YOJANA SUMMARY (DECEMBER 2018) - DIGITAL INDIA

Introduction - Digital India

- Early digital initiatives were mainly to preserve records, create in-house office management systems, processing of data etc.
- From the internet to artificial intelligence and robotics, emerging technologies have presented unprecedented opportunities for social and economic renovation.
- India, the fastest growing economy in the world, has undergone complete transformation with the rapid uptake of digital technologies. Smart and connected technology has become an integral part of businesses, governments and communities.
- The IT revolution has given a big leap forward to Indian economy and proved to be a boon for the Indian youth as a generator of employment and revenue.
- Many services are now available through digital platforms where earlier one had to go physically or stand in queues. Passport and visa services, railway bookings, withdrawal of cash - have all been digitised.
- Aadhar was the first major initiative of the government to streamline government services through Direct Benefit Transfer and the JAM trinity.
- This transformation has also come with considerable challenges in the form of fake content, online frauds and cyber-bullying.
- It is a revolution that has touched the lives of the common man in almost all aspects and holds the potential to completely redefine the human experience, vastly simplifying, enhancing and enriching lives.

Towards an Inclusive and Empowered Nation

Today, India is recognised in the world for its thriving IT industry that is present in more than 200 cities of 80 countries.

Growth of IT industry -
- **Phase - I** - During this phase the Indian IT professionals and IT companies travelled to different parts of the world and established their presence.
- **Phase - II** - During this phase the global IT giants started investing in India and tapped its vast domestic market.
- **Phase - III** - This is the current phase where India is witnessing great growth in innovation and entrepreneurship led by Startups which are mostly founded by young Indians.

Contribution of Digital India -
Under Digital India Programme, various initiatives have been undertaken towards providing digital identities, creating digital infrastructure, enabling digital delivery of services and promoting employment and entrepreneurial opportunities that has transformed India into a digitally empowered society while bringing significant change in the lives of citizens.

Digital Identity -

To provide a unique digital identity, Aadhar has covered around 122 crore residents of the country. It has curbed leakages and corrupt practices from the public welfare delivery mechanism.

Digital Infrastructure -

1. **Bharat Net** - Bharat Net aims to provide high speed internet in rural areas of India by building optical fibre network connecting all the 2.50 lakh Gram Panchayats of India.
2. **National Knowledge Network** - National Knowledge Network (NKN) is a state-of-the-art network to promote collaboration and exchange of knowledge among educational and research institutions. Some of the key NKN initiatives include - virtual Class Rooms, Collaborative research groups over NKN (closed user groups), NDL, NPTEL, various Grids (like Cancer Grid, Brain Grid, Climate Change Grid) etc.
3. **GI Cloud** - By harnessing the benefits of cloud computing, it aims to accelerate delivery of e-services in the country while optimising ICT spending of the Government.
4. **eSign** - eSign Electronic Signature Service is an innovative initiative for allowing easy, efficient, and secure signing of electronic documents by authenticating signer user e-KYC services.

Digital India for Better Governance -

1. **JAM (Jan Dhan-Aadhar-Mobile) Trinity for Direct Benefit Transfers (DBT)** - The combination of 32.94 crore Jandhan Bank Accounts, 121 crore mobile phones and digital identity through 122 crore Aadhar is helping the poor receive the benefits directly into their bank accounts.
2. **Digital Payments** - Over the past four years, digital payment transactions have grown multifold from 316 crore transactions in 2004-15 to 2071 crore transactions in 2017-18.

Digital Delivery of Services -

- **UMANG** - It is a single mobile app that offers more than 307 government services. The target is to provide more than 1200 digital services on a single mobile app.
- **National Scholarship Portal** - It has become a one stop shop for all the scholarship needs of students.
- **Jeevan Pramaan** - It is aimed to facilitate ease of verification of pensioners using Aadhar digital identity.
- **e-Hospital and Online registration** - It aims to ensure that patients can get easy access to doctors.
- **Soil Health Cards** - National Soil Health Card Scheme was launched in 2015 to provide information on soil health digitally.
- **eNAM** - Electronic National Agriculture Market (eNAM) is a pan-India electronic trading portal which networks the existing Agricultural Produce Marketing

Committees (APMC) Mandis to create a unified national market for agricultural commodities.

- **DigiLocker** - It provides access to over 336 crore certificates in digital format on a single platform.
- **eVisa** - Services of e-Visa involves complete online application for which no facilitation is required by any intermediary/agents etc.
- **eCourts** - With e-Courts mobile app and portal it has become easy to keep a track of status of cases going on in different courts across India.
- **GeM** - Government e-Marketplace (GeM) is a transparent online marketplace for government procurements.

