UNIT 4 INFORMATION AND COMMUNICATION TECHNOLOGY(ICT)

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4.1 INTRODUCTION

The first three units of this block focused on the measures of communication and how it is handled and used at the individual level. This Unit emphasises the use of communication in a collective way as part of progressive society.

In this unit you will learn about the technologies facilitating Information and Communication systems across the world. You will be taken through the various components of these technological systems and understand the functions of each one of them in the expediating the process. After this, we will discuss the various applications of these systems in society, ranging from Communication, Education, Commerce, Defence and Science and technology as well. Towards the end, to sum up, we will discuss the perils posed by these technologies and take a peek into what the future entails.

4.2 LEARNING OUTCOMES

After working through this unit, you will be able to:

- Define an Information and Communication Technology (ICT)system
- Identify various components of an ICT system
- Describe the processes induced by ICT
- Appreciate the contribution of ICT in society
- Discuss the future of ICT

4.3 WHAT AREINFORMATION AND COMMUNICATION TECHNOLOGIES (ICT)?

The world around us is surrounded with computers. You encounter a computer when withdrawing money from an ATM, listening to announcements on a Metro Station, or surfing web to read or even watch any videos. You may not realize but when you are chatting with a customer service executive over an app, it is most likely an automized bot. In a world full of devices, all connected to the world wide web, it is important to study how data is gathered, disseminated and utilized. Your phone today has your biometric data saved in the form of your thumb print and you can start the Air Conditioner in your living room with the help of a Wi-Fi network.

The concept of smart homes, artificial intelligence and virtual reality were science fiction till few decades ago, but today they are mere extensions of technological applications. With technology becoming such a huge part of our lives, it becomes imperative to study how we, humans interact with technology and use it for communicating with each other. Putting in nutshell, Information and Communication Technologies or ICT is a discipline that covers combination of devices, networking components, applications and systems that help people and machines that interact with each other in the digital world.

A combination of three words – Information, Communication, and Technology, while ICT sounds like a new digital thing, in reality it could also be referring to all methods of imparting information and communication. Information refers to facts and data represented in a meaningful way. You may need to gather information about traffic before leaving house, or check the weather reports of a place before travelling there or even reading this unit is a form of accessing information. Communication is exchange of ideas with the help of a medium. The medium could be verbal, visual, electronic or even digital. Any process of communication has four basic elements – sender, message, channel and receiver (SMCR which you have studied in detail in the first unit of this block. Lastly, technology is a method or device that is possible due to expansion of scientific knowledge. For example, for years human beings used to travel on foot and then domesticated animals such as horse and camel. Technological inventions starting from the wheel, to trains, cars and now airplanes has made travel easier and faster. Technology can be used to gather information and communicate with people.ICT deals specifically with the technologies that are used to create, store, share, process and transmit information across the globe.

4.3.1 HOW ICT HAS CHANGED THE WORLD

Technologies across world are rapidly evolving and are being frequently replaced by newer inventions. Radio and TV broadcasts, that constituted most of the entertainment and information sector, have now been replaced by Internet data streaming. Telegraphs, that were once used to communicate across long distances, seem like an ancient technology today as the long distance communication over satellite connected devices is the norm in the day. Smart TVs and e-papers have come in use. Similarly, the ICTs are also rapidly evolving to fit into today's Internet connected world.

Many people may connect ICTs with IT (Information Technology) but it is more than that. As communication is a two way process, ICTs are more branched out and varied than other disciplines that have anything to do with technology. It has a number of applications, tools and platforms which find

utility in many fields. ICTs have transformed economy and society in many ways. These include reducing cost and time of accessing information, creating methods of collaboration to increase and tap into expanding efficiency of workers, improving access to formal education and affecting the quality of education as well. We will discuss more of them in the following segments.

Activity 1

Look at the screen of your phone. Is it a smart phone? Does it have a lock? How do you open the lock? How does your phone know that this pattern or finger print or password is to be remembered to operate the phone? What is the purpose of locking the phone? Do you think the feature is successful? Can you think of one way to make it even better?

