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ETHICS & INTEGRITY
AGRICULTURE R&D

INTEGRITY

ETHICS

VALUES

CONSCIENCE

Preface

This is our 66th edition of Yojana Gist and 57th edition of Kurukshetra Gist, released for the month of September 2020. It is increasingly finding a place in the questions of both UPSC Prelims and Mains and therefore, we've come up with this initiative to equip you with knowledge that'll help you in your preparation for the CSE.

Every issue deal with a single topic comprehensively sharing views from a wide spectrum ranging from academicians to policy makers to scholars. The magazine is essential to build an in-depth understanding of various socio-economic issues.

From the exam point of view, however, not all articles are important. Some go into scholarly depths and others discuss agendas that are not relevant for your preparation. Added to this is the difficulty of going through a large volume of information, facts and analysis to finally extract their essence that may be useful for the exam.

We are not discouraging from reading the magazine itself. So, do not take this as a document which you take read, remember and reproduce in the examination. Its only purpose is to equip you with the right understanding. But, if you do not have enough time to go through the magazines, you can rely on the content provided here for it sums up the most essential points from all the articles.

You need not put hours and hours in reading and making its notes in pages. We believe, a smart study, rather than hard study, can improve your preparation levels.

Think, learn, practice and keep improving!

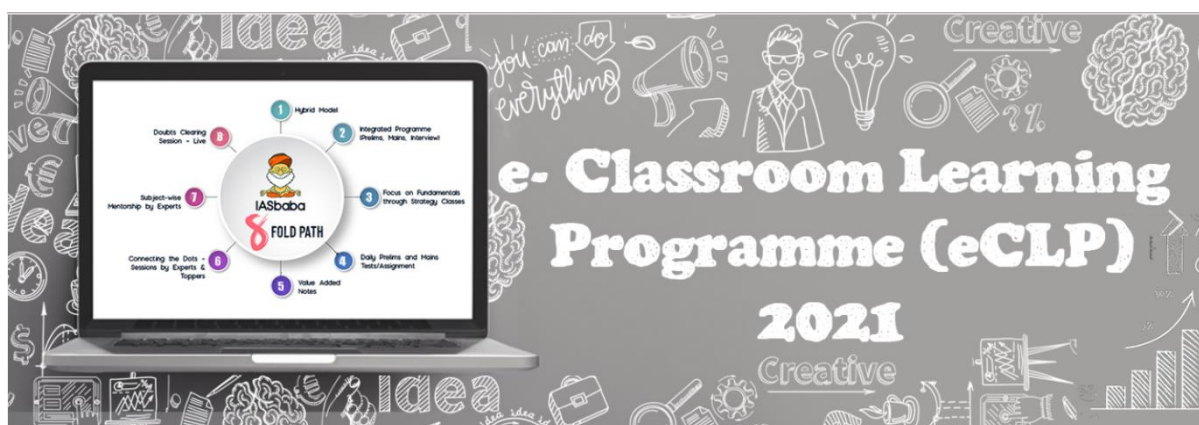**You know that's your success mantra** ☺

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ETHICS AND INTEGRITY

A. Rule of Law

Rule of law is a legal principle that law should govern a nation, as opposed to being governed by arbitrary decisions of individual government officials. It primarily refers to the influence and authority of law within society, particularly as a constraint upon behavior, including behavior of government officials.

The doctrine of rule of law has its origin in England and is given by A.V. Dicey which has 3 fundamental principles:

- Absence of arbitrary power, that is, no man is punished except for a breach of law
- Equality before the law: equal subjection of all citizens (rich or poor, high or low, official or non-official) to the ordinary law of the land administered by the ordinary law courts
- The primacy of the rights of individual, that is, the constitution is the result of the rights of the individual as defined and enforced by courts of law, rather than constitution being the source of the individual rights

Rule of law addressing ethical dilemmas:

Ethical dilemma refers to making choice between competing principles, both being right in their own way. Rule of law helps to make decisions in such situations like

- Rule of law gives a definitive path to follow irrespective of the situations and provide certainty of actions to be followed by the government. E.g. Demolition of a slum/ road side vendors create a dilemma, but is necessary.
- Superior's directive versus Public good: Irrespective of the superior's directive, the official can always follow rule of law which will be later justified in the court/inquiries.
- Political neutrality: being democratically elected, public representatives often give orders to officials which creates ethical dilemmas whether to follow the representative or the public interest. Following rule of law will help in overcoming the same and help civil servants to function without fear or favor.
- Secrecy vs Transparency: For instance, denial of information under RTI. Following rule of law will help the government in proactive disclosure of information vital for the public, but at the same time withholding the information vital for national security.
- Preferential treatment vs Non-discrimination: Equality, though a basic virtue to be followed, equity is necessary. Even the constitution under article 14 provides for differential treatment and upholding it will help in overcoming the sense of discrimination created by differential treatment.
- Overcoming public sentiment and maintaining civil service neutrality: In some situations, it might seem ethically right to circumvent rule of law. E.g. Encountering a child rapist or terrorist and so on. But, Rule of law help in overcoming emotional ambiguities. E.g. Even the terrorist Kasab was prosecuted as per Rule of law.

- Personal allegiance vs public good: For instance, a family member committing crime – the allegiance to family creates an ethical dilemma. However, Rule of law overcomes the biased treatment. E.g. A Sub-inspector in Delhi arresting his own son in drug racket case. The same applies when there is a conflict with cast, race, religion and so on.

Following rule of law is a win-win situation which addresses the situational ambiguities of public servant upholding public interest. However, in certain situations due to archaic laws and rules, emergency situations etc., – following rule of law will create more issues both ethically and in terms of efficiency. E.g. Denial of ration due to technical error of aadhar led to the death of a tribal girl in Chhattisgarh due to hunger. Other instances like, following documents thoroughly during disaster relief, emergency treatment, organ donation and so on. In such situations, there is a need to change the laws rules and regulations matching the changing society and needs progressive towards development to reduce the ethical dilemmas.

Supreme court in its ruling observed that the public officials are answerable to law and law alone. Objectivity, Impartiality, Transparency and so on which are the foundational values of civil services hinges on the implementation of Rule of Law. Thus, Rule of law helps as a directing light to the government and civil servants in fulfilling their duty. But, at the same time, amending laws, rules and regulations as per the changing demands and needs is a sine qua non.

Qn: **Can law alone ensure ethical conduct? Critically examine.**

B. **Various components of Ethical Governance**

Ethics is grounded in the notion of responsibility and accountability. In democracy, every holder of public office is accountable ultimately to the people. Ethics provides the basis for the creation of such laws and rules. Our legal system emanates from a shared vision of what is good and just which forms the basis of ethical governance in India.

- Ethical governance denotes administrative measures, procedures and policies that fulfill criteria required for the ethically good or acceptable handling of public affairs, such as in public administration, public health care, education, and social security.
- In the context of public administration, ethically good or acceptable behavior is often defined in terms of justice, fairness, equality, and integrity. Thus, ethical governance is a normative expression and not a purely descriptive one.
- The minimalist concept of ethical governance states absolute prohibitions that public authorities and civil servants are forbidden to violate in all circumstances. They include prohibitions of all forms of corruption (e.g., bribery, graft, and nepotism), extortion and coercion, deception, theft, and discrimination.

- The maximal concept of ethical governance additionally invokes positive commands, such as 'Be fair and impartial', 'Safeguard the well-being of citizens', and 'Take good care of the administrative tasks entrusted to you'.
- The trusteeship relationship between the public and the officials requires that the authority entrusted to the officials be exercised in the best interest of the people or in 'public interest'.

Some of the components of ethical governance are:

- **Accountability –** Decision-makers in government, the private sector and civil society organizations should be accountable to the public as well as to institutional stakeholders. This accountability differs depending on the organization and whether the decision is internal or external to an organization. For example, Citizen charter is one of the ways through which ethical governance can be upheld.
- **Transparency –** Transparency in governance basically means people should be able to access public information when they want it. They should be able to know what public officials are doing and how the policies are being implemented. Citizens demand greater transparency from governments and require information on who, why and how of decision making. For example, Right to Information is the foremost tool to maintain transparency.
- **Rule of Law –** The rule of law primarily means that everything must be done according to law. Applied to the powers of government, this requires that every government authority which does some act which would otherwise be a wrong or which infringes on a man's liberty, must be able to justify its action as authorised by Law and in nearly every case this will mean authorised directly or indirectly by legal provisions. For example, following the letter and spirit of law during riot situations.
- **Citizen's Participation –** Citizen's Participation in governance is fundamental to democracy as the ultimate power vests with the people. Interaction is one important aspect in governance. There are complex ways in which public, private and social organizations interact and learn from one another. It is also the manner in which citizens contribute to the ethical governance system, directly and indirectly through their collective participation in civil, public and corporate institution. For example, Social audit is one of the prime examples of Citizens participation.

The role of civil society institutions in ethical infrastructure of public life is very often compared with the position of the watchdogs on the behavior of public officials. Their effectiveness is determined by the level of public criticism of government tolerated in the particular society and the position of free and independent media as an important factor of exposing corruption and other unethical actions.

Ethical governance is a continuing focus, starting with the administration and extending to all citizens. With transparency and unwavering ethics, people will seek to earn the trust of those

they partner with, forge lasting service relationships and strengthen business over the long term.

Significance of ethics in public administration

"In the happiness of his subjects lies the happiness of the king" – Kautilya.

Kautilya though a pragmatic thinker emphasized ethical administration (Dharmaneeti/ Dharma paripalana) which is a sine qua non in stable, happy and peaceful society. Public administration is a profession that offers and unusually array of opportunities to make moral or immoral decisions, to make ethical or unethical choices, to do good or evil things to people. Ethics provide a framework for accountability between the public and administration. Ethics and values have key role in smooth functioning of public administration system.

