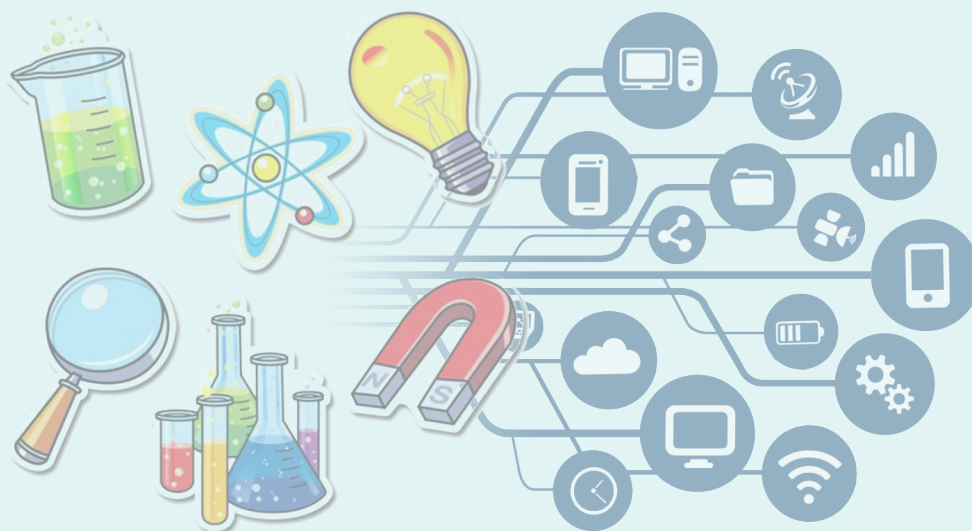




# General Science & Technology

**FIRST STEP**

NCERT Based Course for CSE  
after Class 12





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**Corporate Office:** 44-A/4, Kalu Sarai (Near Hauz Khas Metro Station),

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**E-mail:** infomep@madeeasy.in | **Web :** www.madeeasypublications.org

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## General Science & Technology

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PART II

**Technology**

## 4.1 Overview of ICT

Information and Communication Technology (ICT) consists of various infrastructure and components that used to transmit, process, store, create, display, share or exchange the information by the means of computing.

Information and Communication Technology can be considered to be built on the 4C's: computing, communication, content and capacity.

Applications of Information and Communication Technology are divided into two broad categories:

- (i) The first are those largely dependent on traditional telecommunication networks (including the internet) that enables on-demand communications to provide information tailored to the user's convenience and needs. Distance education programs, e-commerce or e-governance fall into this category.
- (ii) The second group of Information and Communication Technology applications are human independent, where information is processed and decisions are arrived on the basis of preset criteria without human intervention at the time of decision making. These can nearly be passive systems, or part of a larger system (embedded ICT). Eg-Sensor based networks.

The role of ICT should be best seen as an enabler, primarily spanning in several dimensions:

- (a) Efficiency and competitiveness
- (b) New business models and opportunities
- (c) Transparency and empowerment

The value of ICT lies in the gathering, storing and analysing information with greater accuracy and granularity. This enables tailoring development efforts to suit specific social, economic, gender, age, geographic conditions and requirements.



## Advantages and Disadvantages of ICT

### Advantages of ICT

1. **Globalization:** It has not only brought the world closer together, but has allowed the world's economy to become a single independent system.
2. **Communication:** With the help of IT, communication has become cheaper, quicker and more efficient. Various modes of communication such as mobile phone or internet have generated instantaneous response by simply text messaging or sending an e-mail.
3. **Cost Effectiveness:** ICT has helped to computerise the business process, thus streamlining business, to make them extremely cost effective and money-making machines.

4. **Bridging the Cultural Gap:** ICT has helped to bridge the cultural gap by helping people from different structures to communicate with one another, allow exchange of views and ideas, thus increasing awareness and reducing prejudices.
5. **Round the Clock Service:** ICT has made it possible for business to be open all the time all over the globe, making purchases from different countries easier and more convenient. It also means one can have goods delivered right into another's doorstep without having to move a single muscle.
6. **Creation of New Jobs:** Probably the best advantage of ICT is the creation of new and interesting jobs like computer programmers, systems analyst, hardware and software developers and web designers are just some of the many new employment opportunities created with the help of IT.
5. **Dominant Culture:** Culture of rich countries are dominating the lives of people of developing or poor nations.
6. **Moral and Ethical Issue:** ICT has also created a problem of morality; younger generation is getting corrupted because of the content of internet.

