Ministry. A review of IMO documents shows that the number of submissions made by India in the recent past has been measly and not in proportion to India's stakes in global shipping.
- There have also been obstacles in pushing issues which are of importance to India. A classic case was the promulgation of "High Risk Areas" when piracy was at its peak and dominated media headlines.
- The "High Risk Area" formulation led to a ballooning of insurance costs; it affected goods coming into or out of India. The episode highlighted India's apathy and inadequate representation at the IMO.

- So far, India's presence and participation in the IMO has been at the individual level. India should now make its presence felt so that its national interests are served. It is time India regained its status as a major maritime power.

India needs to engage with its neighbours for the realisation of its global ambitions. Analyse in the context of India's regional grouping.

KEY POINTS

- At a time when India has more or less shut down all conversations on the South Asian Association for Regional Cooperation (SAARC) and walked away from the ASEAN-led Regional Comprehensive Economic Partnership (RCEP), former Sri Lankan Prime Minister **held that India-Pakistan dialogue to be held carefully.**
- He blamed India-Pakistan tensions for bringing economic integration within the SAARC region to a "standstill", explaining that the original purpose of the South Asian group was to build a platform where bilateral issues could be set aside in the interest of regional growth.
- Decrying the lack of economic integration in South Asia, and the failure of SAARC, as well as BIMSTEC (which includes Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand), to engender more intra-regional trade.
- The Sri Lankan leader also suggested that with India's leadership, a more integrated South Asian region would be better equipped to negotiate for better terms with RCEP so as not to be cut out of the "productivity network" in Asia, and envisioned an Economic Integration Road Map to speed up the process.
- The government, which has taken a protectionist turn on multilateral trade pacts, is relying more on direct bilateral deals with countries rather than overarching ones that might expose Indian markets to flooding by Chinese goods.
- For any regional sub-grouping in South Asia to flourish, it is India that will have to make the most concessions given the vast trade deficits India's neighbours have at present, which it may not wish to do.
- However, the overall projection that India's global reach will be severely constrained unless it is integrated with its neighbours, and tensions with Pakistan are resolved, cannot be refuted. India needs to be more accommodative for the realisation of its ambitions.

7. HEALTH

The flaws in healthcare network of the country present strong challenges to controlling outbreak of corona virus disease. Discuss.

KEY POINTS

- The density of population in India, low levels of public awareness, and vulnerabilities in the healthcare network present strong challenges to controlling outbreaks of communicable disease.
- India is vulnerable also because it is heavily dependent on China for components used to make products across industries, including essential medicines.
- Its imports from China rose to \$76.38 billion in 2017-18 from \$60.41 billion in 2014-15 but there is still a large imbalance in trade between the two countries India imports much more from China than it exports to it.
- Several products that India imports from other trading partners also have a heavy Chinese presence. For instance, a lot of the ASEAN region's value chains are dependent on China.

Pharma sector key

- According to government data, bulk drugs used to manufacture medicines were among the top 10 imports from China between 2015 and 2019.



- China supplies nearly 70% of the total bulk drugs and intermediates (raw materials) imported to make medicines in India.

Impact on patients

- Industry executives fear that if the situation does not improve soon, the cost of materials used to make medicines in India will rise regardless of therapeutic category.
- On those earlier occasions, industry bodies had sought an increase in the maximum retail prices of these medicines, arguing that they were unable to recover the cost of manufacturing them.

Do you think that the Medical Termination of Pregnancy Bill doesn't do enough to secure women's choices and interests? Critically analyse

KEY POINTS

Issues with the current law

- At all stages of the pregnancy, the healthcare providers, rather than the women seeking abortion, have the final say on whether the abortion can be carried out.
- Thus, at present, pregnant women lack autonomy in making the decision to terminate their pregnancy, and have to bear additional mental stress.
- The MTP Act embodies a clear prejudice against unmarried women. While the applicability of this provision to unmarried women is contested.
- Due to advancements in science, foetal abnormalities can now be detected even after 20 weeks. However, the MTP Act presently allows abortion post 20 weeks only where it is necessary to save the life of the mother.
- This means that even if a substantial foetal abnormality is detected and the mother doesn't want to bear life-long caregiving responsibilities.

Features of the bill

- The Bill seeks to amend **Medical Termination of Pregnancy (MTP) Act, 1971**.
- The Bill proposes the requirement of the opinion of **one** registered medical practitioner (instead of two or more) for termination of pregnancy up to 20 weeks of gestation (foetal development period from the time of conception until birth).
- It introduces the requirement of the opinion of **two** registered medical practitioners **for termination of pregnancy of 20-24 weeks of gestation**.
- It also states that the **"name and other particulars of a woman whose pregnancy has been terminated shall not be revealed"**, except to a person authorised in any law that is currently in force.