- Public resource utilization: ethical use of resources ensures the efficient and effective development of society without corruption. It makes the one holding public office accountable for his/her actions. E.g. RTI, social audits to involve public and enhance transparency in resource utilization.
- The ethical standards of Impartiality and objectivity bring merit into organization, thereby, increasing predictability, which improves economic efficiency. E.g. e-filing of tax returns, online tenders etc.,
- Outcomes for society are better when the decisions of public office holders are made fairly and on merit and not influenced by personal and private interests. Commitment and dedication to work improves the administration. E.g. Ramkumar IAS brought in new ideas to develop dadenggre district of Meghalaya though personally it was difficult.
- Public trust and assurance: every section of public irrespective of race, religion, caste must be treated equitably and ethics ensures just and fair administration. E.g. protection of minority rights.
- Social capital: a just and ethical administration will have credibility and ensures citizen participation in administration. The trust thus generated makes the administration easier and synergetic. E.g. With the credibility he garnered, Officer Armstrong Pame was able to raise funds and labour from public and build a 100km road without the central government help.
- Curb corruption: improving efficiency and break the unholy nexus between the administration and the anti-social elements. E.g. Vohra commission mentioned that corruption is the biggest problem deteriorating the law and order.
- Adding the component of compassion to day to day works makes a lot of difference to the lives of vulnerable sections. For instance, collector S.Shankaran IAS addressing the plight of Bonded laborers, Reforms brought by Kiran Bedi in Tihar jail.

- The administration becomes responsive to the needs and aspirations of the public. For instance, creation of a separate public market for road side vendors before their evacuation in west Bengal.
- International relations: ethical administration also helps in building rapport in international relations and economy.

Absence of ethics results in authoritarianism, suppression of minority rights, high corruption and impoverishment of the poor and the vulnerable. Historically it has only been disastrous whether it is the colonial administration or the authoritarian governments like that of Hitler/Stalin. The very recent atrocities on Rohingyas in Myanmar, persecution of Palestinians etc., are a direct consequence of absence of ethics in public administration.

Ethics guide human conduct and it help people to lead good life by applying moral principles. The same when applied to public administration will not only bring efficiency but also helps in developing an egalitarian, just and fair society.

C. Accountability and Transparency in Governance

Transparency and accountability in administration are sine qua non of participatory democracy. Government secrecy fosters disbelief of government on the part of the citizenry and transparency eliminates the wall of secrecy built against the common people by those holding power. Accountability goes beyond the mere responsibility of delivery of a task or service. It also means answerability if a service is not delivered in a timely and efficient manner such that it becomes a burden.

What is Accountability?

UNDP describes governance as "a system of values, policies and institutions by which a society manages its economic, political and social affairs through interactions within and among the state, civil society and the private sector."

- Accountability can broadly be defined as the obligation of those holding power to take responsibility and be held answerable for their behavior and actions. This obligation might stem out of a moral-ethical need to account for one's behavior, or out of a legal requirement.
- Accountability has an answerability component to justify the action and an enforcement component that is to take action in cases where act of omission or commission is established.
- Helps in improving public confidence in government performance. It facilitates a feedback mechanism between the Government and its citizens.

Who is Accountable to Whom and for what?

First and foremost, stakeholder in any case would be the citizens. The citizens are the tax payers. They have a right to know how the money has been expended by the government. Hence, the accountability to the citizen is most critical.

- It ensures sustenance of public trust and confidence in the existing democratic system.
- Accountability is an ongoing process. The stakeholders directly or indirectly participate in framing the vision and indicating the priorities.
- The schemes are framed and implemented by the government. The results of evaluation help in improving the system.
- At the same time, they empower the stakeholder to seek justification from the decision makers.

On one hand, accountability necessitates transparency in decision making on the other it also presupposes that the accurate and reliable Information and data is maintained for public Scrutiny. In absence of information and facts neither the grievance of the citizens could be appreciated nor could the responsibility be imposed for act of omission or commission.

Constitutional Bodies help in ensuring accountability in following ways:

1. **Financial accountability –**
   - The finance commission (article 280) takes control of distribution of finance between centre and the states.
   - Comptroller and auditor general, CAG (article 148) is the "guardian of the public purse" and controls the entire financial system of the country.
2. **Bureaucratic accountability –** UPSC and State PSC is responsible for selecting and conducting exams for top bureaucrat of the country.
3. **Administrative accountability –** It is upheld by setting up tribunals under article 323 A and article 323 B.
4. **Political accountability –** This is ensured by bodies such as election commission under article 324 by ensuring free and fair election.
5. **Social accountability –** This is ensured by bodies such as national commission on schedule class and schedule tribe through social empowerment of backward section under article 338 and article 338 A.
6. **Judicial accountability –** To ensure that the government performs their duties under ambit of law of the country, Attorney general of India (article 76) has been advising the government for smooth governance.

Various Steps to Ensure Accountability

1. **The Right to Information Act** has introduced a huge element of transparency in the decision-making in the government as well as access to information.
2. **Digitisation of various services** to the citizens has not only facilitated faster delivery of services but also provided a clear trail of transactions for any analysis by an oversight agency.

    a. **E-Governance initiatives** for providing an accountable administration include a framework for efficient handling of public grievances through the Centralised Public Grievance Redress and Monitoring System (CPGRAMS) which is already in place.

    b. **The Champions of Change platform (CoC 2.0)** for aspirational districts has been introduced by NITI Aayog to 'enhance functionality of automated data-quality reports, which would enable the DMs/DCs to take corrective action. This programme is aimed at an overall transformation of the district, using mass movement approach.

    c. **DATA (Digital Accountability and Transparency Act)**

3. **The Citizen's Charter** also clearly spelt out the responsibilities of various agencies of the government. Citizens Charter Bill 2011 aims at providing rights to citizens for time bound delivery of goods and services and provide a Grievance Redressal Mechanism. Such a bill was previously recommended by the Second Administrative Reforms Commission.

4. **Lokpal and Lokayuktas** aims at reducing corruption by setting up of a separate institution of Lokpal at the Central level and Lokayuktas at the State level. These organizations investigate cases of corruption against public servants in the respective Government organizations.

5. In the budget speech in February 2020, the Finance Minister announced insertion of new section 119 A in the Income Tax Act namely, "Taxpayers" Charter". This would provide the much-needed legal backing to Citizen's Charter in India as it would follow the model of governmental accountability in the form of a vision being strengthened through legal status.

Right to Information (RTI) as a tool of accountability and transparency in governance

The path-breaking Right to Information Act came into effect in 2005 with the objective to ensure accountability and transparency in governance. It has been heralded as the most significant reform in public administration in India since Independence.

Transparency and accountability through RTI:

- **Participation –** Participation of both men and women is the cornerstone of good governance. The Right to information acts gives people a chance to participate not just one in five years, but every day and question any decisions.

- **Accessibility-** Right to Information makes it possible to easy access of information from government departments, documents, records, services, finances and policies to all sectors of the community. By providing easy access of information, it reduces the traditional long gaps between citizens and administration and thus helps in nation building process.

- **Transparency-** Transparency is the milestone of good governance. The enactment of Right to Information act 2005, people are now able to seek information from any

government department with a definite time frame. The Right to Information act is intended to promote accountability and transparency in government by making the process of government decision making more open.

- **Empowerment of people:** RTI Act has lent voice to the aspirations of ordinary citizens in issues of governance. It gave the common people a defining power to shape the government schemes and policies. It empowered the people to question, audit, review, examine, and assess government acts.

- **Checking corruption:** RTI is the most effective instrument to check corruption where the citizen has the right to take the initiative to seek information from the state and thereby promotes openness, transparency and accountability in administration by making the government more open to public scrutiny. For instance, it played a big role in exposing the Adarsh scam, irregularity in MGNREGA and other schemes.

- **Awareness:** RTI Act empowered the people to seek definite and direct answer from the officials of their works or lack of it. RTI applications have annually increased by 8 to 10 times. Around 13.70 lakh RTI applications were received in 2018-19 by the registered Central Public Authorities (PAs) which shows how people have become aware of this powerful act.

- **Increasing ambit of RTI:** SC judgement in 2019 opened office of CJI to RTI. An effort is underway to bring political parties under RTI also but it is vehemently opposed by the political parties. Suo moto disclosure of information has become a trend in many ministries and government offices. Every year, an estimated 5-8 million RTI queries are filed. Around 45 RTI activists have been killed so far, not counting the many attacked.

Transparency is considered essential for controlling corruption in public life. Transparency and accountability in Government are mutually reinforcing. The effect of RTI in this regard can be seen from the following examples:

- The impact created through this legislation can be seen through some of the landmark judgements, for instance, in the matter of Adarsh Scam, where crucial links between politicians and military officials was disclosed. This 31-storey building had permission for only 6 floors which was meant entirely for the welfare of war widows and veterans. Instead, these flats went to several politicians, bureaucrats and their relatives.

- In an another matter an RTI filed by an NGO based in Punjab it was revealed that the funds that were meant for victims of the Kargil War were used by bureaucrats to buy cars and air-conditioners. The court charged these bureaucrats with fraud and the funds were then transferred into Prime Minister's Relief Fund.

- People in Rural Karnataka have combined the campaigns for the Right to Information and the Right to Food to fight hunger. Poor villagers have successfully participated in social audits and public hearings to demand that the rations due to them are allotted to them at the correct prices.

Hence, it can be deciphered that RTI has almost successfully achieved not all but many of the objectives of it. In spite of these efforts and reforms some lacunas still remain where RTI has failed to ensure transparency and accountability, which needs to be addressed:

- **High pendency:** The Information Commissions were envisioned as the watchdogs in the implementation of the RTI act. 15 years later, the commissions seem to be going the way of the Judiciary in terms of pendency. CIC currently has more than 30,000 pending cases.
- **Delay in appointments of Information Commissioners and opacity:** Despite the SC direction, four vacancies continue to remain unfilled in the CIC since January 1, 2019, in addition to thousands of vacancies in State Information offices. There is opacity in appointment procedure of CIC and other Information Commissioners.
- **RTI Amendment Bill 2019:** which seeks to amend Sections 13, 16, and 27 of the RTI Act. The amendment threatens RTI through provisions such as: CIC's fixed term of 5 years has been changed to "term as may be prescribed by the Central Government"
- **The salaries, allowances and other terms of service of the Chief Information Commissioner and the Information Commissioners** "shall be such as may be prescribed by the Central Government" which were earlier equivalent to Chief Election Commissioner.