4.4 COMPONENTS OF ANICTSYSTEM

ICTs include broadband connected as well as the wireless connected networks and devices. It started with encompassing technologies that are now phasing out, such as landline telephones, Radio signals and Television broadcasts. Today the list of ICTs starts from simple smartphones and spans over smart TVs, computers, and robotic household assistants as well. It utilizes audio visual media and is progressing to include haptic feedback as well.

It usually has five major components:

1. Hardware – The devices that act as an interface between humans and machines. For e.g., smart watches have made technology wearable which helps in collecting data about the person wearing them. Another example is the smart phones which enable the users in not only communicating over long distances using wireless internet or mobile phone networks, but also to pay bills, check maps and watch YouTube videos. Hardware also uses peripheral devices that work along, such as keyboards, external disks drives and routers etc. As we enter the era of Internet of Things, technology is permeating all spaces with the help of all kinds of devices.
2. Software – The programs which help humans in navigating the device comparise software. Look at the screen of your phone. A simple lock button that needs to be swiped up or keyed in with a passcode that you have set is the simplest software interface of your phone. Software helps the device to perform many functions. Simply put, software is a program that tells the device what to do. There are two major types of software: Primary software and Application Software. The primary software of any device is known as operating system (os), such as Windows or iOS. Its primary function is to manage the operation of the device. Application software is designed for specific tasks, such as handling numbers through an excel sheet or designing a website.
3. Storage – it is the memory of the device. It may store data, information and programs (instructions of what to do with data). Few devices transmit the data live, such as web cams, and do not have capacity to store data. Few devices store data for sometime and relaying it to some other device for longer storage, such as many wearable devices. Few other devices have inbuilt storage capacity or are connected with a server, which makes accessing large amounts of data possible.
4. Data – Raw facts which are used to base decisions and further actions comprise data. It needs to be sifted through and converted in to

information in order to make meaning and be useful. A data base is a place where data is collected and can be retrieved based on filters and requirements of the running program. In recent times, 'big data' is, a term often being used which encompasses large amounts of data, that can be collected and analysed for reaching out to various population sectors online.

5. People – human beings that add data to the machine through various input devices, like keyboard, voice recognition, biometric devices etc. Humans are needed to run these machines to keep the networks intact by following a set of procedures. It is human beings that utilize the data, program the devices, fix the bugs and make the technology useful.

Check Your Progress: 1
Note: 1) Use the space below for you answers.

2) Compare your answers with those given at the end of this unit.

1. What are the components of an Information and technologies system?

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2. What is a software ?

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4.5 APPLICATIONS OF ICT

It was the year 2000, the world was under the fear of Y2K bug. It was a major suspect of all the computer engineers across the world that the change of date from 1999 to 2000 will be read as 1900 by the computers and thus will create errors in all types of computing. Y2K stands for Year 2000 with K standing for 1000 in English. In the days building up to the end of the year, people all over the world in different fields were thinking of catastrophic problems that could rise with the change in date.

For example, think of a bank account opened in year 1998. At the dawn of the year 2000, the account could stop existing as the computer may not recognize the change in date, thus reading it as an error. Similar could be the case with airports, where time tables of various airlines are managed with computers. But with time, the computer programs were updated across the labs in various parts of the world, and no such troubles arose anywhere in any field. Such scare was possible only with the increasing device accessibility and dependence, because the last time the centuries changed, there were no computers, thus the life was not affected in any way by the way machines were programmed. Today ICTs have affected all walks of life through various devices. They have changed the way people work, relax, communicate with each other, and even frame an idea of themselves.

Here are some ways how ICTs have made lives easy:

- **ICTs have made creation of information easy and smooth:** Devices gather data 24X7 and the data can be fed in form of visuals, coded text in form of language, audio, video and multimedia as well. All the data is stored in digital formats and this makes storing and sharing easier. The data can also be organized in data bases and mined according to need. For example, your school/college libraries may have had index cards for creating a data base of the books. Searching for a particular book would take long as one had to sift through the data base categorized alphabetically or discipline wise. Human errors could also creep in while creating and maintaining this data base. Compare this with libraries with digital database. You may recall your library being shifted to digital data bases which could tell you the exact row, column and shelf the book was placed in the library. It would also indicate if the book had been issued or was in stock. Also the possibility of human error was minimum.
- **ICTs have made access to data instantaneous**: One could be anywhere in the world and check what is going on inside their house with the help of Wi-Fi enabled cameras. Access to instant data helps in dynamic processing and decision making across geographical barriers.
- **ICTs are also a vital aid in learning:** Today one can find great opportunities to learn through ICTs. One could learn at anytime, anywhere, at their own pace, formally and informally as well. YouTube videos, Wiki How articles and MOOCs(Massive Open Online Course) allow for learning across platforms and barriers.
- **Jirne and taste management:** Apart from all this, ICTs also allow people to manage and schedule their time and tasks. With features like alerts, setting priorities and focussed approach, ICTs tools can be easily used in planning and managing day to day activities as well.