Digital India for Employment, Entrepreneurship and Empowerment -

1. **Digital Service Delivery near door-step (Common Services Centres)** - A vast network of more than 3.06 lakh of digital services delivery centres, spread across 2.10 lakh Gram Panchayats of the country has been created to provide access to digital services especially in rural areas at an affordable cost.
2. **Digital Literacy for the Masses** - In line with the objective to make one person e-literate in every household in the country, two schemes were launched viz. NDLM and DISHA, wherein a total of 53.7 lakh persons were trained and certified in Digital Literacy in the country.

BPO Promotion in Small Towns -

To create employment opportunities for local youth and secure balanced regional growth of Information Technology and IT Enabled Services (IT/ITES) Sector in each State, India BPO Promotion Scheme and North East BPO Promotion Scheme have been launched under Digital India Programme.

Digital India for Make in India -

1. **Promotion of Electronics Manufacturing** - The Phased Manufacturing Programme for Mobile Phones was launched with the goal of widening and deepening the mobile handsets and components manufacturing ecosystem in India.
2. **Initiatives in Emerging Technologies** - Centres of Excellence (CoE) are being set up in the areas of Internet of Things (IoT), Internal Security, Large Area Flexible Electronics, Intellectual Property Rights (IPR), Tactile Graphics for Visually Impaired, Agriculture and Environment, ESDM, Fintech, Language Technology, Automotive Electronics, Virtual Augmented Reality, Medical Tech and Health Informatics, Block Chain, Gaming and Animation, and Biometrics.
3. **Cyber Security** - The Cyber Swachhata Kendra (Botnet Clearing and malware analysis centre) has been set up to provide alerts to users for preventing losses of financial and other data.

Way forward -

- In the 21st Century, Digital Economy has emerged as a key driver for global economic growth and will also effectively address common global challenges including energy, environment and inequality.

- Concerted efforts to facilitate and promote process of digitalisation including upgrading digital infrastructure, augmenting capacity to develop standards and testing for conformity assessment, promoting electronics manufacturing with appropriate incentives, developing capacity to harness emerging technologies and strengthening cyber security as more services, including digital payments, permeate the economy has the potential to create a trillion-dollar economy by 2025.

Towards a Digital Future

India's move towards its digital future began several decades ago. Early efforts at digitisation in government were largely government focused: how to improve efficiency, record keeping and data storage and processing especially in number crunching departments like finance.

Background -
- It was in 1997 that the first steps towards a citizen focused e-governance programme were taken, initially in the state of Andhra Pradesh.
- The next decade saw the emergence of several e-governance initiatives in diverse areas like land records, transportation, land registration, urban local bodies, PDS, etc.
- Some of these projects were implemented in a PPP mode, thereby drawing the country's technology industry into the nation-wide effort.
- Approval of SWAN project and early discussions at the highest levels of Government on the contours of a National e-Governance Plan and the game-changing Common Services Centres project in 2006 by the Union Cabinet.
- During the period (2004-2013), some of the more ambitious projects like UID (later renamed as Aadhar), Passport Seva, MCA21, etc. were initiated.
- Parallel developments in the telecom sector made the country move from 100 to 1,000 million telecom subscribers in a little over a decade.

Potential of Digital Economy -
- The Aadhar project was taken to its logical conclusion by a vigorous drive, the JAM programme (Jan Dhan, Aadhar and Mobile) programme saw over 200 million people benefitting from financial inclusion through bank accounts and direct benefits transfer (DBT).
- The CSC programme has expanded to 2,50,000 panchayats and now provides employment to nearly a million people in the rural heartland.
- The Indian IT Industry had also grown from strength to strength and had become a 150+ billion dollar behemoth that was globally respected and often, envied.
- The last 5 years have seen one other major development, namely the rapid growth of third largest startup ecosystem in the world with around 7,500 tech start ups.

Digital Services Delivery -

- There are new exciting efforts in social sector like healthcare, agriculture, fintech/ financial inclusion that hold the promise of scripting India's future, riding on the back of and reinforcing the Digital India programme.
- AI and Internet of Medical Things (IoMT) are transforming healthcare. Similar transformations in the agriculture sector through technology interventions that enable precision farming, early warning of pest attack in cotton farming for example, are available through AI-powered systems to lower risks and costs while increasing productivity.