Due to these emerged challenges over the time RTI Act seems to have lost its way of transparency and accountability. Following Steps can be taken to ensure transparency and accountability through RTI:

- Transparency in the process and quick appointment of Information Commissioners.
- Reducing the pendency in RTI disposal.
- Simplification of processes for filing of RTI Requests and Appeals to central Government Authorities.
- Establishing an institutional mechanism for collaborative working with CSOs and Media and included consultation meetings of the National RTI Committee, RTI Fellowships, etc.

Since its inception in 2005, one can conclude that RTI has made its impact felt in the functioning of Government bodies and the larger governance discourse, as the staff has become active, conscious, regular, punctual, accountable and responsible. However, some structural challenges and new emerged challenges posed a question on the transparency and accountability through RTI. Hence, independent institution of RTI needs to be preserved in its original form to realize true meaning of democracy.

Qn: *There is a view that the official secrets act is an obstacle to the implementation of the Rights to Information act. Do you agree with the view? Discuss.*

DATA (Digital Accountability and Transparency Act)

Goals

- The starting point is mandatory and common data standards for all entities receiving government funds in all forms of funding
- The endpoint is a single searchable website to ascertain total government funding by element and entity

What steps are needed to make DATA a reality?

Covering the distance between these needs three elements:

1. **100 per cent end-to-end electronic data capture:** All receipts and expenditure transactions including demands, assessment, and invoices should be received, processed, and paid electronically.
2. **Data governance for standards across all government entities:** Data standards are rules for describing and recording data elements with precise meanings and semantics that enable integration, sharing, and interoperability.
3. **Technology architecture** that must ensure that all IT government systems should conform to a prescribed open architecture framework (for instance, IndEA) while ensuring robust security and maintaining privacy.

What are the advantages of DATA?

1. **Long Overdue reform:**
   - The Union budget grew from Rs 197 crore in 1947 to Rs 30 lakh crore in 2020 and total government expenditure may be higher than Rs 70 lakh crore.
   - But the form and manner of keeping accounts have more or less remained unchanged since Independence
2. **Reduce errors**
   - Manual transactions and manual payments often lead to manually entered data at different stages in different databases on different systems which makes to unreliable & vulnerable to errors
   - DATA ensures Business continuity (electronic records cannot be lost or misplaced like files or paper records) and an incontrovertible audit trail
3. **Enhance transparency & accountability**
   - It makes all government revenue and expenditure data electronic, machine-readable, granular, comprehensive, purpose linked, non-repudiable, reliable, accessible and searchable.
   - It will enable legislatures to draw "assurance" that each rupee due to the government has been collected, and each rupee has been spent for the purpose it was allocated.
4. **Addresses the problem of siloed IT systems**
   - Government computerisation has often mechanised manual processes rather than "re-engineered processes".

- This has created siloed IT systems with individual databases that lack modern data sharing protocols, which DATA tries to solve

5. **Addresses concerns of fiscal data:** Due to siloed IT systems, fiscal data was being
    - **Incomparable** – as basic as salary expenditure across states
    - **Obscure** – large expenditures booked under omnibus head called other
    - **Non-traceable** – actual expenditure against temporary advances drawn or funds drawn on contingent bills
    - **Misclassification** – grants in aid as capital expenditure and bookings under suspense heads

6. **Enables the use of cognitive intelligence tools**
    - DATA will provide with huge information which will enable tools like Big Data analytics, artificial intelligence, machine learning to use it for policy making
    - This in turn will support the establishment of budget baselines, detecting anomalies, data-driven project costing, performance comparisons across departments.

7. **Cost efficiency:** Bad behaviour currently costs the RBI Rs 4,000 crore in bank agency commissions because many parts of the government do not use the RBI's free e-kuber system

Accountability and oversight measures in the budgeting processing of the Central Government

India has been placed at 53rd position among 117 nations in terms of budget transparency and accountability, according to the Open Budget Survey.

- Parliamentary oversight of public funds broadly involves two functions, scrutinising and sanctioning the government's expenditure and taxation proposals through the Union Budget; and examining the utilisation of funds that have been allocated for various activities, through parliamentary committees.

- Legislative control over the budget can be exercised through the General discussion on the budget, after it is presented in the Parliament. Discussion at this stage is limited to general examination of the budget and proposals of the government. At the end of the discussion, the Finance Minister gives a reply.

- After which, parliamentary standing committees which has both members of Lok Sabha and Rajya Sabha a examine detailed estimates of expenditure of all ministries, called Demands for Grants.

- One of the functions of Standing Committees is to scrutinise the allocation of funds to the ministries under their supervision. At present, there are 24 Standing Committees that together oversee the work of all the ministries. For instance, the Standing Committee on Defence scrutinises the Demands for Grants of all departments under

the Ministry of Defence. Budgeted expenditure for defence stands at 4.71 lakh crore which is higher by 5% than revised estimates of 2019-20.

- These Committees examine the amount allocated to various programmes and schemes under the Ministry, and trends of utilisation of the money allocated to the Ministry.
- In doing so, officials of the Ministry are required to depose before the Committee to respond to queries and provide additional information in connection with the Demands for Grants being examined. While examining a ministry's expenditure, the Committees may consult or invite views from experts.
- Committee's report to parliament creates condition for informed debate on the budget involving Cut Motions and Voting on Demands for Grants, prior to the beginning of the next fiscal year.
- Passing of the Finance Bill and the Appropriation Bill without which the Government will not have the constitutional authority to collect tax revenue and to spend money from the Consolidated Fund.
- Parliamentary Committees dealing with the financial affairs of the government, viz. The Public Accounts Committee, the Estimates Committee, and the Committee on Public Undertakings.

The Institutional Mechanisms

- These institutions can detect the violations and deviations from prescribed norms as well as the instances of poor administration. External accountability between the Government and the citizens is established through the elections. Internal accountability mechanisms refer to systems of checks and balances and oversight mechanisms. The framers of the Indian Constitution, while adhering to the principle of separation of powers between Legislature, Judiciary and Executive also provided for appropriate checks and balances for administrative objectivity and accountability.
- The institutions of horizontal accountability in Indian context include the institutions of CAG, the Election Commission, the Vigilance Commission, the Central Information Commission and the Ombudsman. In addition, there are a large number of Regulatory bodies including SEBI, TRAI, CERC, CPCB etc.

How does the legislature act as an instrument for enforcing government accountability?

The Constitution provides for the legislature to make laws, the government to implement laws, and the courts to interpret and enforce these laws. While the judiciary is independent from the other two branches, the government is formed with the support of a majority of members in the legislature. Therefore, the government is collectively responsible to Parliament for its actions.

This implies that legislature (i.e. Lok Sabha and Rajya Sabha) can hold the government accountable for its decisions, and scrutinise its functioning.

- **Collective responsibility:** Executive or Ministerial responsibility to Parliament or what is often termed legislative control over the Executive is based on Article 75- the constitutional provision of collective responsibility of the Council of Ministers to the popular House of Parliament.

- **Threat of 'no confidence' over poor policy decision:** The House may at any time decide to throw out the Government by a majority vote i.e. if the ruling party loses the support of the majority of the members of the House. Want of parliamentary confidence in the Government may be expressed by the House of the People by passing a substantive motion of no-confidence in the Council of Ministers.

- **Financial accountability:** Financial control is a critical tool for Parliament's authority over the executive hence finance committees (Public Accounts Committee, the Estimates Committee and the Committee on Public Undertakings) are considered to be particularly powerful. Parliament's control over the Budget through budget demand, capacity to refuse to vote supplies or of defeating the Government on a financial measure. In first session of 17th Lok Sabha, 11 of the 22 Bills have been passed without scrutiny by parliamentary standing committees, which indicate losing legislative oversight on law making.

- **Procedural devices:** The various procedural devices like Questions, Calling Attention, Half-an-Hour Discussion, etc. constitute very potent instruments for effecting parliamentary surveillance over administrative action. During Question Hour, MPs may pose questions to ministers related to the implementation of laws and policies by the government. In the 16th Lok Sabha, question hour has functioned in Lok Sabha for 77% of the scheduled time, while in Rajya Sabha it has functioned for 47%. A lower rate of functioning reflects time lost due to disruptions which reduces the number of questions that may be answered orally.

- **Reflection of public opinion:** Significant occasions for review of administration are provided by the discussions on the Motion of Thanks on the President's Address. Specific matters may be discussed through motions on matters of urgent public importance, private members' resolutions and other substantive motions. Members are free to express themselves and to say what is good for the country and what modifications are required in the existing policies.

In a Parliamentary form of Government, such as we have, the function of Parliament is to legislate, advise, criticise, and ventilate the public grievances; and that of the Executive, to govern.

Under the Constitution of India to maintain accountability,

- The relationship between the Executive and the Parliament should be based on mutual trust and confidence.

- Parliament has almost unlimited right of information and criticism ex post facto and the Executive has likewise unlimited right to initiate and formulate proposals and policies arid to give effect to the approved policies, unfettered and unhindered.

- In essence, Parliament must respect the Executive and the Executive must feel parliamentary influence all the time.
- So long as this equilibrium is maintained, there is every reason to believe that the government of the country will be carried on in accordance with the wishes of the people. The success of our system lies in our having in fact this happy balance and blending.

The office of the Comptroller and Auditor General (CAG) of India is the keystone in the arch of constitutional measures of accountability.

The Constitution of India (Article 148) provides for an independent office of the Comptroller and Auditor General of India (CAG). She/he is the head of the Indian Audit and Accounts Department. CAG is guardian of the public purse and controls the entire financial system of the country at both the levels–the Centre and the state.

Abound to Her/his duty to uphold the Constitution of India and laws of Parliament in the field of financial administration CAG plays following roles and performs important functions to fulfil her/his accountability as mentioned below:

- CAG audits the accounts related to all expenditure from the Consolidated Fund of India, Consolidated Fund of each state and UT's having a legislative assembly.
- She/he audits all expenditure from the Contingency Fund of India and the Public Account of India as well as the Contingency Fund and Public Account of each state.
- She/he audits all trading, manufacturing, profit and loss accounts, balance sheets and other subsidiary accounts kept by any department of the Central Government and the state governments.
- She/he audits the receipts and expenditure of all bodies and authorities substantially financed from the Central or State revenues.
- She/he audits the accounts of any other authority when requested by the President or Governor e.g. Local bodies.
- CAG also acts as a guide, friend and philosopher of the Public Accounts Committee of the Parliament.