4.5.1 COMMUNICATION

You may recall the MeToo# movement on the web. Hundreds and thousands of women shared experiences on the web about the sexual harassment they had faced at some point in their lives. While the issue was not new, the magnitude and frequency of the problem sent the world in a whirlwind. Several big names like Harvey Weinstein came under limelight for harassing new actresses in the Hollywood film industry. This lead to several conversations across social media and news rooms and gradual changes were introduced in workplaces. The conversation also made young women aware of their rights while iringing to light many a perpetrators.

In today's time, people prefer to interact through over chat instead of calling each other. The Covid induced lockdown has also made people comfortable with online interaction modes such as video calling. Internet has facilitated calling around the globe at any time, at minimal cost. No one would have imagined this in the era of letter writing, which took months to reach, or even ISD calling, which was more expensive than a local monthly mobile recharge. Call centres have been replaced by chat bots, which replicate human interaction over the web.

One can communicate with family, friends and even strangers over the web using text, audio and visual material. Social media and networking platforms are an extension of ICTs which enable users to share their views and air their talents free of cost. People can collaborate to produce work, network to reach

out to producers, collaborators, audience and other stake holders. Platforms like Facebook, YouTube, Twitter etc. allow for conversation and communication and has helped herald many a social movements virtually. They also allow for alternate perspectives to come to light as they give an equal platform to all sections of society.

4.5.2 ADMINISTRATION AND MANAGEMENT

As discussed earlier, ICTs make creation, storage, archiving and access to information extremely efficient. This helps in quick and better decision making required for administration and management of organizations. ICTs have also helped in automizing a number of processes, such as keeping attendance with the help of biometric systems and easing communication within organization with help of customized apps and platforms. Progress reports, annual appraisals, employee tasks etc can be charted, updated and monitored regularly and transparently.

4.5.3 EDUCATION

ICT has entered the education sector at all stages, like seeking admission, attending lectures, accessing resource material, submitting assignments and finally receiving the diploma/degree certificates. E-resources are being used by all educational institutes in today's time and the covid induced lockdown has made virtual classes a norm for education at all levels starting from pre-primary to collegiate level. Studies have proven that using ICTs as a pedagogical tool helps students to interact more and learn better.

As the generations become more comfortable with technology, use ICTs in and outside classroom for teaching and learning makes students more responsive and thus more connected with the curricula. ICT based modules have made it easier for students in remote areas to gain access to subjects and resources that were once bound by geographical barriers. Use of e-learning platforms, apps, podcasts, video tutorials etc. have made learning more inclusive and adaptive. One can today personalize the pace and level of education and collaborate with other students and trainers in real time. ICTs have also made gamification of education possible. Websites like Kahoot help in assigning points for assignment submission, completing levels etc, thus making students more interested in completing the tasks. Gamification allows students four kinds of freedoms – freedom to fail, freedom to experiment, freedom to assume identities and freedom of applying varying effort. Flipped classrooms allow for an exchange of roles, with a reversal of traditional flow of teaching and learning. Project based learning allows for a dynamic, learning environment with teachers or personnel from the industries involving students in practical task based projects.

Due to its far reaching impact, UNESCO (United Nations Education Scientific and Cultural Organization) endeavours to integrate ICTs into education as a part of school curriculums. Online classes have enabled educators to adapt to tools to facilitate virtual learning, thus making the shift smoother and more efficient. ICTs are also helping academia in facilitating research. Many online research methods, scholar databases, open source platforms have made researching, teaching and learning a seamless experience.

4.5.4 ENVIRONMENT

As discussed in earlier sections, ICT has become an indispensable part of our lives. Their profound yet precise impact on our day to day lives, makes it imperative to check how they are affecting our surrounding environment.