Unani system of medicine offer lessons for sustainable, effective healthcare and demonstrate scientific humility in the country. Elaborate

KEY POINTS



- The evolution of Unani medicine itself has been as a syncretic science. It draws its roots and name from ancient Greek physicians and philosophers, Hippocrates and Galen, also the acknowledged roots of modern medicine in Europe.
- A large body of preventive, promotive, therapeutic and palliative (lifestyle, medicinal and surgical) knowledge emerged.
- It reached India in the 11th century, receiving patronage since the 13th century from the Delhi sultanate to later Mughal rulers and nawabs.
- The then practising hakims' research on local health problems, medicinal plants and methods for preparation of medicines, and interaction with the voids, led to generation of an Indian version of Unani.
- Indianised Unani medicine is especially known for its contributions to the knowledge of toxicology, for effective cures in urological and skin diseases, among others.
- When the first Unani Education Committee was set up in 1964 by the Government of India to formulate a shuddha (pure) Unani curriculum, members argued that "purity" is unscientific and undesirable.
- To strengthen this knowledge system, the Committee suggested admitting undergraduate students immediately after school for a Pre-Tibb curriculum of two-years and then a four-and-a-half year curriculum of Unani medicine and surgery;
- Research including "research on the fundamental principles and basic theories of Unani system of medicine, such as temperament, the humoral theory and Tabiat Mudabra-Badan (natural healing powers); and rights, status and privileges for Unani practitioners equal to their Allopathic counterparts."

India has promoted regional cooperation in South Asian region in a spirit of generosity, without insisting on principle of reciprocity. Analyse

KEY POINTS

- There are abundant signs of a fresh commitment by India to the neighbourhood in current government's second term.
- The key connectivity project, which will provide Nepal with cleaner petroleum products at affordable cost, was completed well ahead of schedule, giving the lie to the notion that India's project delivery is tardy.
- Geography plays a determining role in creating inter-dependence. Even as Nepal, like other South Asian countries, seeks closer ties with China, there is a much better appreciation today that India's role as a key economic and developmental partner is unique and indispensable.
- India's relations with Bangladesh have evolved into a model partnership, consolidated by high-level exchanges, mutual trust and enhanced cooperation on security matters.
- Notably, the centrepiece Mangdechhu project (750 MW) was completed on schedule last year. The introduction of the RuPay card in Bhutan and elsewhere in the neighbourhood will further cement economic and people-to-people ties.
- South Asia has 1.8 billion people and a combined GDP of nearly \$3.47 trillion, with India's economy the largest by far. South Asia has great potential but has been held back by Pakistan.
- It has held to ransom cooperation within SAARC by raising extraneous matters, perpetuating terrorism and rejecting the ineluctable logic of intra-South Asian trade, which remains abysmally poor.
- The stasis in SAARC is entirely due to Pakistan's recalcitrance. Even so, between 2014 and 2018, India's developmental assistance to six South Asian countries was over Rs 21,100 crore.
- The signing of the MoU on BIMSTEC Grid Interconnection at the fourth BIMSTEC Summit, attended by all seven nations in Kathmandu in August 2018, provides a fillip to cross-border electricity trade.



- India's focus on BIMSTEC and its Act East Policy have served to highlight India's key role in promoting cooperative growth and development in several parts of South Asia.
- In a world increasingly characterised by a "my country first" approach, India has endeavoured to harness the impulse for regional cooperation in a spirit of generosity, without insisting on reciprocity, to realise Modi's motto of Security And Growth For All In The Region (SAGAR).

GS PAPER III

8. INDIAN ECONOMY

There are a number of reasons for the government to implement wider governance reforms in Public sector banks. Examine

KEY POINTS

- The government announced that the Prevention of Corruption Act had been modified and permission would be required for initiating action against public servants.
- It has also modified the 2015 framework on large-value frauds. As a result, managing directors and chief executive officers in public sector banks (PSBs) will not be personally responsible for compliance with different timelines.
- Therefore, an initial examination before the investigation is launched should help bankers. However, it is difficult to argue that these steps will be enough. Legal safeguards, in general, do not always prohibit investigating agencies from launching probes, or even making arrests.
- Besides, the government should not lose sight of the broader picture. Frauds and non-performing assets (NPAs) in PSBs are not always a result of corruption.
- As the RBI's latest Report on Trend and Progress of Banking in India showed, PSBs accounted for over 90 per cent of the amount involved in fraud during 2018-19, "mainly reflecting the lack of adequate internal processes, people and systems to tackle operational risks".
- This clearly indicates that PSBs need wider reforms to build capacity in evaluating risks associated with lending. In the absence of reforms, PSBs will remain vulnerable to frauds and the fear of investigation, despite the safeguards put in place by the government.