Keystone in the arch of Constitutional measures of accountability:

- CAG audit reports are handed over to the PACs i.e. Public Accounts Committee at the centre and at the state.
- Three CAG reports i.e. audit report on appropriation accounts, audit report on finance accounts and audit report on public sector undertakings are examined by PAC.
- At the central/state level, these reports are submitted by CAG to president/governor, who makes them to be laid in parliament/legislature. Here CAG stands different from other measures of accountability as the CAG reports are submitted to the executive.

- CAG also assists the committee in its deliberations by preparing a list of the most urgent matters which deserve the attention of the PAC. Here, CAG plays his role by bringing the most important matters to the attention of PAC.
- She/he also helps in making the actions of the committee clear to the witnesses and in making the action of the government clear to the committee.
- CAG position is sometimes one of interpreter and translator, explaining the officials' views to the politicians and vice-versa which in turn ensure accountability of the government.
- The responsibility of the CAG does not end here. He has to watch whether the corrective action suggested by her/him has been taken or not. In cases whether it has not been taken, She/he reports the matter to the PAC which will take up the matter. It ensures accountability not just with respect to auditing matters but also with respect to implementation.
- Hence, CAG stands as a keystone in the arch of constitutional measure of accountability where CAG not only represents the structure of accountability but also holds together the structure of accountability.

Despite playing this most important role CAG has some considerable challenges to address:
- In present times audits are getting complex because forms of corruption and maladministration extremely difficult to detect.
- Besides the historic task of keeping a close watch on the Central and State governments, CAG are now auditing several public-private partnerships (PPP) projects.
- No criterion or procedure has been prescribed either in the Constitution or in the statute for the appointment of CAG.
- This goes against the international best practices prevalent across the world.
- The CAG has the authority to inspect any Government office and to call for any accounts. However, in practice, the supply of records is often denied.
- The work of audit of accounts of the Union and of the States is actually done by the officers and staff of the IA&AD. However, no statutory recognition has been given to the work of IA&AD in India as against National Audit Office of the UK.
- CAG of India only performed the role of an Auditor General and not of a Comptroller but in Britain it has the power of both Comptroller as well as Auditor General.
- In India the CAG audits the accounts after the expenditure is committed i.e. ex post facto. In UK no money can be drawn from the public exchequer without the approval of the CAG.
- In India, CAG is not a member of the parliament while in Britain; CAG is a member of house of the Commons.

To address these kind of challenges some reforms are suggested by former CAG Vinod Rai :

- Bring all private-public partnerships (PPPs), Panchayati Raj Institutions and government-funded societies, within the ambit of the CAG.
- CAG Act of 1971 should be amended to keep pace with the changes in governance.
- A collegiums type mechanism be set up to choose a new CAG on the lines of selecting a Chief Vigilance Commissioner (CVC).

In view of the nature of work of CAG,Dr. B.R. Ambedkar said that the CAG shall be the most important Office under the Constitution of India. Hence, It becomes imperative to maintain the independent nature of office of the CAG which in turn will ensure that CAG will remain as a keystone in the arch of constitutional measure of accountability.

Measures to ensure accountability of Civil Servants

Civil services are an integral part of Indian democracy and considered as "Steel Frame" of governance. They play a great role in societal development as they have the responsibilities of both decision making and policy implementation.

1. **Improve transparency around the feasibility of major projects:** Make use of technology to digitise the information pertaining to major projects and fix deadlines for projects.
2. **Clarify what public services citizens get for their money:** Strengthen the citizen charter at every major department and also make the utilisation of funds received by every department and how they have been spent every year transparent
3. **Reward for excellent work and review for failures:** Promotion need to be based on excellent work done and not on basis of seniority. Also, failures to achieve goals need to be accounted.
4. **Mandatory Social Auditing:** States like Meghalaya have adopted social audit law, should be extended pan India
5. **Instill code of ethics** among civil servants in line of code of conduct

6. **Clear delegation of roles and responsibilities with commensurate powers and resources:** There needs to be a clear basis upon which specific roles and activities are assigned to specific levels of the system. Second, the delegation of roles and responsibilities must be accompanied by the delegation of resources that would allow functionaries to fulfil their roles. In the absence of this, delegation could end up confounding rather than strengthening accountability.

Qn: *"Non-performance of duty by a public servant is a form of corruption". Do you agree with this view? Justify your answer.*

The Way forward
- The concept of accountability should not be limited to a fault-finding perspective or blame game but should encompass the larger perspective of correcting and improving the systems.
- The focus should be on identification of systemic errors/ failures and suggesting improvements thereof. It also needs to be recognised that in a scenario of collective decision-making, it becomes a case of collective responsibility and accountability.
- The accountability mechanisms also need to keep pace with developments of modern government structures particularly in the era of digitisation.

While strong accountability is not a panacea for solving the numerous challenges that government faces in a complex environment, it can improve government. It generates incentives for responsible individuals to act in the interests of the public. Sometimes this means that 'heads must roll' following a major failure; but a healthy system of accountability also promotes improvements in how government works. This should include:
- Proportionate rewards for good performance
- Proportionate sanctions for failure
- A greater degree of learning than the current system contains
- Support for responsible individuals to develop, so that they are able to innovate and take appropriate risks.

As per 2nd ARC open, transparent and accountable government is an imperative pre-requisite for community-oriented citizen centric public service delivery. Because without it covert unethical behaviour will result. Through series of reform measures such as Financial Management Initiative, creation of Executive Agencies, Citizen's Charter, and Public Service Agreement, complete transformation of bureaucratic structure and efficient public service, accountability is embedded.

Max Weber observed that the power position of a fully developed bureaucracy is everywhere overpowering. Without accountability bureaucracy will become like Frankenstein's monster that divorced his own master.

Connecting the Dots:

1. How are accountability and ethical governance interrelated? Illustrate with the help of suitable examples.

2. What is meant by the term 'constitutional morality'? How does one uphold constitutional morality?

3. Explain the basic principles of citizens' charter movement and bring out its importance.

4. What do you understand by probity in governance? Based on your understanding of the term, suggest measures for ensuring probity in government.

5. What is the significance of ethics in public administration? Illustrate with the help of suitable examples.

6. In recent times, there has been an increasing concern in India to develop effective civil service ethics, code of conduct, transparency measures, ethics and integrity systems and anti-corruption agencies. In view of this, there is need being felt to focus on three specific areas, which are directly relevant to the problems of internalizing integrity and ethics in the civil services. These are as follows:

   - Anticipating specific threats to ethical standards and integrity in the civil services,
   - Strengthening the ethical competence of civil servant and
   - Developing administrative processes and practices which promote ethical values and integrity in civil services.

   Suggest institutional measures to address the above three issues.

7. Honesty and uprightness are the hallmarks of a civil servants. Civil servants possessing these qualities are considered as a back bone of any strong organizations. In line of duty, they take various decisions, at times some become bonafide mistakes. As long as such decisions, are not taken intentionally and do not benefit personally, the officer cannot be said to be guilty. Though such decisions may, at times, lead to unforeseen adverse consequences in the long term. In the recent past, a few instances have surfaced where in civil servants has been implicated for bonafide mistakes. They have often been prosecuted and even imprisoned. These instances have greatly rattled the moral fiber of the civil servants. How does this trend affect the functioning of civil services? What measures can be taken to ensure that honest civil servants are not implicated for bonafide mistakes on their part? Justify your answer.

D. POLITICIANS, ELECTIONS AND FUNDING

India became a republic and chose universal adult franchise. With an overwhelmingly illiterate (85%) population and with female literacy at 7.5%, many prognosticated the failure of the experiment.

Current Scenario of Political Funding

- **Individual Persons:** Section 29B of RPA allows political parties to receive donations from individual persons.
- **Indirect State Funding:** It includes methods except direct funding, like free access to media, free access to public places for rallies, free or subsidized transport facilities. It is allowed in India in a regulated manner.
- **Electoral Trusts:** A non-profit company created in India for orderly receipt of voluntary contributions from any person like an individual or a domestic company
- **Corporate Funding- Earlier** corporates to donate up to 7.5 percent of the net average profits earned in the preceding three years. However, this limitation was the done away with 2017 Finance Act
- Changes were made in the Foreign Contribution Regulation Act (FCRA), 2010 via the 2018 Finance Bill to allow **foreign companies registered in India** to make political donations.
- **Electoral Bonds:** It is like a promissory note that can be bought by any Indian citizen or company incorporated in India from select branches of SBI. They can then donate the same to any eligible political party of his/her choice

Issues with Political Funding

- Use of Shell/Fake companies to **route Black Money**
- Limits imposed on Individual expenditure during elections but **no such caps on expenditure by Political Parties**
- Corporate donations cover more than the two-third of total funds collected by the political parties thus engendering an **unholy Corporate-Politician nexus**
- 75% of the donors to a political party are **anonymous**. The source of money could be crime, drug or ill-intentioned foreign money, which cannot be tracked.
- The money that is received in cash is not audited properly and therefore becomes a source of malfeasance.

A few government reports have looked at state funding of elections in the past are:

1. **Indrajit Gupta Committee on State Funding of Elections (1998)**
   - It endorsed state funding of elections, seeing "full justification constitutional, legal as well as on ground of public interest" in order to establish **a fair playing field for parties with less money.**
   - The Committee recommended **two limitations to state funding.**

- o Firstly, that state funds should be given **only to national and state parties** allotted a symbol and not to independent candidates.
- o Secondly, that in the short-term state funding should **only be given in kind,** in the form of certain facilities to the recognised political parties and their candidates.
- The Committee noted that at the time of the report the economic situation of the country only suited **partial and not full state funding of elections**

2. **Law Commission Report on Reform of the Electoral Laws (1999)**
   - It concluded that total state funding of elections is "desirable" so long as political parties are prohibited from taking funds from other sources.
   - Additionally, it strongly recommended that the **appropriate regulatory framework** be put in place with regard to political parties (provisions ensuring internal democracy, internal structures and maintenance of accounts, their auditing and submission to Election Commission) before state funding of elections is attempted

3. **National Commission to Review the Working of the Constitution (2001)**: It did not endorse state funding of elections but concurred with the 1999 Law Commission report that the appropriate framework for regulation of political parties would need to be implemented before state funding is considered

4. **Second Administrative Reforms Commission (2008)**: "**Ethics in Governance**", a report of the Second ARC also recommended partial state funding of elections for the purpose of reducing "illegitimate and unnecessary funding" of elections expenses.