- ICTs have proven to be extremely useful in natural disaster management. In 2019, Cyclone *Fani*was predicted fairly accurately, including its path and wind speed. This helped Odisha Government in evacuating the coastal villages rapidly and managing the displaced population efficiently in temporary camps set up specially for this purpose. Web pages were used to keep the public informed and aware about the facilities provided by the government and online portals were used to gather donations and funds for the welfare.
- Due to their widespread use, ICT industry is a growing contributor in the Greenhouse gas emissions.
- Large amounts of e-waste is produced every day, which includes discarded electronic items or devices. These devices contain toxic materials, which, if not disposed judiciously, can lead to soil and ground water pollution. Exposure to these elements can cause headaches, irritation, nausea and eye pain. Cases of liver, kidney and different types of neurological disorders have risen among personnel working in e-waste recycling industry.

4.5.5 COMMERCE

ICTs importance in economic development has been hailed as fourth industrial revolution in human history, and some believe that this is just the beginning. ICTs are not only opening up the markets for fair prices and deals, they are also opening up many avenues for job seekers and entrepreneurs. Out of the top ten entrepreneurs in the world, eight work in ICTs enabled industries like these dealing in software, ecommerce and digital payments. Rest two use the ICTs to market their offline businesses and gather clientele.

Big data has changed the way companies are reaching out to the target groups. It has become possible to classify the target group on the basis of their psychographic profiling(classification on the basis of mental traits or characterstics) and not just demographic profiling (Classification on the basis of physical charaterstics) like earlier days. Online reservations of services, shopping of FMCG (Fast Moving Consumer Goods) and even appointments with doctors have been made possible now.

ICTs are also proving beneficial in monitoring public safety and security. CCTV cameras have become a common occurrence now. Criminals are also tracked across the world by INTERPOL, which traces their digital footprint. ICTs is also being used by governments in form of e-governance, which utilizes the technology to interact with various branches of governing agencies and citizens in an efficient and transparent manner, making governance a corruption free process.

4.5.6 SCIENCE AND TECHNOLOGY

Telecommunication industry has seen a rapid growth as satellite communication enables low cost carrier services thus making mobile phone calling available to masses. Around 60 percent of population of India today uses smart phones, thus increasing the virtual populace. Satellite technology has also made it easier to locate resources that are hidden under the earth, such as coal, metal and petroleum, making mining an easier process. Satellite technology has also made weather reporting fairly accurate, which has affected many sectors like tourism and agriculture. Space probes are able to communicate with earth via the satellites, thus opening the skies to mankind.

4.5.7 MEDICINE

ICT is making its presence felt in health industry as its inclusion in surgeries renders them less invasive while maling them highly precise in nature. Recovery time of the patients has reduced many a fold due to this factor. Doctors across continents can be referenced easily, surpassing the need to travel. Archival and access to medical data has made diagnosis much more accurate by doctors. Health care professionals are being assisted by ICTs in process of diagnosis, treatment, monitoring, creating and tracking medicine prescriptions and transactions in a transparent manner.

4.5.8 DEFENCE

ICT is making its presence felt slowly and steadily in Defence sector too. Satellite monitoring is helping in surveying areas that were difficult for human reach. The surveying can help in checking military installations of the enemy forces and help in being prepared beforehand. Combat review and surveillance is also helping in dynamic strategizing of warfare. Managing and deploying vast numbers of army, navy and air force personnel has also become plausible with the help of ICTs. Development of smart weapons, robots to replace humans, better intra troop communication devices, satellite guidance through GPS etc are helping in revolutionising how a nation defends itself.

4.5.9 AGRICULTURE

ICT help farmers with accurate weather reports, which help in planning, sowing and reaping of crops as per the weather conditions. ICTs have also facilitated farmers with real time access to market prices, so they are not duped by middle men. It has also become easier for farmers to gain information about different type of manures, seed varieties and planting techniques that has improved the quality of the crop effectively. Early Warning Systems (EWS) also help the farmers to be better prepared for disaster management and not be dependent on unreliable weather conditions.