Challenges -
- Regulatory facilitation and debottlenecking by Government are critical across sectors for rapid progress necessary for full realisation of the potential.
- Map Policy of the country was an impediment to growth of location based services.
- Lack of a drone policy stymied use of drones and growth of a drone services ecosystem in the country.
- As we formulate laws and regulations on data privacy, we have to strike a careful balance to ensure that innovation is not stifled by unduly restrictive regulation.
- The new era requires speed: in thought, in action, in governance and regulatory changes. These are not easy.
- Availability, power and affordability of technology are no longer the limitations.

Regulating the Digital Revolution

The Digital Revolution is often called as the Fourth Industrial Revolution, the first three being the Steam Engine, followed by the age of Science and Mass production, and computers.

Drivers of Fourth Industrial Revolution -
The revolution is driven by various factors like the availability of high-speed Internet, innovative products and services, the need for efficient management and distribution of resources both by the Government as well as private entities, the user's ubiquitous requirement of remaining connected at all times etc.

Growth in data consumption -
It is estimated that the global volume of digital data created annually was 4.4 zettabytes in 2013 and this would reach 44 zettabytes by 2020. Further, it is expected that the number of devices connected to the IP Networks would be approximately three times the global population by 2021.

Challenges -
A major portion of the Applications and services that are being developed are based on the mobile connectivity, hence the role of Telecom Service Providers as well as the Regulator becomes more and more challenging.
The challenges faced by the tradition regulation can be broadly classified into -

1. **Business challenges** - Pacing problems i.e. a slow pace of regulations may become irrelevant very soon. The disruptive business models may require intervention/regulation by multiple regulators.
2. **Technological challenges** - Issues related to Data, Digital Privacy and Security, Data Ownership, AI-based challenges etc. One of the major challenges in the telecom sector today is to simultaneously regulate the legacy as well as the new digital networks.
3. **Socio-economic challenges** - Spreading awareness as well as connecting every individual are the key socio-economic challenges of our country.

Approaches to Regulation -

1. Regulations should be Adaptive - An adaptive regulatory regime would foster innovation, provide a platform for the industry to grow, enhance user satisfaction, provide consumer protection and help the government to regulate.
2. Use of Regulatory Sandboxes - Impact assessment of regulation on the technologies may be studied before issuing the Regulations.
3. Collaborative Regulations - Services and products today may require regulation by multiple Regulatory bodies; hence a collaborative Regulatory approach would have to be adopted.

A Regulator, therefore, has to be aware of the current state of regulations world over, know the right time to regulate, know the right approach to regulate and have an adaptive approach towards emerging technologies.

Aadhaar : The Digital Highway to New India

Critics have alleged that Aadhaar was unconstitutional for it purportedly, as per their claim, infringed on individual liberty, privacy, personal autonomy, freedom of choice, etc.

International Experience -

● USA introduced Social Security Number (SSN) through an enactment in 1935 for a limited purpose of providing social security benefits during the Great Depression.
● However, in 1942, President Franklin Roosevelt expanded the scope through a historic executive order number 9397 which mandated all Federal agencies to exclusively use SSN in their programmes.
● In 1962, SSN was adopted as the official Tax Identification Number (TIN) for income tax purposes.
● In 1976, the Social Security Act was further amended to say that any State may utilise, in the administration of any tax, any general public assistance, driver's license or motor vehicle registration law, the social security account numbers for the purpose of establishing the identification of individuals and may require any individual to furnish SSN.

Importance of Aadhaar -

- Aadhaar ensures that the benefits reach directly to the deserving beneficiaries in a hassle-free manner. Aadhaar is helping eliminate middlemen, ghosts, fakes and duplicates in social sector schemes.
- Aadhaar makes it possible for the government to design special welfare programmes and target them to deserving sections of the society.
- Aadhaar is also emerging as a great enabler of alternate digital payment system for those who cannot use debit, credit card, internet banking etc. Aadhaar enabled Payment System (AePS) deployed on a handheld device makes it possible for people to use their Aadhaar and fingerprint to withdraw or transfer money at their doorsteps.
- Aadhaar has helped flood victims of Tamil Nadu who were stranded in relief camps to withdraw money from their bank accounts without any documents or withdrawal slips being filed just by their Aadhaar and fingerprint through AePS enabled micro-ATMs.
- The government is using Aadhaar to create a tax compliant society by weeding out fake and duplicate PAN cards, shell companies, and curb tax evasion, money laundering, fraudulent, corrupt and dubious activities.