What is meant by Extra budgetary borrowings? How it is contributing the Indian economy to move towards the path of fiscal consolidation and greater transparency? Discuss

KEY POINTS

- The extra-budgetary funds refers to public resources and government transactions that are not included in the annual budget.
- The government needs to be commended for increasing transparency and disclosing off-Budget borrowings as the markets will now have a better picture of government finances.
- While the government has indeed taken a step forward by disclosing the expenditure, it clearly needs to do more to build trust in government finances.
- Some of the government schemes for which proceeds from EBRs have been utilised so far are Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY), Swachh Bharat Mission (SBM), Pradhan Mantri Awas Yojana (PMAY).
- Institution-wise break up of borrowings made through EBR route reveals that the top three borrowers are National Bank for Agriculture and Rural Development (NABARD), which has borrowed for both rural development and irrigation projects.



- The release of information on EBRs in the public domain through the Union Budget 2019-20, has significantly enhanced fiscal transparency in India as per the report of Reserve bank of India.
- The provision of funds through extra-budgetary sources does bring down the stated fiscal deficit resulting in fiscal consolidation.

Increasing dependence on foreign flows with weak fundamental could raise financial stability risks. Analyse

KEY POINTS

- The idea behind the proposal mentioned in the 2020-21 Budget is to further open up the sovereign debt market for foreign investors and make sure that Indian government bonds figure in global indices.
- Inclusion in global indices would result in a stable flow of foreign savings. Some of the large and long-term investors such as pension funds invest on the basis of the composition of such indices.
- According to the latest data, net household financial savings dropped to an eight-year low of 6.5 per cent of gross domestic product (GDP) in 2018-19.
- The flow of foreign savings would ease some pressure in the debt market and help encourage real investments. The government is also increasing the limit for foreign investment in the corporate debt market.
- In the given context, it is likely that India will not immediately get included in bond indices and would need to offer a significant stock of bonds to foreign investors before being considered for addition in indices.
- Inclusion in such indices often depends on availability and liquidity. But large foreign inflows will put upward pressure on the rupee, which could affect India's external competitiveness and increase the current account deficit.
- To avoid currency appreciation, the Reserve Bank of India will need to actively manage the currency, which could affect its monetary policy objectives.
- Thus, while the idea of inclusion in global bond indices and accessing global savings has merits at a theoretical level, policymakers should not ignore the fundamental weaknesses of the Indian economy.

Do you think only a minuscule percentage of MSMEs participate on e-commerce platforms, leaving the large potential untapped? Comment

KEY POINTS.

- The practices prevailing in the e-commerce sector are not inclusive. They also pose obstacles in leveraging its true potential for the benefit of both the entire e-commerce network and the overall economy.
- There are an estimated 1.5 million sellers registered across various Indian portals. However, since the majority of the sellers are common across platforms, the true number could be just a little more than the number of sellers registered on the largest marketplace.
- There are multiple reasons for poor integration of MSMEs on e-marketplaces — poor digital literacy, poor geographical reach, and inadequate digital and physical infrastructure.
- The average commission charged for facilitating business across marketplaces is very high, and after deducting shipping costs and taxes, what the seller is left with is quite low as compared to offline sales, which makes it unviable for most small and medium-sized businesses.
- On the major marketplaces, a few top vendors capture a large share of the total merchandise and, given their financial strength to offer products at lower price points, smaller businesses find it difficult to compete.
- The solution lies in creating a universal e-commerce interface which is seller-agnostic and pro-active in onboarding sellers of goods and services who are MSMEs as well.



- Data aggregation and sharing across e-commerce platforms will go a long way in enhancing the inclusivity of the overall e-commerce ecosystem. E-payment infrastructure as well as established public service platforms can be leveraged for providing ease of payment and delivery, and in facilitating last mile connectivity. This may just open up a pan-India market for small businesses.

Why Reserve Bank of India's latest monetary policy review could be game-changer for Indian economy? Explain

KEY POINTS

- Reserve Bank of India announced that Monetary Policy Committee voted to keep the repo rate – that is the rate at which banks borrow money from the central bank – steady at 5.15 per cent.
- More importantly, the RBI will conduct 1-year and 3-year repos up to an amount of Rs 1 lakh crore.
- Doing this would lead to a substantial reduction in the interest rates charged in the economy. For instance, most home loans are being sold at 8 per cent interest rate; existing customers are actually paying as much as 9 per cent.
- The RBI has announced that any incremental lending (retail loans) by banks for automobiles, residential housing and loans to micro, small and medium enterprises (MSMEs) to automobile.
- The RBI has chosen to hold off CRR for incremental lending in key sectors in an obvious bid to boost credit growth and perk up consumption.
- MSMEs who were struggling pay back their loans were given a one-year extension to “restructure” their loans. This facility has now been extended to MSME loans that had started defaulting.
- RBI has decided to be lenient with MSME defaulters and it hopes that, given some time and leeway, these MSMEs will be able to recover and pay back their dues, especially as the economy improves.
- The RBI has given an additional year before a loan to a real estate project, which has been delayed “for reasons beyond the control of promoters”.
- By giving them an extension, the RBI is hoping that developers would be able to focus on getting fresh funds and finish their projects quickly – thus resolving the whole problem.