## 4.2 Challenges in ICT

Several issues that determine the viability of ICT for sustainable development, primarily focused on traditional computing and connectivity are listed below:

### Digital Divides

#### Disadvantages of ICT

- 1. **Unemployment:** While information technology may have streamlined the business process, it has also created job redundancies, downsizing and outsourcing.
- 2. **Lack of Job Security:** Technology keeps on changing constantly, therefore one has to be in a continuous learning mode.
- 3. **Domination of Language:** Language like English is dominating over other languages as most of the content on the internet is in English language.
- 4. **Privacy:** Though ICT may have made communication quicker, easier and more convenient, it has also brought along privacy issues. From cell phone signal interceptions to e-mail hacking, people are now worried about their once private information becoming public knowledge.
- The digital divide is actually a manifestation of other underlying divides, spanning economic, social, geographic, gender and other divides. Attempting to address the digital divide as a cause instead of a symptom of other divides has led to many failures of ICT-driven development projects.
- The digital divide is more than differences in availability of hardware and connectivity. The four interrelated features determine the value of ICT for a user which are as:
  - (i) **Awareness:** People must know what can be done with ICT; they must also be open to using ICT.
  - (ii) **Availability:** ICT must be offered within reasonable proximity, with appropriate hardware/software.
  - (iii) **Accessibility:** Related to the ability to use the ICT (spanning literacy, e-literacy, language, interfaces etc.)
  - (iv) **Affordability:** All ICT usage together should be only a few percent of one's income, this covers life-cycle costs, spanning hardware, software, connectivity, education etc.

## Hardware and Software Cost

Until hardware and software cost decreases, ICT may remain beyond the reach of many users. Most of the developing nations may face higher hardware cost due to important duties or other artificial constraints or a lack of local production capabilities.

## Connectivity Cost

As per ITU data report, using dial-up to access the internet can cost more than the average annual Gross National Income (GNI) in many countries. This implies that a shared access model becomes costlier for ICT to be affordable.

## Robustness

Telecommunications equipment is designed to have much higher reliability with about 99.99% uptime or just 5 minutes of downtime per year. However, in developing countries, the reliability of ICT is much lower which is mostly due to failure in electricity, software or other complementary systems, including limited availability of spares.

## Content

Not only issues such as literacy and multitude of language are yet to be addressed, there are also concerns over control of data, accuracy and transaction costs. In addition, most content is not locally relevant or actionable.

Today's ICT systems are largely geared towards passive consumption of information, instead of active production of information and content.

## Usability and Interface

The prime means of interfacing with data has been the computer, which assumes a certain level of literacy, both lingual and technical. Until local

language and graphical interfaces are improved, users will only be from upper socio-economic strata or developed nations.

## Security

Information security and its aspects encompassing integrity, confidentiality, privacy and assurance is a major concern for all countries, including the developed ones. Due to lack of institutions of tackle cyber security, a few developing nations become victims and also launching pads for a number of attacks.

## Internet control, Architecture and Addressing

One of the major debates ongoing in the ICT and development community is over internet governance. The structure of internet governance largely does not include issues relating accountability and various stakeholders are struggling to define roles and responsibilities.

### 4.3 ICT in Daily Life

ICT includes all technical components that are used for handling information and achieving communication. It includes network hardware, communication lines and all necessary software.

ICT is comprised of information technology, telephony, electronic media and all types of process and transfer of audio and video and all control and managing functions based on network technologies.

#### The ICT Used in Various Parts of Daily Services Are:

##### 1. Internet Services

- It includes e-commerce, e-banking and e-governance.

- 'e-commerce' is a form of trade that allows customers to see and purchase products online.
- 'e-banking' allows users to have control over their accounts (view balance and transaction), transactions from one account to another, credit payment, vouchers for mobile phone etc. The benefits are time saving, lower service fee and access from anywhere, anytime.
- 'e-governance' means use of technology to provide better public access to government information, therefore providing citizens their human right of information.

## 2. e-learning

- e-learning consists of all form of learning or transfer of knowledge based on electronic technologies. It is mostly used to describe a learning technique, in which there is no direct teacher-student contact while using ICT technology.