Secure Digital India

Concerns of Digital Space -
- The path to digitisation is resulting in massive volumes of data getting digitised and infrastructure and applications becoming exposed to internet and interconnected to each other, which, apart from opening new and better avenues, also engenders the cyber security risk.
- Never before encountered and unanticipated threat scenarios are emerging and confronting the industry today and taking a toll in the form of business risks, reputational damage, disruption of services, and potentially public safety hazards.
- Cyber space is now the fifth domain of warfare. The World Economic Forum 2018 Risk report called out Cyber Risk as one of the top three risks along with environment disasters.

Changing Paradigm of Cyber Security -
The indicative list of next generation cybersecurity strategy elements are as follows, but not limited at -
1. Security of Recognition Technologies,
2. Extended Perimeter Security with a focus on Supply Chain,
3. Context Aware Security,
4. The Shift from Detection to Response,
5. Protecting Machines,
6. Providing Resiliency to e-Infra,
7. Converging Security Disciplines.

Addressing Cyber Security Concerns -
Industry and government needs to partner and implement measures -

1. **Policy and regulatory response to drive sectors and entities to Cyber Security Preparedness** - We need strong enforcement of security frameworks and similar focus in other sectors of Critical Infrastructure including Healthcare.
2. **Coordination and collaboration for collective defence and quick response** - Need for sectoral CERTS and State level CERTs to bolster the efforts of a national CERT. Forge necessary government to government and bilateral, multilateral collaborations.
3. **Cyber Security Preparedness in India including large enterprises, SMBs and PSUs needs to be stepped up** - Micro and small enterprises are rapidly going online, and face a severe cyber risk. Digital Literacy and Cyber Security Awareness and adopting safe and secure practices online, and in their digital payment transactions is a key priority for India.

Transformative Impact of Digital India

The Digital India Programme was launched by the Government in 2015 with the aim to develop India into a knowledge economy and a digitally empowered society.

Recognition of achievement -
- The remarkable increase in digital adoption in the improvement in India's position in the United Nations E-Government Index 2018 that highlights that India's relative capabilities of utilising ICT for governance have improved relatively faster than the entire Asia region.
- There have been significant improvements in the UN-Online Service Index, where India has scored 0.95 in 2018. There has been a consistent growth in e-participation index too, that has grown to 0.96 in 2018.
- The citizens of the country have been given a Digital Identity through Aadhar and more than 122 crore residents have already been covered.
- India has moved up the ladder with the multifold growth in digital payment transaction. It has risen from 335 crore transactions in 2014-15 to 2070.98 crore transactions in 2017-18 and is growing day by day.

Digital Developing Service -
- Digital India has changed the landscape of delivery of service and governance. The **Common Service Centres (CSCs)** are ICT enabled rural enterprises in the country and provide plethora of services at the doorsteps of the citizens. Over 300 services, ranging from Education, Health, Agriculture, Certificate related are being provided in around 3.07 lakh CSCs.
- **DigiLocker** has enabled people to store, share and verify their documents and certificates through cloud.
- **National Scholarship Portal** has become a source of facilitating education. It is a one-stop solution that ensures students to access various services starting from student application, application receipt, processing, sanction and disbursal of various scholarships with ease.

- **Online Registration System (ORS) and e-Hospital** have facilitated Aadhaar based online registration and appointment for patients, reducing tiring queues in hospitals for appointments and enabled health information management system.
- **Jeevan Pramaan**, provides the ease to pensioners to generate their Digital Life Certificate at home, bank, CSC centre, government office etc, using Aadhaar biometric authentication.
- To sustain the people throughout their digital journey, a **Unified Mobile Application for New Age Governance (UMANG)** has been launched. It has brought government services to the fingertips of the citizens of India.
- **Government e-Marketplace -** To address the challenges in public procurements, Government e-marketplace (GeM) was launched. GeM provides an online marketplace for public procurement for both goods and services.
- The Government of India has taken significant measures in the area of Electronics Manufacturing, BPO Promotion, IT-ITeS etc. Indian startups are already developing to take advantage of the humongous potential created through this transformation - more than 1,200 startups came up in 2018, including eight unicorns, taking the total number to 7,200 startups.
- The skill set of the people have been continuously improved and enhanced for adaptation of digital services through **Pradhan Mantri Gramin Saksharta Abhiyaan (PMGDISHA)** which aims to make 6 crore people digitally literate.
- The **Cyber Swachhata Kendra** (Botnet Clearing and malware analysis Centre) has been setup to provide alerts to users for preventing losses of financial and other data.