An increase in the number of registered firms and the prevalence of numerous small enterprises ones don't necessarily mean that the country's economic progress is on right track. Discuss

KEY POINTS

- There are firms that have registered with government agencies. On the second track are informal enterprises that exist in the shadow of the formal economy. Making these two meet is one of the most important policy challenges over the next decade.
- A 10% increase in the registration of new firms in a district increases the gross domestic district product by 1.8%.
- New firm creation is also negatively correlated with unemployment rates in states, which means that those with more startups tend to have less joblessness. This is more so in agriculture and manufacturing, rather than in services.
- The fact that new firms are more likely to be established in the services sector rather than in manufacturing, agriculture and infrastructure may also help explain why job creation has been weak despite economic growth.
- It is well known that most Indian enterprises are not registered firms. They operate in the informal economy.
- Most people starting micro enterprises do it out of necessity, rather than inner drive. Many would prefer a job with steady wages.



- These enterprises offer economic opportunity to people who are unable to get good jobs in formal enterprises. That is a positive.
- Informality also means that low-productivity firms survive and perhaps restrict the growth of registered firms, as they enjoy an implicit subsidy by staying outside the country's tax system. That is the negative.
- Research by the International Monetary Fund shows that there is a negative correlation between productivity growth in an economy and the degree of self-employment in an economy, a proxy for informality.
- A sudden push towards formalization could create unemployment, since a large chunk of Indian enterprises will not survive the costs of registration or paying taxes. There is no point in glorifying the millions of tiny enterprises that restrict productivity growth in the Indian economy.
- The ideal compromise is the gradual formalization of tiny enterprises with a helping hand from the government.

9. AGRICULTURE

To appreciate the significance of the blue economy geared by the 'blue revolution', more reforms are needed to unlock fishing and aquaculture potential. Explain.

KEY POINTS

- Interim Budget FY20 had created a separate ministry for animal husbandry, livestock, and fisheries, and Union Budget FY20 allocated Rs 770.25 crore for fisheries for a comprehensive development. This budgetary support has recognised the significance of 'blue economy'.
- Centrally sponsored schemes including the Integrated Development and Management of Fisheries and Fisheries and Aquaculture Infrastructure Development Fund are made available to devise a framework of development, management, and conservation of marine (and inland) fisheries.
- India ranks third in fisheries production, and second in aquaculture. Fisheries alone has employed 145 million people and contributed to 1.07% of the GDP and generated export earnings of Rs 334.41 billion as per a recent estimate of National Fisheries Development Board.
- Freshwater aquaculture that contributes about 55% of the total fish production is predominantly driven by smallholder farmers and institutionalised culture fisheries in part.
- Small-scale fisheries meet a raging concern for poverty reduction and food security in developing countries as it contains a rich animal protein and Omega 3 fatty acids, providing a nutritional diet.
- Freshwater aquaculture engenders sustainability through manure loading, nutrient cycling into the agri-food-ecosystem. From the governance and organisational view point, the fisheries sector has a long way to go to unleash the potential of blue economy.
- South Indian Federation of Fishermen Societies, working in the marine fisheries sector, can help bring the necessary reforms to marine fisheries since it follows an AMUL-like cooperative model with a three-tier federal structure that have catalysed livelihood promotion of small-scale fishermen.
- Third, skilling is important to subsistence of marginalised fishermen. Union Budget 2020 has aimed for skilling fishermen through fisheries extension akin to 'MatsyaVigyanKendras' in collaboration with the Central Fisheries Research Institute.

Do you think that opening up the dairy market to the US will place India at an economic disadvantage and hurt small farmers, businesses in the sector? Comment

KEY POINTS

- Opening up the dairy market to the US will place India at an economic disadvantage and hurt small farmers, businesses in the sector



- The dynamics of the dairy trade with focus on the US and India, the data shows that the US is a net exporter in dairy trading, with its share in global exports standing at 4.9 per cent as opposed to an import share of around 2.8 per cent in 2018.

Trade surplus

- The lower average final bound duties on dairy products in the US help provide a boost to dairy exports from India. According to the *World Tariff Profiles, 2019*, an average final bound duty on dairy products in the US is around 19 per cent, as against close to 64 per cent in India.
- The third and most critical reason for India's high trade surplus in dairy vis-à-vis US is attributable to 'cultural and religious sentiments'. The latter implies that the Indian authorities' mandatory certification from the concerned US agency which states that "the source animal should not have been fed animal-derived blood meal", weeds out significant imports from the US.