## 3. Tele-networking

- It includes Public Switched Telephone Network (PSTN). It operates on the basis of circuit switched by national, regional or local telephone operators. Various factors like quality of IT infrastructure, good computer literacy etc. affect the performance of tele-networking.
- Tele-networking is advantageous as:
  - (i) It reduces cost and employees transportation reimbursement.
  - (ii) It reduces travelling time from one place to another.
  - (iii) It allows the possibility of working in the convenient place.

## 4. E-mail, IM, VOIP, BLOG, PODCAST

- E-mail is the transmission of text messages using internet. With the help of internet, users

can exchange files like image, multimedia, documents etc. E-mail consists of a user name and a domain name.

- IM (Instant Messaging) service is used for instant message exchange and real time communication. It allows video conferencing also. Most popular IM services are: Windows Live Messenger, Skype etc.
- VOIP (Voice Over Internet Protocol) is a term of technology that allows digitalization and transfer of voice over the internet. It enables sound communication like telephone call over internet.
- BLOG is form of internet media in which one can post or write their opinion on any topic. It can be personal or in the form of journals. Blogs are popular because end-users's don't need to have advanced computer knowledge or knowledge of webpage creation etc. Blogging allows exchange of interests, ideas and opinions etc.
- PODCAST (POD-Personal on Demand + Broadcast) is a digital like containing audio or video content subscribed to and downloaded automatically through web syndication or streamlined online to a computer or mobile device.

## 5. Virtual Communities

- It includes a group of people who communicates via social-networks, forums, IM service, blogs. It is called a community because there are a collection of people who participates in a group of their interests thus forms of a virtual community as the people involving are not in physical contact but connected by means of ICT technologies.
- Social networking like Facebook, Twitter, Google+ are one of the application of ICT tools in our daily life.

## 6. Forum

- Forum is a service that allows users to exchange opinions. It can be compared to bulletin boards on which participants leave their messages, while others leave their comments. One of the examples of forum is TED conversational.

### 4.4

## Electronic Governance (e-Governance)

- The “e” in e-Governance stands for ‘electronic’. Thus, e-Governance is basically associated with carrying out the functions and achieving the results of governance through the utilization of ICT (Information and Communications Technology).
- While Governance relates to safeguarding the legal rights of all citizens, an equally important aspect is concerned with ensuring equitable access to public services and the benefits of economic growth to all. It also ensures government to be transparent in its dealings, accountable for its activities and faster in its responses as part of good governance.
- However, this would require the government to change itself – its processes, its outlook, laws, rules and regulations and also its way of interacting with the citizens. It would also require capacity building within the government and creation of general awareness about e-Governance among the citizens.
- In India, the main thrust for e-Governance was provided by the launching of NICNET in 1987 – the national satellite-based computer network. This was followed by the launch of the District Information System of the National Informatics Centre (DISNIC) programme to computerize all district offices in the country for which free hardware and software was offered to the State Governments. NICNET was extended via

the State capitals to all district headquarters by 1990. In the ensuing years, with ongoing computerization, tele-connectivity and internet connectivity established a large number of e-Governance initiatives, both at the Union and State levels.

## Government Interaction in e-Governance

### Government to Citizen (G2C)

G2C concept is used for expressing a delivery of public services from the government directly to the citizens

#### Initiatives in G2C

- **Computerization of Land Records:** In collaboration with NIC. Ensuring that landowners get computerized copies of ownership, crop and tenancy and updated copies of Records of Rights (RoRs) on demand.
- **Bhoomi Project:** Online delivery of Land Records. Self-sustainable e-Governance project for the computerized delivery of 20 million rural land records to 6.7 million farmers through 177 Government-owned kiosks in the State of Karnataka.
- **Gyandoot:** It is an Intranet-based Government to Citizen (G2C) service delivery initiative. It was initiated in the Dhar district of Madhya Pradesh in January 2000 with the twin objective of providing relevant information to the rural population and acting as an interface between the district administration and the people.
- **Lokvani Project in Uttar Pradesh:** Lokvani is a public-private partnership project at Sitapur District in Uttar Pradesh which was initiated in November, 2004. Its objective is to provide a single window, self-sustainable e-Governance solution with regard to handling of grievances, land record maintenance and providing a mixture of essential services.