Merits of State Funding of Elections
- It will become possible for **new and cleaner candidates** from outside the mainstream parties to join politics;
- It will **ease the pressure on parties themselves** to give tickets to criminals and other rogues primarily because they can manage their own funding
- Parties themselves will become more **internally democratic,** as candidates will not be over-dependent on party bosses for cash.

Issues of public funding of elections
- This will encourage spawning of new parties every now and then.
- Further, it will burden the exchequer.

ECI's View on State Funding of Election
- It would not be able to prohibit or check candidates' expenditure or expenditure by others over and above that which is provided for by the state.

- Instead it has suggested for reforms in funding of Political Parties- Proper receipt of funds, auditing of the expenditure of Political Parties and more transparency in funding process.

Alternatives Suggested:
- Former election commission chairman S.Y. Qureshi has suggested **state funding of the political parties** instead of state funding of elections.
- A **National Election Fund** can be created where people can donate anonymously. And at the end of the five years, the collected amount can be given to respective political parties based on performance. 70% of the European countries have this system.

Political Parties and their Tall Promises

Accountability is the hallmark of democratic setup of any country which refers to answerability and taking responsibility of one's actions or inactions. Election season is marked by tall claims and unrealistic promises of political parties in their election manifestos for which they are not answerable to anyone if they fail to fulfill those promises.

If democracy is a social contract between those elected and ordinary citizens, then manifestoes should be considered as a legal contract enshrining a country's purported development agenda.

Arguments in support of making political parties accountable:
- Election promises disturb the level playing field, give edge to some parties, and shakes the root of free and fair election to a large degree.
- Parties play with the emotions of people. Example – issue of illegal migrants in north east states.
- There is increase in trust deficit in case government fails to fulfil election promises.
- Election promises sometimes create rift/tension between communities in a multi-cultural society as India. Example – promises of construction of Ram Temple even though the matter is sub-judice in Supreme Court.
- It creates undue burden on exchequer which is against prudent fiscal planning. Example – loan waiver announcements by various political parties.
- Populist promises announced can sometimes lead to inadequately planned measures which can have unintended results. Example- demonetization was announced to put a curb on black money.
- Making parties accountable for their promises will ensure that they will make realistic promises; debates on more important issues of national importance can be of public discourse.

Challenges in making parties accountable:

- Model Code of Conduct (MCC) drafted by Election Commission of India (ECI) is not enforceable by law.
- Sometimes Coalition government comes to power which makes it difficult to fulfil election promises.
- It is impractical for ECI to scrutinize manifestos of all political parties.

Suggestions:

- Making MCC legally enforceable.
    - Increasing awareness among voters by NGOs, civil societies about manifestos during election times.
    - Unbiased media -making paid news a corrupt practice under Section 123 of the Representation of People's (RP) Act, 1951.
- Need for self-restraint by parties.

For the health of India's democracy, ensuring accountability of political parties for manifestoes remains a key reform to be pushed which will strengthen the democratic credentials of our country.

Code of Conduct during Elections

The model Code of Conduct is a set of guidelines issued by the election Commission of India to regulate political parties and candidates prior to elections, in order to ensure a free and fair election.

Code of conduct imposed during the elections in India serve real purpose

- It acts as a moral compass for the political representatives and politicians.
- It sets a parameter to do moral analysis of behavior of political parties by citizens, media and civil society.
- Election Commission of India (ECI) has certain executive power to check unethical behavior of political parties.

Code of conduct imposed during the elections in India does not any serve real purpose-

- Politicians have devised ingenious ways to circumvent the code of conduct. For instance, wearing clothes of particular colour; using encrypted sentences in campaign speeches etc.
- ECI does not have sufficient power to stop illegal activities like liquor distribution, cash for vote etc.
- Moral erosion and criminalization of politics has rendered all codes of conduct ineffective.

Code of conduct be made legally enforceable-
- Nietzsche has said "fear is the mother of morality".
- ECI will get more power to enforce code of conduct.
- Free and fair election is the soul of democracy. To safeguard and further strengthen our democracy code of conducts must be made legally enforceable.

Code of conduct be not made legally enforceable-
- Morality cannot be enforced by law. To follow code of conduct in true spirit and to not adopt any circumvention of law, one has to imbibe political morality in himself/herself.
- Code of conduct can be followed only by moral conviction. For this one must have moral principles and ability to do moral analysis. Law alone will not be sufficient.
- Chief Justice Earl Warren once remarked: "In civilized life, law floats in a sea of ethics." Without development of political ethics making code of conduct legally enforceable will not be sufficient.

Dr. Rajendra Prasad one remarked, "The future of our nation will not depend on whether it is ruled by this law or that, but on the men who rules it." Hence development of morality is more important than legislation.

Legislators and Criminal Charges against them

Increasing trend of criminalization of politics have disrupted constitutional ethos at the root of our democratic form of government. Criminalization of politics refers to increased participation of criminals in electoral process.

Views against incumbent legislators having serious criminal charges:
- The latest report by election watchdog Association for Democratic Reforms, of the 542 MPs in Lok Sabha, 179 or 33 per cent were found to have criminal cases against them. Of these, 114 or 21 per cent have been named in "serious" cases such as kidnapping, hate speech, and those of crimes against women. Also said 228 Rajya Sabha members, 51 or 22 per cent are implicated in criminal cases. Of these, 9 per cent have been charged with serious crimes. Same with MLAs, 4,083 sitting MLAs scattered across the country, 1,355 nearly a third have criminal cases pending against them
- People are agonised that money and muscle power have become the supreme power and decide the electoral outcomes.
- Person who enter public life and participate in law making should be above any kind of serious criminal allegation but with the present scenario, it might lead to situation where people might no longer have trust in the democratic system.

Reasons for criminalization of politics:
- Loopholes in electoral process and lack of powers to election commission of India to scrutinize and prevent criminal elements.
- Political Parties are biased towards candidates having money and muscle power because they believe that they can win elections compared to a clean candidate with no money.
- Lack of morals, values and poor ethics in Indian political setup. Also voters have accepted candidates with criminal backgrounds.
- People can be easily lured with money due to ignorance and lack of knowledge about their responsibility in the democratic setup.
- Indian laws do not ban individuals with a criminal background to contest the election and also the cases go on for years.
- Soft state: India is seen as a soft state where people do not have fear for laws and or for undergoing punishments, due to which there is no deterrence to indulge in criminal activities.

Measures taken to ensure a cleaner legislature:

A. **By election commission of India:**
- Contesting candidate will have to fill up the form provided by the Election Commission of India and he or she will have to state "in bold letters" about the criminal cases pending against the candidate.
- If a candidate is participating from the party, he/she is required to inform the party about the criminal cases pending against him/her, and that information shall be displayed in their website. Also, that information should be circulated in newspapers and electronic media.

B. **By Government of India:**
- Section 8 of representation of people act (RPA), 1951 disqualifies a person convicted of any offence and sentenced to imprisonment for not less than two years.
- Articles 102(1)(e) and 191(1)(e) of the Constitution allow parliament to make laws for disqualification and not protection and preservation of members.

C. **By supreme court of India:**
- Judgement in public interest foundation and union of India: issues directions to the election commission and the political parties to make the disclosure of the criminal antecedents of candidate contesting election.
- Supreme court left it to parliament to "cure the malignancy "of criminalization of politics by making a law
- None of the above (NOTA) is introduced by judiciary in 2003 to reject a person.

Election commission of India, Government of India, and public at large should come together to curb the menace of criminalization of politics. Maintaining the purity of legislature by proactive steps from all stake holders is must for the welfare of the society.

The five most important directives in a Code of Ethics meant for Politicians

Code of ethics represents certain values and norms that standardise one's behaviour in different aspects of life. It leads to morality in actions and thus ensures fairness and justice to all. It is often seen that civil servants and politicians do not adhere to required moral values

Need for Code of Ethics
- There is opportunism and playing of games to fulfil their personal gains.
- Political promises, action agendas remain just statement of intent after coming to power. They remain among poor people only before elections, and forget their concerns later.
- Misuse of political, official positions and power is often seen. e.g. abusive behaviour by an MLA with civic officer or Senior officers making junior officials cleaning their shoes.
- Many corruption scandals unearthed such as in giving accreditation to educational institutes, coal-scam, conflict of interest, visit to foreign countries on public funds etc show a nexus between civil servants and politicians.
- Horse trading, defections often show lack of integrity and organizational ethics. Officials taking prejudiced decisions or favouring an ideology while discharging official duties.
- Internal democracy lacking in parties, Criminalization of politics, black money being used in elections, official being caught taking bribes and amassing huge properties

Five most important directives in a code of ethics meant for politicians
- Prohibit MPs from misusing the power and immunities they get.
- An MP should avoid conflict between a private and a public interest.
- No parliamentarian should be allowed to vote on those questions in the House, in which he/she has a vested interest.
- Amend the Constitution to ensure a minimum of 110 days of sitting in a legislature having more than 100 members, and 90-50 days of sitting in Houses with less than 100 members depending on the size of the State involved.
- The filing by legislators of a statement of income, assets and liabilities, and an indication of changes in these figures over time.
- Punishment of members by admonition, reprimand, censure or withdrawal from the House in case of violations or breach of the code of conduct.
- Automatic suspension from the House of any member involved in offences of grave misconduct.

It would be cynical to view ethical behavior merely as strategy for getting elected. A better way to think about ethics comes from Wilford Brimley's famous pitch for Quaker Oatmeal: *"It's the right thing to do."*

Qn: *What reasons would you attribute to the decline of parliamentary standards? Can you suggest some remedies?*

E. Gandhian Perspective on Ethics

"It is the duty of all leading men, whatever their persuasion or party, to safeguard the dignity of India." – Mahatma Gandhi

It goes to the credit of Gandhi that he evolved a philosophy and lifestyle which was permeated with ethical, moral, spiritual insights and scientific truth.