Disadvantage, India

- Further, according to *The World Dairy Situation, 2019* report, milk yield per cow in the US is the highest in the world, standing at 10,500 kg per cow as against 1,715 kg per cow in India, which is the second-lowest in the world after Pakistan.
- Importantly, a dairy farmer in the US is able to sell milk at a price 16.6 per cent above the average world market price, as compared with the similar number standing at 15.6 per cent in India.
- Thus, it is evident from the numbers that despite lower milk yield and dominance of small and marginal farmers in dairy activity, India is comfortably placed to produce milk at a cheaper rate.
- The India-US trade deal in the dairy sector already been in force, India would have run up a dairy sector trade deficit of \$85 million today, instead of the 2018-19 trade surplus of \$14.71 million.
- This is not good news for the Indian dairy industry, as the trade deal will not only adversely affect the industry as a whole but also the socio-economic conditions of millions of small, landless and marginal farmers – especially women, who are active in this industry.

How solarisation of irrigation can conserve groundwater and provide income to farmers? Explain

KEY POINTS

- Getting a bunch of farmers to install solar pumps was quite a task for IWMI, International Water Management Institute which is headquartered in Sri Lanka.
- It is part of an international consortium of agricultural research institutions called CGIAR, two of which ushered in the Green Revolution in wheat and rice. IWMI's mandate is to develop solutions for sustainable use of water in agriculture.
- Early in the last decade, IWMI had advocated the separation of the grid supplying three-phase electricity to irrigation pumps from the one lighting up homes.
- The farm grid would provide limited hours of subsidised three-phase electricity during the day and at night alternately every week. The home grid would have uninterrupted power for lighting.
- Gujarat adopted the model, and called it Jyotigram. Limiting the duration of supply would not only reduce the power subsidy bill but also help conserve groundwater.
- The power purchase arrangement is vital to conserving groundwater. Otherwise, farmers will keep their pumps running as there is no operating cost. They will overwater their crops, or grow crops that need more water.
- There are 10 million diesel pumps in the country. There is a long waitlist to electrify them. There are 20 million electric pumps as well, accounting for 17% of the country's annual electricity consumption.



- Solarisation will reduce the subsidy bill, and also provide income to farmers. The finance minister has set a target of solarising 2 million diesel pumps, and 1.5 million electric pumps.
- Diesel pumps are cheaper, but solar pumps can match the cost in five years if running and maintenance costs are considered.

Application of fertilisers based on soil testing on a mission mode is creating a quiet revolution. Analyse in the context of Soil health card programme

KEY POINTS

- The leveraging of agricultural research and technology proved successful. India, in 2018-19, produced 284.95 million tonnes (mt) of foodgrains – roughly 3.5 times the pre-Green Revolution level – and that included 23.40 mt of pulses.
- However, the above output increases have also come at the cost of our natural resources, especially soil and water.
- Keeping in view the deleterious effects of the rampant and imbalanced use of chemical fertilisers, a unique programme of Soil Health Cards (SHC) was launched by the Central government, laying the foundation for evidence-based integrated nutrient management in Indian agriculture..
- The SHC programme, implemented over the last five years, assesses soil fertility in terms of the availability of key nutrients – primary (nitrogen, phosphorous and potash) as well as secondary (sulphur) and micro (iron, zinc, copper, manganese and boron) – and physical parameters (electrical conductivity, pH and organic carbon).
- The SHCs issued to individual farmers also carry a prescription of the right dosage of nutrients based on both deficiency and crops grown in the soils of their particular area.
- The programme itself has evolved into a mission mode project, to instill belief among farmers in the prescriptions and application of fertilisers as per the SHCs issued to them.
- The SHCs are only the first link in ensuring healthy soils and production of safe and nutritious food.
- The SHC programme has also attracted global attention. India is assisting Nepal in setting up soil-testing facilities and capacity building for integrated nutrient management and certified organic farming.
- These also figure in India's initiatives in South-South Cooperation focusing on African countries.
- In a nutshell, the judicious application of fertilisers based on SHC prescription has multifold benefits in terms of improved soil health, safe food and mitigating climate change.

Amidst the Government efforts, the PPP route should be explored to bring down to avoid looming water crisis in agriculture. Discuss

KEY POINTS

- Groundwater extraction is so severe that the country's water table is falling at the rate of 0.3 m per year.
- Bad agricultural policies—both at the central and the state level—have meant that just four crops (rice, wheat, cotton, and sugarcane), accounting for just 46% of the country's gross cropped area, take up 65% of the gross irrigated area, and consume 70% of all the water used in agriculture.
- The Centre and Nabard have created a Rs 5,000 crore fund to promote micro-irrigation under the Pradhan Mantri Krishi Sinchayee Yojana.
- Just 11.58 lakh hectares were covered under micro-irrigation in 2018-19, against a net sown area of 14.1 crore hectares, and the total area under micro-irrigation currently stands at just 1.02 crore hectares.
- This makes a strong case for roping in the private sector to supplement government efforts, especially in irrigation infrastructure creation and management, if India is to reduce agricultural wastage of water.