- **Project FRIENDS in Kerala:** FRIENDS (Fast, Reliable, Instant, Efficient Network for the Disbursement of Services) is a Single Window Facility providing citizens the means to pay taxes and other financial dues to the State Government. The services are provided through FRIENDS Janasevana Kendrams located in the district headquarters.
- **e-Mitra Project in Rajasthan:** e-Mitra is an integrated project to facilitate the urban and the rural masses with maximum possible services related to different state government departments through Lokmitra-Janmitra Centers/Kiosks.
- **e-Seva (Andhra Pradesh):** This project is designed to provide 'Government to Citizen' and 'e-Business to Citizen' services. The highlight of the eSeva project is that all the services are delivered online to consumers / citizens by connecting them to the respective government departments and providing online information at the point of service delivery.
- **Admission to Professional Colleges**  
**Common Entrance Test (CET):** With the rapid growth in the demand as well as supply of professional education, the process of admission to these institutions became a major challenge in the early 1990s. Recourse was then taken to ICT to make the process of admission transparent and objective. One of the pioneering efforts was made by Karnataka. The State Government decided to conduct a common entrance test based on which admission to different colleges and disciplines was made.

### Government to Business (G2B)

It is direct interaction between the government and business. There is no need of intermediaries, for which businesses otherwise would have incurred a significant expense. It makes business transactions

transparent. It is also useful in helping businesses leverage opportunities across regions

### Initiatives in G2B

- **e-Procurement Project in Andhra Pradesh and Gujarat:** To reduce the time and cost of doing business for both vendors and government.
- **MCA 21:** By the Ministry of Corporate Affairs. The project aims at providing easy and secure online access to all registry related services provided by the Union Ministry of Corporate Affairs to corporates and other stakeholders at any time and in a manner that best suits them.

### Government to Government (G2G)

It involves distributing data or information between agencies, organizations or departments of government. It aims to play a supportive role for implementing e-Governance by better communication, data sharing and enabling data access. It helps bring cost-effectiveness

### Initiatives in G2G

- **Khajane Project in Karnataka:** It is a comprehensive online treasury computerization project of the Government of Karnataka. The project has resulted in the computerization of the entire treasury related activities of the State Government and the system has the ability to track every activity right from the approval of the State Budget to the point of rendering accounts to the government.
- **SmartGov (Andhra Pradesh):** SmartGov has been developed to streamline operations, enhance efficiency through workflow automation and knowledge management for implementation in the Andhra Pradesh Secretariat.

### Government to Employees (G2E)

It involves giving and taking of information regarding diverse work assignments as may come from time

to time, evolution of performance, management policy for personnel, training and development of employees, and career advice. Exchange of information happens online among different organizations, discussion forums, and agencies to enable employees to get the maximum benefit.

### Advantages of e-Governance

1. **Speed:** Technology makes communication speedier. Internet, Phones, Cell Phones have reduced the time taken in normal communication.
2. **Cost Reduction:** Most of the Government expenditure is appropriated towards the cost of stationary. Paper-based communication needs lots of stationery, printers, computers, etc. which calls for continuous heavy expenditure. Internet and Phones makes communication cheaper saving valuable money for the Government.
3. **Transparency:** Use of ICT makes governing profess transparent. All the information of the Government would be made available on the internet. ICT helps make the information available online eliminating all the possibilities of concealing of information.
4. **Accountability:** Once the governing process is made transparent the Government is automatically made accountable. Accountability is answerability of the Government to the people. It is the answerability for the deeds of the Government.
5. **Convenience:** e-Government brings public services to citizens on their schedule and their venue.
6. **Improved Customer Service:** e-Government allows to redeploy resources from back-end processing to the front line of customer service.

### Disadvantages of e-Governance

- Electronic governments also consist on certain disadvantage. The main disadvantage

of an electronic government is to move the government services into an electronic based system. This system loses the person to person interaction which is valued by a lot of people.

- In addition, the implementation of an e-Government service is that, with many technology based services, it is often easy to make the excuse (e.g. the server has gone down) that problems with the service provided are because of the technology.