Science and Technology vs Moral and Ethical Fiber of the Individual

- Gandhiji kept on reminding humanity that there is a 'truth' beyond all what we perceive and hold to be 'truth'. By making truth as the axis of all his endeavors, Gandhi was seeking the spirituality of truth itself which is the very basis of science. He challenged those who believed that spirituality and science need to be at war with each other.

- Gandhi who initially held the view that 'God is Truth' reversed it later as, "Truth is God" thereby asserting the supremacy of truth over everything. This also implies that there is a greater power within every human being in his/her consciousness. The outer world has been effectively influenced by changing what is within us.

- He was guided by the teachings of Gita and the assertion of Thoreau who wrote, "I know of no more encouraging fact than the unquestionable ability of man to elevate his life through conscious endeavor".

- Gandhi Ji famously said, "There is a higher court than courts of justice and that is the court of conscience. It supersedes all other courts." Conscience is the voice in our head, and the feeling in your heart, that tells us if something is right or wrong. It is the voice of the inner self which says "yes" or "no" when we are involved in a moral struggle. It is an internal monitor. Gandhi rightly said, "The human voice can never reach the distance that is covered by the still small voice of conscience."

Satyagraha: Blending of Ethical, Moral, Political, Social and Religious Concerns

- Gandhi's seminal contribution lies in the area of blending science and spirituality as revealed in the philosophy and practice of Satyagraha. The Satyagraha seeks to integrate spiritual values, and community organisation and self-reliance with a view to empower individuals, families, group, villages, towns and cities.
- Robert Payne in his perceptive study of Gandhi remarks, "Gandhi was continually experimenting with truth and inventing new forms of force. And just as Satyagraha was never "truth force" So if was never "non-violence" or "passive resistance", although it included them in its ever-widening orbit."
- The ancient Vedic philosophy of "Sarva Dharma Samabhav" or "Respect for all religions" formed the basis of Gandhiji's religious humanism which was rooted in ethical, moral and spiritual considerations.
- Spiritual living is responsible living. Gandhi said, "I am responsible not only for myself but for all of you just as all of you are responsible for me. When we live truly selfless life, we never think in terms of personal profit or pleasure but always in terms of global prosperity and world peace. For even these grand goals ultimately depend not on government but on selfless efforts of little people like you and me of the long run, friendly persuasion is the only effective teacher. Human beings can always grow".
- He described the society that he was aiming as Ram Rajya- a Divine Rajya: The Kingdom of God. Truth, dharma and justice to be the dominant characteristics of such a society. For Gandhi rights and duties are complementary and a citizen who is not conscious of his duties has no right to think of his rights.

Gandhi's Talisman –

Gandhi's Talisman is an effective tool to solve moral dilemma and guides towards action.

It says: I will give you a talisman. Whenever you are in doubt, or when the self becomes too much with you, apply the following test. Recall the face of the poorest and the weakest man [woman] whom you may have seen, and ask yourself, if the step you contemplate is going to be of any use to him [her]. Will he [she] gain anything by it? Will it restore him [her] to a control over his [her] own life and destiny? In other words, will it lead to swaraj [freedom] for the hungry and spiritually starving millions? Then you will find your doubts and yourself melt away."

One of the last notes left behind by Gandhi in 1948, expressing his deepest social thought.

Provides an ethical test to judge everyday actions -

- This talisman of Gandhiji champions the cause of 'sarvodaya through antyodaya' implying the welfare of all through the weakest of the society which lies at the core of Indian Constitution.
- This talisman is a clarion call to the citizens to develop emotional intelligence so that they are in a better position to assess the needs of fellow (vulnerable) citizens, and work towards their upliftment through individual actions.
- India of the 21st century is witnessing sectoral violence, socio-economic inequality, low tolerance threshold and increasing consumerism. Global politics is witnessing xenophobia, armed conflicts and multiple refugee crises. Gaindhiji's talisman can hence be an effective tool to evaluate the relevance of government policies, business priorities and our daily actions with the society. All these entities can assess their actions in public as well as private life against the Gandhi's talisman to ameliorate ethical dilemmas.

Applying the talisman to our daily lives invariably suggest the following:

- Government policies must necessarily focus on the vulnerable and marginalized sections of the society even if it requires making special provision for such classes.
- At personal level, self-serving acts like tax evasion, littering in public places etc. must be shunned.
- Derogatory practices in society like manual scavenging, caste-based discrimination, exploitation of women and the poor, dowry, nepotism etc. must be condemned in practice.
- At societal level, it encourages altruism, compassion and communal harmony towards fellow human beings when encountered with negative vibes of hatred and violence.
- Businesses and Industries should strive to reduce polluting activities, ensure optimal working conditions and must honestly comply with social security legislations. Further, it encourages business houses to go for Corporate Social Responsibility for achieving greater inclusiveness in the society.
- Public servants should ensure transparency and integrity in implementation of welfare provisions like PDS, MGNREGA, Old Age Pension Scheme etc. so that their steps lead to swaraj in true sense.

Deepening Moral Disintegration and Throwing Ethics to Winds

Sarvodaya was Gandhi's vision of a just, egalitarian, morally and spiritually strong citadel of individual liberty. Social Justice and equality to all were the cornerstones of the Sarvodaya social order. The Sarvodaya Samaj would have effectively prevented and eliminated any form of corruption, and general decay of moral, ethical and spiritual values.

Seven Sins according to Gandhi -

1. Wealth without work

2. Pleasure without conscience

3. Knowledge without character

4. Commerce without morality

5. Science without humanity

6. Religion without sacrifice

7. Politics without principle

In Hind Swaraj, Gandhi condemned contemporary civilization, mechanization, the extending tentacles of immorality, scant regard for spiritual roots. The book was described seditious by the British and they banned it.

The Means vs. Ends Debate of an action

The Means vs. Ends Debate of an action has been so prominent in ethics that two separate schools of thought emerged. Consequentialism focussing on judging the moral worth of the results of the actions and Deontological ethics on judging the actions themselves.

- Gandhi observed that "Noble Goals can be achieved only through Noble Means" - Here he adheres similarity with Immanuel Kant's philosophy of moral command that action should end in itself. That's why Gandhi advocated that people should reform themselves and then preach to people i.e. more focus in the cultivation of self.

- Gandhi used an example to explain why means always take precedence over ends in the context of usage of Non-violence over violence to establish Peace. "If I want to deprive you of your watch, I shall certainly have to fight for it; if I want to buy your watch, I shall have to pay for it; and if I want a gift, I shall have to plead for it; and, according to the means I employ, the watch is stolen property, my own property, or a donation."

  - Gandhi's idea of non-violence was not a dream; it was a realistic hope, armed with a dose of practical idealism; that of the global welcoming of the **law of love**.

  - With Gandhi, the philosophy of non-violence turned into an **instrument of public dissent** and a pragmatic tool of the powerless against the powerful.

  - While being an instrument of conflict resolution and universal harmony, non-violence was also an essentially moral exercise.

  - He viewed non-violence essentially as an **ethical commitment** and a constructive political action.

o For Gandhi, the **ethical and the political were the same**. Therefore, for him, the struggle against violence and fanaticism was at the same moral level as disobeying unjust laws.

Application of principles in real life:

- Gandhi withdrew the first large scale mass movement "Non co-operation movement", because of one single 'Chauri Chaura incident' because the incident deviated from his Non-violence stance and he immediately called off the movement despite criticism.
- The Seven Sins philosophy also emphasises on Importance of Means. For example, in the list of sins – Politics without Principles, Wealth without Work, Worship without Sacrifice, etc., the former are the ends whereas the latter symbolises means which imply that Ends are of lesser value without the desired means.
- Gandhi's notion of democracy is that under it the weakest shall have the same opportunities as the strongest. Which stands for Deontological ethics i.e. putting dignity of an Individual over narrow definition of democracy.
  o Gandhi's idea of non-violence was not a dream; it was a realistic hope, armed with a dose of practical idealism; that of the global welcoming of the law of love.
  o With Gandhi, the philosophy of non-violence turned into an instrument of public dissent and a pragmatic tool of the powerless against the powerful.
  o While being an instrument of conflict resolution and universal harmony, non-violence was also an essentially moral exercise.
  o He viewed non-violence essentially as an ethical commitment and a constructive political action.
  o For Gandhi, the ethical and the political were the same. Therefore, for him, the struggle against violence and fanaticism was at the same moral level as disobeying unjust laws.
- With respect to concept of development (END) he emphasised on the idea of village level sustenance through small and cottage industries thereby making villages self-reliant (Desired Means).
- Gandhi's Ideas of politics with principle and special stress on 3rd tier Panchayati raj, respect for others' religion and pride for one's own & the famous Gandhian quote -" the nature is sufficiently endowed to satisfy every man's need but not every man's greed" are respectively the wide dimensions that emanate from Gandhi's Deontology philosophy.

Gandhi's philosophies in the times of COVID-19 Crisis

Some of the Gandhian principles which hold true in present times are:

a) **Swadeshi** – Which emphasises indigenisation and reduces the dependence on other; Global dependence on China has made this pandemic & its recovery difficult for Nations

b) **Swachhata:** Gandhi practise and promoted personal hygiene and community sanitation, which has been advocated as Social Vaccine during this pandemic

c) **Sarvodaya**– i.e. development of all - Adhering to this would principle would have mitigated the troubles faced by migrants & poor during lockdown

d) **Glocalisation**: Gandhi emphasised on learning to experience the entire world within the precincts of our immediate village or neighbourhood

e) **Sustainable Living:** Gandhi advocated to live in harmony with our environment, eschewing exploitative practices as far as possible**.**

f) **Regenerating our rural economy:** It is the urban areas which are facing the brunt of pandemic and dependence on them endangering rural areas as well.

g) **Emphasis on Ethics:** Gandhi called for integrating economics, politics and technology with ethics. If China was prompt about the initial outbreak of disease in Nov 2019, much of the damage could have been avoided

NEED OF THE HOUR – RESEARCH & DEVELOPMENT IN AGRICULTURE

India is a global agricultural powerhouse. However, there are shortcomings in the actual realization of this as an engine of growth due to the increased support to the sector through repeated provision of sops rather than fuelling the competitive growth. India's farmers today are trying to run on a technological treadmill of rising input costs, increasing frequency and virulence of insects and pests along with declining levels of groundwater and soil fertility. This treadmill will not stop unless a paradigm shift is made towards sustainable agriculture.