- The El Guerdane project in Morocco that involves a 300-km irrigation network built by the private partner in a PPP endeavour to distribute water to farmers in Guerdane; while the private partner was selected on the basis of the lowest water tariff quoted, this worked out to be lower than the costs farmers used to incur on groundwater-fed irrigation.
- In Bihar's Vaishali district, a local small-farmers association is implementing a pay-as-you-go model, with support from an international development agency, which has brought in responsible water usage.

10. INFRASTRUCTURE

Does the introduction of private trains help the Indian Railways in several ways, besides ensuring better services? Comment

KEY POINTS

The proposed introduction of private passenger trains on select routes can be a win-win for private players and the Indian Railways (IR) alike, provided niggling issues are addressed to clear the tracks.

Better Services

- It would improve its financials, given the massive losses it incurs in the passenger segment.
- As per a NITI Aayog report, 77-80% of the total losses in the passenger segment are in the non-suburban segment, within which IR incurs losses in all classes save for 3rd AC.
- The proposed model, if scaled up, could help IR reduce such losses and allow it to have profitable earnings. It could also save on the capital expenditure to be incurred on its plan to replace ~40,000 outdated coaches with Linke Hofmann Busch coaches.
- The move would help bridge the demand-supply gap. The resultant increase in capacity would enable IR to capture passengers unserved by it, which stood at 8.85 crore in fiscal 2019.
- It would make rail travel more competitive vis-à-vis air travel – the growing aviation sector has been weaning away passengers from the premium category.
- The entry of private players is expected to lead to introduction of new-design trains with improved passenger amenities and travel comfort as well as value-added and on-demand services.
- Such enhancements and improved service levels, together with punctuality of trains and targeted marketing by the private players, could help the railways retain and wean back passengers.
- Overall, the proposed initiative augurs well for the railways in India. At the very least, it would usher in competition, ultimately benefitting the customer.

11. ENERGY

Is land a constraint for Government of India's ambitious expansion programme for renewable energy sector? Comment

KEY POINTS



- The Indian Government's ambitious programme for renewables expansion aims to increase capacity in solar PV to 100 GW and that in wind to 75 GW by 2022.
- The footprint of wind turbines continues to fall with the recent advances in technology such as the increase in size of the individual turbine. Leasing of land for wind could provide a stream of income while retaining most of the land for its original use.
- Utility scale solar PV currently inhibits any other use of the same land, but this can change in the future. Agrivoltaics, or raised solar PV plants that allow agriculture in their partial shade can solve this problem, while also providing better productivity and water savings, especially for horticulture.
- Even if all of India's electricity generation of 1,561 Terawatt hours in 2018-19 came from solar PV, the total area required would be about 20,000 sq km.
- The International Energy Agency, in its 2018 World Energy Outlook considered an electric scenario with significantly higher electrification of the Indian economy.
- In this scenario, about 6,000 Terawatt hours of generation is projected, which would require about 80,000 sq km, if entirely provided by solar PV.
- As wind turbines need less area, these estimates provide an upper bound for the total area required for powering India using renewables only. Note that the urban area of India is about 220,000 sq km, and a large fraction of this could be used for solar PV.
- Land availability is not a limiting factor as we emphasise here. A lot of renewables can be absorbed in the grid if the right regulatory support is provided for grid balancing, and electricity system flexibility.
- The real challenge is that the coal generation sector is under financial stress, and is likely to suffer further with the expansion of renewables.

12. S & T

The latest leak of medical information of the country speaks to the urgent need for a comprehensive data protection law. Elaborate

KEY POINTS

- The report by a German cybersecurity firm that medical details of millions of Indian patients were leaked and are freely available on the Internet is worrying.
- The reason for the availability of this data is the absence of any security in the Picture Archiving and Communications Systems (PACS) servers used by medical professionals and which seem to have been connected to the public Internet without protection.
- India still lacks a comprehensive legal framework to protect data privacy. The Draft Personal Data Protection Bill 2019 is still to be tabled but could enable protection of privacy.
- Justice B.N. Srikrishna committee sought to codify the relationship between individuals and firms/state institutions as one between "data principals" (whose information is collected) and "data fiduciaries" (those processing the data) so that privacy is safeguarded by design.
- While the 2019 version of the Bill seeks to retain the intent and many of the recommendations of the Justice Srikrishna committee, it has also diluted a few provisions.
- For example, while the Bill tasks the fiduciary to seek the consent in a free, informed, specific, clear form (and which is capable of being withdrawn later) from the principal, it has removed the proviso from the 2018 version of the Bill that said selling or transferring sensitive personal data by the fiduciary to a third party is an offence.
- Yet, considering the manner in which public data are being stored and used by both the state and private entities, a comprehensive Data Protection Act is the need of the hour.