### M-Governance

- M-Governance is not a replacement for e-Governance, rather it complements e-Governance. M-Governance, is the use of mobile or wireless to improve Governance service and information “anytime, anywhere”. Mobile applications also rely on good back office ICT infrastructure and work processes. It has potential of using mobile phones as input devices in certain areas where last mile connectivity becomes issues for simple data inputs of critical importance for decision making in government departments.
- M-Governance is not a new concept. The private sector has been greatly leveraging these of mobile phones for delivery of value added services for the following which however are mostly SMS based: Banking, Media, Airlines, Telecom, Entertainment, News, Sports, Astrology, and Movie Tickets Etc.
- M-governance has increased the productivity of public service personnel, improving the delivery of government information and services, increasing channels for public interactions and Lower costs leading to higher participation of people.
- Recent thrust to m-governance is being provided through USSD Services Unstructured Supplementary Services Data (USSD) is a session based service unlike sms which is store and forward service. It can be used by the user to send command to an application in text format. USSD acts as a trigger for the application

## 4.5 ICT Initiatives of Govt

### Direct Cash Transfer

To facilitate disbursements of Government entitlements like NREGA, Social Security pension, Handicapped Old Age Pension etc. of any Central or State Government bodies, using Aadhaar and authentication thereof as supported by UIDAI.

### Aadhaar Enabled Payment System (AEPS)

AEPS is a bank led model which allows online interoperable financial inclusion transaction through the Business correspondent of any bank using the Aadhaar authentication. This has helped in financial inclusion. The four Aadhaar enabled basic types of banking transactions are as follows:

- Balance Enquiry
- Cash Withdrawal
- Cash Deposit
- Aadhaar to Aadhaar Funds Transfer

### Digital India Program

This programme has been envisaged by Department of Electronics and Information Technology (DeitY). The vision of Digital India aims to transform the country into a digitally empowered society and knowledge economy.

The Digital India is transformational in nature and would ensure that Government services are available to citizens electronically. It would also bring in public accountability through mandated delivery of government's services electronically, a Unique ID and e-Pramaan based on authentic

and integrated government applications and data base.

### MyGov Citizen Portal

Union Government launched an online platform mygov.nic.in to engage citizens in the task of "good governance". MyGov is a technology-driven platform that provides people with the opportunity to contribute towards good governance.

### E-Kranti Scheme

This is project for linking the internet with remote villages in the country. This scheme will broaden the reach of internet services to the rural areas in the country.

### JAM Trinity

It is an abbreviation for Jan Dhan Yojana, Aadhaar and Mobile number. The government is pinning its hopes on these three modes of identification to deliver direct benefits to India's poor. Until now, the government has operated a multitude of subsidy schemes to ensure a minimum standard of living for the poor. These take convoluted routes to deliver affordable products or services to them.

JAM significantly reduced leakages in LPG and MGNREGS with limited exclusion of the poor. The returns from pursuing JAM in other areas depends on the size of leakages in those sectors. Subsidies with higher leakages have larger returns from introducing JAM.

### DigiLocker

- Targeted at the idea of paperless governance, DigiLocker is a platform for issuance and verification of documents & certificates in a digital way, thus eliminating the use of physical documents.

- Indian citizens who sign up for a DigiLocker account get a dedicated cloud storage space that is linked to their Aadhaar (UIDAI) number.
- Organizations that are registered with Digital Locker can push electronic copies of documents and certificates (e.g. driving license, Voter ID, School certificates) directly into citizens lockers.
- Citizens can also upload scanned copies of their legacy documents in their accounts. These legacy documents can be electronically signed using the eSign facility.
- It also offers a unique combination in the direction of cooperative federalism since it brings on one stage the Secretaries of Government of India and the Chief Secretaries of the States.
- The system has been designed in-house by the PMO team with the help of National Informatics Center (NIC). As the name suggests, it is aimed at starting a culture of Pro-Active Governance and Timely Implementation.

### SWAYAM

### MeghRaj

- In order to utilise and harness the benefits of Cloud Computing, Government of India has embarked upon an ambitious initiative – ‘GI Cloud’ which has been named as ‘MeghRaj’. The focus of this initiative is to accelerate delivery of e-services in the country while optimizing ICT spending of the Government.
- This will ensure optimum utilization of the infrastructure and speed up the development and deployment of eGov applications.