Research is a capital-intensive business with a very long gestation period and highest level of uncertainty in terms of results. So, developing countries like India are very often seen struggling to balance spending between research and basic necessities. It is natural, therefore, that we as a country often debate the minuscule quantum of expenditure on R&D as a percentage of GDP in various sectors.

Research expenditure on agriculture acquires special significance given the millions of Indians dependent on this sector. Also, when the country expects around 1.63 billion stomachs to feed by 2050 with ever shrinking cultivable land due to rising urbanisation, research in agriculture is anything but a luxury.

According to the Ashok Dalwai Committee report on Doubling Farmers' Income released in 2018, India's research spending on agriculture has been abysmally low, especially compared to countries such as China and Brazil. India's spending on agriculture research and development has hovered around 0.50% of the agricultural GDP since 2001. Of this, 90% is spent on salaries and day-to-day expenditures of research organisations and universities. The rate of return from agriculture research and development has been declining in India and there has indeed been a proliferation of state agricultural universities (SAU) in recent times.

"The fad of the moment (be it dams, barefoot doctors, microcredit, or whatever) is turned into a policy without any attention to the reality within which it is supposed to function," Nobel Laureates Abhijit Banerjee and Esther Duflo write in their book *Poor Economics*.

Let us go back a little…
Fortunately, agriculture is one of those rare sectors where we have a well laid out network of research institutions with plenty of skilled human resources. The history of institutional research in India dates back to 1880 with the establishment of Department of Agriculture in each Indian province. Later, in response to the Montagu-Chelmsford Reforms in 1919, the

Imperial Agricultural Research Institute (IARI) was established to foster agricultural research and education.

Agricultural developmental activities were decentralised and vested with the Provincial governments.

In independent India, the agricultural review team chaired by MW Parker of USDA (1963) suggested far-reaching changes in organisation and management of agricultural research in the country. The research centres across the country came under the Indian Council of Agricultural Research (ICAR).

Corresponding changes occurred at the State level with the transfer of research and education to State Agricultural Universities (SAUs). These infrastructural reforms prepared a strong background for R&D in agriculture. And that is the reason why Green Revolution became such a huge success. Today the National Agricultural Research System includes some 27,500 scientists and more than 1,00,000 supporting staff actively engaged in agricultural research, which makes it probably the largest research system in the world.

But should India now become complacent about agriculture research? The issue gets confounded when we think about the agriculture only in terms of quantity. This myopic vision has a historical background as India recognised the need of research in agriculture only when faced with acute shortage of grains.

In response to that, the then Prime Minister Lal Bahadur Shastri gave a slogan *"Jai Kisan"* and Green Revolution started. The whole focus of the movement was to increase the production of grains, especially paddy and wheat. India successfully achieved the goal and became self-sufficient in grains. But after that the vision was lost. In spite of a large agri research network, the system failed to respond to the biggest problems of Indian agriculture, be it cost effectiveness, productivity, water scarcity, market making, food processing etc.

A mathematical model cited in a book 'Supporting Indian Farms the Smart Way' shows that every rupee spent on agricultural research and development, yields better returns (11.2), compared to returns on every rupee spent on fertiliser subsidy (0.88), power subsidy (0.79), education (0.97) or on roads (1.10).

Research and development in agriculture is a crucial requirement for meeting future challenges.

One of the key conditions for the rejuvenation of Indian agriculture is a significant increase in crop yields. Research and development in agriculture is a crucial requirement for meeting the future challenges.

- Will help in the **development of new technologies** that can be developed to increase profitability in farming

- Increased R&D will be able to **guide the policies and schemes** of the Government. Policies are being framed largely based on anecdotal instances and empirical evidence collected in the context of developed economies.
- Will **support the digitisation of Indian agriculture**.
  - o Currently, the digitalisation of Indian agriculture is advancing without an informed understanding of its implications.
  - o There have been almost no critical social studies on agri-tech start-ups in India. Instead, policies are being framed largely based on anecdotal instances and empirical evidence collected from the context of developed economies.
  - o India lacks a grounded understanding to discuss the possible implications of this process.
  - o India must ensure that evidence-based agri-tech policies are framed so that possible pitfalls can be avoided.
- Will help Government to increase financial allocation to research and create an enabling environment for **private investments**. The private sector is investing in sectors other than in India's agriculture R&D and this needs to change. But the change in behaviour of private sector depends on policy imperatives. Profits are vital for the private sector and if governments can't create a conducive environment for it, private investments will not pick up.
- The spending on agri R&D would lead to **sustainable development** with comparatively more equal distribution of resources. According to Shenggen Fan, Director-General of the Washington DC-based International Food Policy Research Institute (IFPRI), agriculture is key to meeting half of the **17 Sustainable Development Goal (SDG)** targets set for 2030. These SDG targets include eliminating poverty and hunger and reducing inequalities. So increasing R&D spending on agriculture is not only a vital necessity for ensuring food security, but also important from the socio-economic point of view.

The Way Forward

A. Encouragement for Indian Companies
- A robust policy framework is needed to encourage research investments by Indian seed companies enabling them to compete effectively with international companies.
- They need financial incentives to compete in global markets, policy support to protect Intellectual Property, incentives for research investments and recognition for their research efforts.
- Most Indian companies operate at regional levels with crops which are important for the local population. Many local crops, including some orphan crops, are covered by them ensuring a wider coverage for crop improvement with regional impact. Research alliances with global corporations can bring modern technology to India-centric crops.

- Special incentives are also needed for Indian and foreign companies who collaborate and bring new technologies to India.
- World class research projects between ICAR and Indian seed companies need to be established, especially to improve OP crops which need private investments. Assurance of a reasonable returns on their investments for Indian companies is the key.

B. Encouragement for International companies

- The FDI inflows in seeds and plantation sector have gone up from $17.46 million in 2014-15 to $40.55 million in 2018-19 with a cumulative investment of $191.64 million. To continue this trend, it would be critical to continue with our current policy of attracting FDI investments into seed sector.
- Since 2006, when 100 per cent FDI was approved in India, many foreign companies have set up 100 per cent subsidiaries in India or have acquired Indian seed companies. They have brought new technologies and elite breeding lines into the country, thus improving the quality of seed varieties in India and enhancing yields. A prime example is maize. Indian companies benefitted in terms of technology collaborations, access to modern systems and processes, valuation in M&A deals and on the stock markets.
- Many progressive nations allow majority foreign shareholding in seeds. Access to Indian germplasm for a foreign company needs approval of the National Biodiversity Authority (NBA) and governed under BDA Act of 2002. Any company with even one foreigner as its director or shareholder is treated as foreign company. Whether a foreign company has 1 per cent or 100 per cent share in a seed company here, they will not be able to access or transfer Indian germplasm without NBA's approval.

C. Need for global collaboration

- Global collaboration provides access to unique and new germplasm that allows breeders to deliver better products to farmers. We can't find all traits within our own germplasm collections. For example, the Norin dwarf gene from Japanese germplasm is used in modern dwarf wheat and the Dee gee woo gen triple dwarf gene from Chinese germplasm is used in cultivated rice in India which changed rice to a dwarf, lodging resistant plant. This led to the Green Revolution.
- Ever since the government issued OGL in 1989 foreign companies imported of elite global germplasm and new traits got introduced in vegetables. Full FDI rules in India encouraged MNCs to invest in research in different crops — vegetables, corn, rice, mustard, millets and sweet corn — which benefitted the farmers immensely. Biotechnology is another area where foreign collaborations benefitted Indian farmers.
- Foreign companies, encouraged by our FDI rules, have invested in developing research facilities of global standards in cities such as Hyderabad, Bangalore, and Delhi, as well as high-class production and processing facilities. They invested for training in

research, production, product development, marketing, sales which contributed immensely in developing our seed sector. Many from Indian industry travelled to other countries, visited nurseries, witnessed high quality breeding programmes, biotech programmes and enriched their knowledge.

- Foreign companies sell seeds produced in India and they employ large number of Indians in running these companies. They built good export business from here. Corporates make strategic commitments to a country based on the predictable policy environment.

- India has the technical manpower, agro-ecological zones, research institutions and other strengths which we must leverage in our collaborations with foreign companies and access the benefits of the best of global innovation. We should invest in infrastructure and utilise our technical competency to establish ourselves as a winter nursery and field evaluation hub for the world.

- Seed research is key to the future security of our agriculture and our farmers. The government should encourage research investments by both Indian and foreign companies to develop climate resilient crop varieties through a '**Research in India'** programme.

Steps Taken to Promote R&D

The Government has allocated 2.83 lakh crore rupees in the budget for the year 2020-21 for agriculture and allied activities, irrigation and rural development, which is the highest budget allocation to date.

- The foundation stone of Agricultural Research Institute at Hazari Bagh, Jharkhand was laid in 2015.

- The Indian Council of Agricultural Research (ICAR) was established to promote agricultural research in the country.

- There are, at present, 102 research institutes and 71 agricultural universities affiliated to ICAR, across the country.

- ICAR has also earned recognition internationally in teaching subjects like agronomy and agricultural engineering. This organisation has established a vast network of 718 Krishi Vigyan Kendras (KVKs) for extension and spread of its valuable agricultural research benefits.

- ICAR and the Department of Agricultural Cooperation have set up 150 seed hubs in different parts of the country and provided seeds of improved varieties to the farmers.

- For livestocks, an active surveillance system has also been developed to make India free from Foot and Mouth (FMD) disease by 2024. For this, a temperature tolerant vaccine is being developed. A total of 43 diagnostic kits were developed.

- The government has approved the **Agriculture Infrastructure Fund** of Rs one lakh crore. Encouraging private investment through this fund will lead to the all-round development of rural areas for agricultural activities across the country.