India needs more platforms like the National Bio-Entrepreneurship Competition, which democratises innovation access for ideas with large potential societal impact. Discuss

KEY POINTS

- India is home to the third-largest congregation of startups, after the US, and China. National Bio-Entrepreneurship Competition (NBEC) has seen steady growth in three years, from 1,500+ registrants in 2017 to 2,000+ in 2018, and nearly 3,000 in 2019
- This phenomenal growth signifies the thirst for innovation in all corners of India and the lay Indian's drive to solve societal challenges. NBEC's goal is to unlock bio-entrepreneurship talent all over India.
- Participants develop diverse indigenous technologies and solutions, weighted toward impact, based on scientific fundamentals, and applications.
- The framework is designed such that competitors are judged solely on the merit of the idea and its societal impact.
- It is this idea-first framework that India must implement across other verticals like cybersecurity, energy, defence, urban design, health, and water management to unlock greater innovation-led entrepreneurship.
- A unique feature of NBEC is that it doesn't just end the day when winners are announced; it then serves as a launchpad for the competitors with the best ideas.
- The number of organisation partners that have been bought into this value proposition has steadily risen, from 10 in 2017 to 17 in 2019, including three international partners.
- These organisations bring diverse operations experience, technical know-how, market reach, and mentorship to the table, proving invaluable to the innovators they partner with and support.
- Carefully structured ideas platforms like NBEC serve as ideal vehicles to effect socio-economic impact at scale across India.
- While NBEC focuses on innovative ideas in the bio-agri-health network, the model can be effectively replicated for other deep science innovation fields like energy, defence, semiconductors, automobile design.

What is Genome India Project? Discuss the significance and intended benefits of the project.

KEY POINTS

What is the Genome India Project?

- Its aim is to ultimately build a grid of the Indian "reference genome", to fully understand the type and nature of diseases and traits that comprise the diverse Indian population.
- The mega project hopes to form a grid after collecting 10,000 samples in the first phase from across India, to arrive at a representative Indian genome.

What is the significance of GIP?

- **HGP has a major diversity problem** as most genomes (over 95%) mapped under HGP have been sourced from urban middle-class white people. Thus, HGP should not really be seen as representative of the human genome.
- **Horizontal Diversity:** The Indian subcontinent has been the site of huge migrations, where the first migrations were from Africa. Also, there have been periodic migrations by various populations from all around the world, making this a very special case of almost all races and types intermingling genetically.



- **Vertical Diversity:** There has been endogamy or inter-marriage practised among distinct groups, resulting in some diseases passed on strictly within some groups and some other traits inherited by just some groups.

Intended Benefits of GIP

- **Precision Healthcare:** GIP will help in the development of personalised medicine, anticipating diseases and modulating treatment according to the genome of patients.
- **Sustainable Agriculture:** Similar benefits would come to agriculture if there is a better understanding of the genetic basis of the susceptibility of plants to pests, insects and other issues hampering productivity.
- This can reduce dependence on chemicals.
- **International Cooperation:** Global science would also benefit from a mapping project in one of the world's most diverse gene pools.
- The project is said to be among the most significant of its kind in the world because of its scale and the diversity it would bring to genetic studies.

AI provides a strategic instrument to government to address various challenges and an opportunity for global leadership by creating foundational technologies and digital infrastructure. Discuss

KEY POINTS

- According to a report by Price waterhouse Coopers, AI could contribute a whopping \$15.7 trillion to global GDP by 2030. However, for India, AI is much more than just a piece of this pie.
- For India, the real power of AI lies in its transformative potential to address massive societal challenges that were traditionally considered to be beyond the purview of computing.
- For example, India stands to lose \$4.58 trillion before 2030 due to non-communicable diseases and mental health conditions. Cardiovascular diseases (accounting for \$2.17 trillion) and mental health conditions (accounting for \$1.03 trillion), will lead the way in economic loss.
- In the transport sector, as per a Government of India report, road accidents led to 17 deaths on roads every hour in the year 2016, outlining the urgent need for smarter infrastructure.
- Non-communicable diseases like depression can be treated by achieving a better understanding of the brain and mind using AI and computing.
- With the rise of wearables, AI can allow individuals much greater control over their health and empower them to make better decisions about their well-being.
- In agriculture, AI can help us handle the complexity and uncertainty associated with production, making better sense of problems associated with epidemics, price volatility of raw materials and optimal usage of resources such as water, energy and fertilisers.
- It can empower farmers to deploy tailored interventions ranging from predictable crop planning to precision farming. In India's smart cities, AI algorithms in collision avoidance systems can give an approximate 1.5 seconds advance notice to drivers to avoid 93% of road accidents.
- The rAIse Summit will be the first such major event in India organised in collaboration between the government, industry and academia.