Conclusion -
India is at a tipping point where robust foundation of Digital India and increased access to information and services are enabling India to optimally harness digital technologies in the core economic and social sectors, leading to $1 trillion Digital Economy while sustaining 55-60 million jobs by 2025.

Electronic Manufacturing : Scope and Future in India

Electronics Industry is one of the largest and fastest growing industries in the world. Manufacturing activity related to mobile handsets and its components ecosystem has been growing at a rapid pace during the past 3-4 years.

Growth in manufacturing -
- Over 120 new manufacturing units have been established across the country during the past 3-4 years generating employment for 4.5 lakhs combining both direct and indirect employment.
- During 2017-18 India has overtaken Vietnam to become the second largest mobile handset production geography after China with approximately 225 million units of handsets being produced during this period.

Government steps -

- Indigenisation of components related to mobile handsets has also gained momentum after the Government of India notified and started implementing the Phased Manufacturing Programme (PMP) in various phases.
- The aims and objectives behind implementation of the PMP are to widen and deepen the components manufacturing ecosystem in the country with a major focus to enhance value addition and generate significant employment.
- As per ICEA estimates, PMP alone does have the potential to create 47 lakh jobs through establishment of 1400 factories in the mobile components space alone.

How mobile handset manufacturing picked up?
- Robust differential duty structure which was made applicable on mobile handsets vide Budget 2015 encouraging domestic manufacture of handsets.
- Notifying and subsequent phased implementation of the Phased Manufacturing Programme (PMP) to encourage indigenisation of components of handsets.
- Draft National Policy on Electronics 2018 currently under consultation process.
- Effective outreach initiatives jointly undertaken by Government of India (MeiTY, DIPP etc.) and major Industry Associations such as ICEA (India Cellular and Electronics Association) to important geographies such as China, Taiwan, Japan, USA, Korea, Germany etc.
- Investment friendly policy framework adopted by various state Governments such as AP, Telangana, UP, Haryana, etc.
- Establishment of the Fast Track Task Force (FTTF) by the Ministry of Electronics and IT (MeiTY) to "re-establish and catalyse significant growth in mobile handset and components manufacturing ecosystem in India".

Conclusion -
Riding on successes already achieved in the mobile handset manufacturing ecosystem, the Government of India is very keen to replicate similar success stories in the entire electronics vertical with a special focus on developing manufacturing ecosystem in medical electronics, automotive electronics, defence electronics, consumer electronics, emerging technologies such as IoT, sensors, agricultural electronics etc.

Technology Areas for Indian languages

Indian language technology can enable people to access material in their own languages, for example, material in English and other Indian languages can be translated automatically.
Similarly, computers can read out information to the illiterate or the blind through text-to-speech systems, remote data can become accessible through telephone speech interfaces, sophisticated search can be provided to the internet, digitally scanned books and other material can be made more accessible by using optical character readers.

Technology Areas -
1. **Localisation** -

a. Localisation in our context means that the electronic device is enabled with Indian languages using the standards. For example, when one buys a phone, it should already have the language or the region built into it along with Hindi and English.

b. Use of standards is most important. This ensures that the data created on one device is usable (displayable, editable, processable etc.) on any other electronic device.

2. **Creating e-content in Indian languages** -
   a. There is an acute need to create e-content in Indian languages.
   b. e-Content in ILs can be created rapidly, in the short term, through translation of English content, but in the long term, it should be created originally in the Indian languages.
   c. Translations across ILs can be effective in conveying the original meaning and would also be suitable to the Indian context.

3. **Automatic Machine Translation (MT)** -
   a. Automatic Machine Translation (MT) translates a given text in one language to another, instantly.
   b. MT systems for Indian languages are available and produce good quality translation. They compare favourably with similar systems across European languages.

4. **Cross Language Access to Content** -
   a. As the e-content in Indian languages increases, there would be an even greater need to search for and locate relevant content by the users on the internet.

5. Speech Processing - There are two parts to this technology -
   a. Text-to-speech (TTS), and
   b. Speech-to-text (ASR) systems
      i. The former technology allows a computer to "read out" a given text file in an IL. The latter allows the computer to "listen" to the spoken language and convert it into a text file.
      ii. TTS can be used to allow a text file to be accessed by a blind person or an illiterate person. It can also allow interaction over the telephone, where the text cannot be seen by the user. TTS is a mature technology and is available for more than a dozen ILs.
      iii. ASR systems are available in half a dozen ILs in the laboratory, but are not yet mature. Research needs to be done to advance the accuracy and performance, particularly for restricted task domains.