- Fisheries, animal husbandry, herbal farming, beekeeping, and agricultural entrepreneurship are being promoted through **the Innovation and Agri-Entrepreneurship Development Program** under the National Agriculture Development Scheme.
- Recently a state-of the-art honey testing laboratory of international standard has been set up in Anand, Gujarat.

Agriculture Inputs

a) **Seed:** Production of breeder, foundation and certified seeds resulted in sustaining the agriculture. ICAR developed various drought resistant and hybrid seeds to sustain and improve agriculture, Genetic manipulation of crops has resulted in increasing the yield of crops too.

b) **Fertilizers:** Nutrient Based Subsidy Scheme (2010) focused on efficient targeting of subsidised fertilizers. The recent research and application of Neem Coated Urea in the field have not only reduced the consumption of chemical fertiliser and improved the quality of the soil, but also became largely responsible for restricting diversion of Urea for purposes other than agriculture.

c) As in March 2020, about 1.8 percent of the total cultivable area (27.7 lakh hectare) has been covered under organic cultivation in the country. Government has been promoting Integrated Nutrient Management and farmers are advised to use biofertilisers, organic manure in conjunction with chemical fertilisers to maintain fertility of soil. Further, Nanofertilisers, a recently launched product has immense potential for ensuring soil health through efficient management of fertility for improved crop production

d) **Agro Chemicals:** R&D has resulted in manufacturing of various insecticides, pesticides and herbicides to protect the agriculture yield. Integrated Pest Management System is an initiative in agriculture to control pests and insects by combining biological, cultural and chemical practices.

e) **Farm Machinery and Equipment:** Recent R&D in technology have resulted in the production and use of different and innovative agri-equipment like tractors, balers, planters and sprayers, etc. The Union Government has launched two mobile applications viz. CHC Farm Machinery and Krishi Kissan App. While the former aims at facilitating and maximising farm mechanisation through networking with custom hiring centres in a short span of time, the later envisages, demonstration of high-yielding variety (HYV) of crops and seeds, geo-fencing and geo-tagging of crops.

How can robotics be a game changer for agriculture?

Agriculture is quickly becoming an exciting high-tech industry, advancing the production capabilities of farmers. The robotics technology coupled with digital mechanization possesses potential in bringing positive transformation across agricultural landscape globally and

especially in India in the backdrop of challenges like lack of favourable terms of trade, vagaries of monsoon, sluggish technology adaptation, productivity per yield etc.

- **Precision Agriculture:** Weed control using robotics and machine learning, to pinpoint the application of fertilizers and herbicide. Field tests have reported using only 10 percent of the herbicide needed in the past. The concept can be reversed to precisely apply fertilizer to only desired plants, thereby reducing waste while optimizing yields.
- **Solution to lack of labour:** Robotics for agricultural activities like fruit picking, harvesting etc. For example: Large scale Orange harvesting with agricultural robots in France and USA. Example: Virgo, the robotic harvesting system.
- **Full field capacity work:** The robots do not get sick or tired and they do not need the time off, they offer fewer errors at higher speeds, and the higher quality products can be sensed by the machines accurately.
- **Safety of famers and consumers:** The robots can protect the human workers from the harmful effects of handling the chemicals by hand and through the system of high spraying, and they can reduce up to 80% of a farm use of pesticides, avoiding contamination.
- **High productivity:** Robotics mechanism closely mimics the human method of farming, but at a much higher productivity level. Increase in farmers' income per yield and reduction in all round costs are observed.
- **Enables alternate employment and additional source of income**: Due to robotic farming, lot of time is saved for the farmers, and they can engage in alternate occupations, thus earning additional income.
- **Other applications**: Nursery planting, crop analysis, animal husbandry, dairy farming, drone service, harsh terrain resilient farming etc.

Need for robotics in Indian agriculture:
- **Growth:** According to NITI Aayog's report, Agriculture and allied sector is critical to India's growth story and to achieve and maintain an annual growth rate of 8 –10% for the Indian economy, agriculture sector must grow 4% or higher rate. Adopting technological strategies seems to be the way forward.
- **Enhance productivity**: The sector suffers from poor resource utilisation, with the production quantum and productivity still being quite low. For example, yield of cereals, comprising a major share of food grain production, in terms of magnitude is significantly lower than that of China and the USA. Technology adoption and efficient resource usage like robotics, AI, Digital mapping etc in these two countries are far higher, thus resulting in higher yields.
- **Economic strengthening:** According to CB Insights, agricultural tech start-ups in India have raised over USD800million in the last 5 years to bring AI and robotics to agriculture and are helping solve pressing issues across the agriculture value chain which is valued to be at USD2.6 billion by 2025.

- **Reduced costs:** Agri-bots being used in several regions in India which tend to crops, harvesting, weeding etc. can reduce fertilizer cost up to 90% and eliminate human labour.
- **Attracting youth:** Robot

Challenges:

- The capital-intensive nature of Robotics.
- High cost of procuring imported hardware components as well as training personnel.
- Unavailability of skilled labour and sluggish adaptation of technology: Most of Indian agriculture is carried out in the rural dominated regions which entail difficulty in convincing the farmers to trust the technology over traditional farming.
- Repair and maintenance become an issue, especially in India, where reach of AI knowledge has not penetrated across the country.
- Loss of various traditional, yet effectively resilient methods suitable for Indian agriculture.
- Substitution of technology may put farmers out of their jobs and render difficulties to the already suffering state of unemployment.

Examples of Robotics in Indian Agriculture: (These are for your information)

- PAAMA Agrico under Made-in-India Agri-Equipment has designed the world-class soil titling blades used in rotovators and cultivators. It enables a Robot to weld blades enabling the precision function – ensuring uniformity in production while facilitating repeatability function each time.
- GRoboMac: The working of this robot has been designed in such a way that the computerized vision detects and locates the precise 3D coordinates of the bloomed cotton from the images of the cotton plant. A robotic arm uses these coordinates to pick the cotton and the arm, then uses a vacuum for precision picking of cotton and avoids picking any other contaminant.

Technological advancements in agriculture are an important element to fodder growth and engaging in robotics is an indispensible technique of driving this. NITI Aayog's Statement of Intent (SoI) to develop and deploy AI to provide real-time advisory to farmers in Aspirational districts is laudable at this juncture and should be extended across the length and breadth of the country.

Smart Agriculture

Smart agriculture is a global initiative to maintain sustainable agriculture through judicious use of improved and updated technology. Technological innovations in information and biology can help alter the above scenario and transform the agricultural landscape.

Potential of Infotech

a) **Farm Management Information System (FMIS)** provides various information at a given period instantly which includes data on soil sample, weather conditions, sensor data, maps, etc. It helps in taking right farming decisions at an appropriate time.

b) **Geographical Information System -** It examines and analyses the wider range of agricultural-related resources which are important parameters of crop productivity.

c) **Artificial Intelligence-** Use of automated agricultural vehicles will maximize their efficiency and capacity.

d) **Automated equipment-** automatic watering and irrigation systems, precision agriculture etc. can help ease the way of practicing agriculture and reduce the labour input for the same.

e) **Blockchain technology-** Blockchain can be used for agricultural trading and selling, decentralized transactions and self-executing smart contracts as well as for resource management, like tracking machinery maintenance records or for tracking other sensors and equipment.

f) **Cloud based solutions-** help companies remotely monitor farms, interact with farmers and make every crop transparent and traceable. It also aids farmers in adopting global agricultural practices and improves productivity by offering productivity insights and harvest forecasts.

g) **IT based network integrators-** These technological platforms offer a range of services to farmers in rural areas including financial, agricultural inputs and government assistance.

h) **Mobile technology-** Apps like Trringo have brought revolution in farm equipment renting process in India.

i) **Virtual aggregators-** Farmers can use the mobile platform for aggregation, and then leverage the volume to negotiate better prices with suppliers.

Potential of Biotech

a) **Nanotechnology** has prospects for integrated pest and nutrient management involving processes for pest disease control, efficient fertiliser applications with minimised nutrient loss.

b) **Genetic editing-** Engineering crops that require less water and that grow more food, and use of CRISPR/CAS9 to change a cow's gut microbes to try and reduce the amount of methane they are producing as well as how large they get are few examples of gene modification.

c) **High yielding crops-** Use of biotechnology can result in high yielding varieties of crops thus improving crop productivity.

d) **Tissue Culture-** It is the science of cultivating animal/ plant tissue in a prepared medium. Technologies based on this can be harnessed to achieve crop improvement objectives.

e) **Biofertilisers-** micro-organisms and minute plants which can absorb gaseous nitrogen and phosphorous directly from the atmosphere and make it available to the plants can be identified, multiplied in the laboratories and introduced into the root zone of crop plants to supply nitrogen and phosphorous.

f) **Improved value-** Biotechnology can help enhance flavor and nutritional value of the crop while also increasing its shelf life.

Krishi Megh (National Agricultural Research & Education System -Cloud Infrastructure and Services)

Union Minister of Agriculture & Farmers' Welfare virtually launched Krishi Megh along with KVC ALUNET (Krishi Vishwavidyalaya Chhatr Alumni Network) and Online Accreditation System for Higher Agricultural Educational Institutions (HEI). Krishi Megh is a step forward towards digital agriculture of New India.

About Krishi Megh:
- Krishi Megh is the National Agricultural Research & Education System -Cloud Infrastructure and Services.
- It aims to protect the precious data of the government's premier research body Indian Council of Agricultural Research.
- It has been set up at National Academy of Agricultural Research Management (NAARM) in Hyderabad.

Key features:
- Krishi Megh has been set up under the National Agricultural Higher Education Project (NAHEP), funded by both the government and World Bank.
- The data recovery centre at NAARM is synchronized with the data centre at the main data centre of the ICAR is at Indian Agricultural Statistics Research Institute (IASRI) Delhi.
- Built to mitigate the risk, enhance the quality, availability and accessibility of e-governance, research, extension and education in field of agriculture in India.
- Cater the need to save and preserve the important research-based data in a prompt digitised form to enable its access anywhere in any corner of the country and the world.

About KVC ALUNET:
- Its development has been a result of an idea of social networking for the alumnus of the Agricultural Universities.

- It will enable the alumni of all the 74 Agricultural Universities in connecting with each other and making it possible to assist the students in internship, placements and to provide support to their alma mater.

All the best
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