- SWAYAM is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality.
- The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged.
- SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy.
- SWAYAM platform is indigenously developed by Ministry of Human Resource Development (MHRD) and All India Council for Technical Education (AICTE) with the help of Microsoft and would be ultimately capable of hosting 2000 courses and 80000 hours of learning: covering school, under-graduate, post-graduate, engineering, law and other professional courses.

### PRAGATI

- PRAGATI (Pro-Active Governance And Timely Implementation) is an ambitious multi-purpose and multi-modal platform.
- PRAGATI is a unique integrating and interactive platform. The platform is aimed at addressing common man's grievances, and simultaneously monitoring and reviewing important programmes and projects of the Government of India as well as projects flagged by State Governments.
- The PRAGATI platform uniquely bundles three latest technologies: Digital data management, video-conferencing and geospatial technology.

### E-Pathshala

- E-Pathshala has been developed by NCERT for showcasing and disseminating all educational e-resources including textbooks, audio, video, periodicals and a variety of other print and non-print materials through website and mobile app.

- The platform addresses the dual challenge of reaching out to a diverse clientele and bridging the digital divide (geographical, socio-cultural and linguistic), offering comparable quality of e-contents and ensuring its free access at every time and every place.

#### 4.6 Internet of Things

The Internet of things (Internet of Things or IoT) is the internet working of physical devices, vehicles (also referred to as “connected devices” and “smart devices”), buildings, and other items embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data.

In 2013 the Global Standards Initiative on Internet of Things (IoT-GSI) defined the IoT as “the infrastructure of the information society. The IoT allows objects to be sensed and/or controlled remotely across

existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human intervention.

Economic benefits IoT is one of the platforms of today’s Smart City, and Smart Energy Management Systems. It can also be used to improve crop yield to help feed the world’s growing.

#### 4.7 Nanotechnology

Nanotechnology is a technology for building or constructing materials, devices, tools etc. in smallest or lowest possible form i.e. on the scale of atom and molecule. One nanometre is a one billionth of a meter.

Nanotechnological inventions would bring enormous benefits and luxury in human life.

It is widely believed that nanotechnology has got the much-needed potential to be effective in terms of energy consumption besides being environment friendly. It is also expected to solve major health problems.

Applications of this technology will help manufacturing products at reduced cost which will be smaller, lighter and cheaper. The Nanotechnology is believed to be very promising in bringing solutions in the fields of health and sanitation, food security and environmental issues.

### Bitcoin

Bitcoin is a piece of digital code which is also used by people as currency. It was started in 2009 by Satoshi Nakamoto, whose real identity is still shrouded in mystery. The maximum number of Bitcoins that can be created is limited to ~21 million



#### Blockchain Technology

Blockchain—technology behind the Bitcoin digital currency—is a decentralized public ledger of transactions that no one person or company owns or controls.



# Information & Communication Technology

## PRACTICE QUESTIONS

- PRAGATI is the acronym
  - Pro-active governance and transparency in India
  - Pro-active governance and timely implementation
  - Primary governance for transparency in India
  - Promoting and accomplishing governance with assured and timely implementation
- Which of the following is a vision of e-Kranti also known as NeGP 2.0?
  - One stop service centre
  - Electronic change of rural villages
  - Transforming e-Governance for transforming governance
  - Increase in agricultural productivity
- Digi-Dhan Vyapar Yojana is a scheme to promote digital payments and is implemented by
  - NITI Aayog
  - UIDAI
  - Ministry of Finance
  - MeitY
- Gyandoot, a mass based information technology revolution is implemented in which of the following states?
  - Uttar Pradesh
  - Madhya Pradesh
  - Karnataka
  - Andhra Pradesh
- 'SWAN' is a term used in e-Governance stands for
  - Static Wide Area Network
  - Stable Wide Area Network
  - Static Wireless Area Network
  - State Wide Area Network
- Which of the following is a free Doordarshan DTH channel launched by Law and Information Technology (IT) to educate and inform the people about various modes of digital payments?
  - Digital World
  - Digishala
  - E-Mitra
  - Tech Zone
- Which of the following ministry has launched its e-office as a part of Good Governance initiative?
  - Ministry of Home Affairs
  - Ministry of Education
  - Ministry of Information and Technology
  - Ministry of Women and Child Development
- A mobile application launched by Union Government to provide speedy redressal of consumer grievances is:
  - E-mitra
  - E-Kranti
  - E-Seva
  - Smart Consumer
- Which of the following is a social network?
  - amazon.com
  - eBay.com
  - gmail.com
  - Twitter
- Information and Communication Technology includes:
  - Online learning
  - Learning through the use of EDUSAT
  - Web Based Learning
  - All the above