6. **Optical Character Recognition (OCR)** - OCR takes a printed book and converts it into text form. When scanning of a book in hardcopy is done, the output is in the form of scanned images which cannot be used for search, machine translations, speech processing etc. OCR takes a scanned image of a page, recognises the characters, and converts it into text form.

Impact of Audio Digital Library -

● Availability of information in spoken language form for illiterate and others.

- Promotes research in speech technology for Indian languages.
- Enable to develop speech technology products useful for common man.
- Examples - Speech-speech translation systems (for information exchange), Screen readers (for illiterate and physically challenged), Naturally speaking dialog systems (for information access over voice mode).

Way forward -
1. Indian language technology should immediately be deployed to translate all central government websites into 22 Indian languages.
2. There would also be the need for human post-editors who would take the output of MT system, and make it more readable etc.
3. Speech processing can be done, along with MT, to provide spoken language translation.
4. The National Digital Library of India should use services of an OCR for indexing the scanned images in Indian languages, in making them searchable.

Digital Library in India - A Paradigm Shift

Digital technology and internet connectivity lead the evolution of the traditional library to digital library. The demands for information, limitations of resources available, searching difficulties in traditional libraries, low cost of using technology, the space needed to build a traditional library and needs of new generations, are the most important factors driving this change.

Concept of Digital Library -
- Digital library is a library in which collections are stored in digital format (as opposed to print, microform, or other media) and accessible by computers. The content may be stored locally, or accessed remotely.
- Digital Libraries have the ability to enhance access to information and knowledge. They also bridge barriers of time and space.

Digitisation of Libraries - Few Initiatives -
1. **Digital Library of India (DLI)** -
   a. Digital Library of India (DLI) is a digital collection of freely accessible rare books collected from various libraries in India. DLI project started in early 2000 with the vision to archive all the significant literary, artistic and scientific works of mankind to preserve digitally and make them available freely for every one over internet for education, study, appreciation and for future generations.
   b. The Project was initiated by the Office of the Principal Scientific Advisor to the Government of India and subsequently taken over by the Department of Electronics and Information Technology (DEITY).
2. **Information and Library Network (INFLIBNET)** -
   a. Information and Library Network (INFLIBNET) Centre is an autonomous Inter-University Centre of the University Grants Commission of India.

b. It is a major National Programme initiated by the UGC in March 1991.

c. INFLIBNET is involved in modernising university libraries in India and connecting them as well as information centres in the country through a nation-wide high speed network using the state-of-art technologies for the optimum utilisation of information.

3. **Shodhganga** - "Shodhganga" is the name coined to denote digital repository of Indian Electronic Theses and Dissertations set-up by the INFLIBNET Centre.

4. **Shodh Gangotri : Indian Research in Progress** -

a. Shodhgangotri is a new initiative that complements "ShodhGanga".

b. While "ShodhGanga" is a repository of full-text theses submitted to universities in India, Shodhgangotri hosts the synopsis of research topics submitted to the universities in India by research scholars for registering themselves for the PhD programme.

c. Under the initiative called ShodhGangotri, research scholars/research supervisors in universities are requested to deposit electronic version of approved synopsis submitted by research scholars to the universities for registering themselves to the PhD programme.

5. **National Library and Information Services Infrastructure for Scholarly Content (N-LIST)** - The Project entitled "National Library and Information Services Infrastructure for Scholarly Content (N-LIST)", being jointly executed by the UGC-INFONET Digital Library Consortium, INFLIBNET Centre and the INDEST-AICTE Consortium, IIT Delhi provides for -

a. Cross-subscription to e-resources subscribed by the two Consortia.

b. Access to selected e-resources to colleges i.e. to students, researchers and faculty from colleges and other beneficiary institutions.

6. **e-ShodhSindhu** -

a. MHRD has formed e-ShodhSindhu merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium.

b. e-ShodhSindhu will continue to provide current as well as archival access to more than 15,000 crore and peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines from a large number of publishers and aggregators to its member institutions.

7. **National Digital Library (NDL)** -

a. Ministry of HUman Resource Development, under its National Mission on Education through Information and Communication Technology (NMEICT), has entrusted IIT Kharagpur to host, coordinate and set-up the National Digital Library (NDL) towards building a national asset.

b. The objective is to provide a single window access with e-learning facility to different groups of users ranging from primary to higher education.

Conclusion -

Digital Libraries provide an effective means to distribute learning resources to students and other users. India truly needs digitisation of traditional libraries more and more for the growth and development in education and research.