13. ENVIRONMENT

Considering draft notification on reverse osmosis, the primary aim should be to persuade authorities to upgrade and supply BIS-standard water at the consumer's end. Examine

KEY POINTS



- The Environment Ministry's draft notification to regulate the use of membrane-based water purification systems primarily concerns the manufacturers of reverse osmosis (RO) water filters but effectively bars domestic users from installing RO systems.
- Home filters waste nearly 80% of the water during treatment, some research has shown that the process can cut the levels of calcium and magnesium, which are vital nutrients.
- For one, the notification implies, these filters are only prohibited if the home gets water supply that conforms to Bureau of Indian Standards (BIS) for Drinking Water.
- Although several State and city water boards claim BIS standards, the water at homes falls short of the test parameters.
- The BIS norms are voluntary for public agencies which supply piped water but are mandatory for bottled water producers.
- The Composite Water Management Index (CWMI) of NITI Aayog says that 70% of water supply is contaminated. India is ranked 120th among 122 countries in an NGO, WaterAid's quality index.
- The notification mainly deals with rules for commercial suppliers and for integration of systems that inform consumers about TDS levels — a major determinant of water quality.
- When implemented, the notification's primary aim should be to persuade authorities to upgrade and supply BIS-standard water at the consumer's end.

The India's attitude towards green building has inherently been different from the western model of green building which is equipment centric. Do you agree with this view? Examine

KEY POINTS

- Developments across India, perhaps even throughout the world, are designed with a layer of sustainability or 'green' superimposed on it.
- A green development or building can be defined as one which depletes as little of the natural resources during its construction and operation.
- Traditional Indian architecture has been more often than not adopted passive solutions which further help to reduce energy dependence by increasing the number of comfortable habitable hours without reliance on mechanical means.
- Optimisation of all resources is a pre-requisite to responsible architecture today. Unlike other nations, local resources and methods of construction are still easily available to us.
- The most effective approach is to build with local materials in a manner that responds to the climatic needs of the region while remaining economically viable.
- Additionally, the green rated materials available today, further reduce the embodied energy of the finished product. Low energy materials when used at all stages of the building construction process – civil construction, interiors and landscape design can aid in reducing the overall impact of materials on health and environment.
- By closed loop recycling, conserving natural resources, elimination of products with bio-accumulative toxins and minimising waste to landfill, we can significantly reduce carbon footprint of our built environment.
- For energy conservation during construction phase, it's imperative to address the impact of heavy machinery, transportation of materials and waste generation and its safe disposal.
- The idea of sustainability should now move on from buildings to our cities as well.

How will India's proposals at UN Convention on the Conservation of Migratory Species of Wild Animals (CMS) help in sustainable management and conservation of migratory species? Explain



KEY POINTS

India's proposals

- India has proposed inclusion of the three species on Appendix-I of the Convention. Appendix-I lists species threatened with extinction, while Appendix-II lists those in need of global cooperation for favourable conservation status.
- The proposals cleared the first hurdle when they were adopted unanimously by the conference's committee of the whole.

Grounds on which India has proposed the listing

- **Asian elephant:** India said elephants' inclusion on Appendix-I would ensure better coordination among the range countries, facilitate migration, increase effective habitat area, and reduce killings.
- **Great Indian bustard:** Its range stretching across India and Pakistan, it is a critically endangered species with a population of just around 150 individuals.
- India said there is prima facie evidence that the birds fly across the India-Pakistan border and hence the need for bilateral cooperation for recovery of the species.
- **Bengal florican:** This too is a critically endangered species of bird that belongs to the bustard family. India said the present population of the South Asian subspecies has shrunk to around 1,000 individuals and its present habitat been restricted to the Terai and Dooars grassland regions of the Indo-Gangetic and Brahmaputra floodplains.
- India has also invited the COP13 to adopt the 'Gandhinagar Declaration' urging the world community to strive for ensuring ecological connectivity, especially for sustainable management and conservation of migratory species.
- India has proposed that once adopted, CMS forward the Gandhinagar Declaration to the 15th meeting of UN Convention on Biological Diversity conference in China in October this year, for preparing post-2020 global biodiversity framework.

Climate change impact warnings for Eastern Ghats underscore need for forest protection similar to western ghats. Examine

KEY POINTS

- If the Western Ghats are the crown jewels of India's natural heritage, the Eastern Ghats spread across some 75,000 sq. km. from Odisha to southern Tamil Nadu, play an important dual role: fostering biodiversity and storing energy in trees.
- Crucially, many parts, primarily in Odisha, Andhra Pradesh and Tamil Nadu, provide forest produce and ecosystem services to millions.
- Given the key functions that the lands perform, in modulating climate, fostering biodiversity and providing sustenance, new research findings arguing that the Ghats face a serious threat from climate change, and temperature variations are a cause for worry.
- It is noteworthy that a disruption of the annual average temperature and diminished rainfall would rob the productivity of these forests, in terms of their ability to store carbon, and provide subsistence material.
- Protecting the Eastern Ghats, which are separated by powerful rivers — the Godavari and Krishna, to name just two — is an ecological imperative.
- India is committed, under the Paris Agreement on Climate Change, to create an additional carbon sink of 2.5 to 3 billion tonnes through enhanced forest and tree cover.

Improving tree cover nationally is certain to confer multiple benefits, including modulation of the monsoon, improved air quality and wider spaces for biodiversity to persist



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