11. Official information to the press and other news media, is normally communicated through which department?
- Press Trust of India
  - Press Information Bureau
  - Press council of India
  - Any news outlet
12. ICT comprises the following components:
- Information and Communication Infrastructure (ICI)
  - Information Technology (IT)
  - Communication Technology (CT)
- Select the correct answer from the codes given below:
- 1 only
  - 1 and 2 only
  - 2 and 3 only
  - 1, 2 and 3
13. Which of the following examples illustrate(s) the application of ICT in teaching?
- ICT in languages
  - ICT in graphics creation
  - Spreadsheet design
  - All of the above
14. ICT refers to all the methods, tools, concepts related to
- storing digital information
  - recording digital information
  - sending digital information
  - All of the above
15. Which of the following open-source e-learning platform has been developed by IIT-Kanpur?
- e-Gyan
  - e-Saraswati
  - Brihaspati
  - None of the above
16. Which of the following is the appropriate definition for Information Technology?
- Information technology refers to the use of hardware and software for processing information.
  - Information technology refers to the use of hardware and software for distribution of useful information.
  - Information technology refers to the use of hardware and software for storage, retrieval, processing and distributing information of many kinds.
  - Information technology refers to the use of principles of physical sciences and social sciences for processing of information of many kinds.
17. Which of the following is also termed as multimedia education?
- ICT supported education
  - ICT enabled education
  - ICT education
  - None of the above
18. Which of the following statements are correct?
- N.K.N stands for New Knowledge Network
  - MOOCs are offline courses
  - National Supercomputing Mission is a Government of India initiative
  - Clock rate of CPU is measured in Gigabytes
  - Param Shivay is a super computer
- Choose the correct answer from the options given below:
- 3 and 5 only
  - 2 and 3 only
  - 3 and 4 only
  - 1 and 5 only
19. Which of the following are major issues arising out of the growing reliance on information technology?
- Profitability
  - Security threats
  - Privacy concerns
- Choose the correct answer from the options given below:
- 1 and 2 only
  - 1 and 3 only
  - 2 and 3 only
  - 1, 2 and 3

20. With respect to computers, which one of the following best describes phishing?
- A malicious program installed on a system that stays concealed to avoid detection.
  - A method of bypassing normal authentication procedures over a connection to a network.
  - A type of unsolicited bulk email of identical messages sent to numerous recipients.
  - An attempt to acquire sensitive information for malicious reasons, by masquerading as a trustworthy entity.
21. With regard to a word processing software, the process of combining static information in a publication together with variable information in a data source to create one merged publication is known as:
- Electronic mail
  - Data sourcing
  - Mail merge
  - Spam mail
22. The statement “the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer Hardware” refers to:
- Information Technology (IT)
  - Information and Collaborative Technology
  - Information and Data Technology (IDT)
  - Artificial Intelligence (AI)
23. NMEICT stands for:
- National Mission on Education through ICT
  - National Mission on E-governance through ICT
  - National Mission on E-commerce through ICT
  - National Mission on E-learning through ICT
24. Which of the following is/are instant messaging applications?
- WhatsApp
  - Google Talk
  - Telegram
- Select the correct answer from the codes given below:
- 1 only
  - 1 and 2 only
  - 2 and 3 only
  - 1, 2 and 3
25. MOOC stands for:
- Media Online Open Course
  - Massachusetts Open Online Course
  - Massive Open Online Course
  - Myrind Open Online Course

## INFORMATION AND COMMUNICATION TECHNOLOGY

## ANSWER KEY

- |         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. (b)  | 2. (c)  | 3. (a)  | 4. (b)  | 5. (d)  | 6. (b)  | 7. (d)  | 8. (d)  |
| 9. (d)  | 10. (d) | 11. (b) | 12. (d) | 13. (d) | 14. (d) | 15. (c) | 16. (c) |
| 17. (a) | 18. (a) | 19. (c) | 20. (d) | 21. (c) | 22. (a) | 23. (a) | 24. (d) |
| 25. (c) |         |         |         |         |         |         |         |