4.5.10TRANSPORT

ICTs have made travelling and transportation of goods much easier than past. Easy access to travel information, online booking, real time monitoring and methods of networking and sharing transport with fellow travellers have made transportation easier and cheaper. GPS (Global Positioning System) and RADAR systems have made navigation simpler, revolutionizing the experience of transportation industry.

Activity 2

Have you noticed how your Google history affects the ads shown to you on Facebook or YouTube? Try searching for few unrelated things on your Google app in your smartphone and notice next 10 advertisements that appear on your Facebook or YouTube app. Write your observations.

Check Your Progress: 2
Note: 1) Use the space below for you answers.

2) Compare your answers with those given at the end of this unit.

1. How is UNESCO helping in transforming education?

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2. How do ICTs affect the environment?

_____

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4.6 ICT AND ENVIRONMENTAL CONCERNS

ICTs for Environmental Sustainability (ICT Ensure) refers and monitors application of ICTs for better environment sustainability. As these technologies work on electricity, the consumption has increased many fold over the years with their expansion and penetration across the world. European Union Commission also planned proper monitoring and reporting of carbon footprints of various ICTs segments.

The following can be same plausible solutions to the rising environmental concerns:

1. Raise awareness about benefits of using ICTs across sectors and segments. Developing economies are still shying from adapting ICTs completely in their economic sector. Awareness would help bridge the gap and contribute positively to the environment.
2. Expand usage of ICTs. Many sectors are still exploring best practices for adapting ICTs in their functioning. Ensure that safety and privacy of individuals is not compromised.
3. Engage private and public sectors equally. In heavily populated countries, such as those of South Asia, technology is seen as a deterrent to human employment, as it is a common fear that machines will replace humans. It is the task of the government agencies to strike a balance and render the populations employable in an ICT rich environment. This requires an overhaul in education sector to equip the populace with skills imperative for digital world.
4. Promote low carbon economies. Reusing, refurbishing and recycling is the key to the future. Strict policy guidelines need to be charted out in order to integrate ICTs in bringing the climate change to a hall which is much needed in the world at the moment.
5. Create a country/region specific road map for adapting to cleaner and greener technologies. Each region and indigenous industries face their own specific challenges. One size fits all does not apply here. Thus, the policy makers need to consider the differences and not chase a homogenous plan for the regions.
6. Switch to Cloud computing for centralized and better utilization of resources.
7. Bridge the digital divide by providing education and skills to use ICTs judiciously.

With long term and judicious use of devices, and proper recycling and disposing procedures, the carbon emission and footprints can be reduced over the years.

4.7 FUTURE OF ICT

ICT sector is growing immensely with investments coming from across the world. It is estimated that a further 16 percent growth will occur in the areas of new technologies such as IoT, Robotics, Augmented and Virtual Realities and Artificial Intelligence. Few sectors that will see immense growth and applicability are:

1. Artificial Intelligence and Machine Learning

Artificial Intelligence or AI can enhance the human experience of using the technology with cognitive and emotional modelling of machine learning. AI systems are capable of collecting and processing vast amounts of data for better synthesis much more quickly, compared to a human.

2. 3D Printing

3D Printing is a method of creating a 3 dimensional object using a computer program. The object is designed in a software, and is printed layer by layer to produce the object using minimum material. It is a good method for creating prototypes and models. Various fields are exploring methods of using this technology at the moment.

3. Augmented and Virtual Reality

Augmented reality is the system and program which can superimpose the world view with super imposed images. Virtual reality systems generate a simulated world with help of audio visual and haptic feedbacks. Both technologies are today being used for training purposes with simulated world, consumer applications in many industries and tourism and marketing sectors amongst many other fields.

ICT growth has also been linked to economic growth of countries according to the ICT Development Index (IDI), which is published by United Nations International Telecommunications Union (UNITU). Today, more than 60 percent of the world has internet, that translates to every 6 out of 10 people using Internet. Even with so much penetration and access, the richer countries across the globe have greater ICT capacities compared to the rest of the world. Thus, they reap more benefits offered by ICTs. This disproportionate access creates a digital divide. A number of local government authorities across the third world are creating policies and directives to bridge this divide, while the World Bank also advocates and supports a wider reach for a uniformly developed world. Many Non-Governmental organizations are also working on Digital literacy of the masses. United Nations has listed this as one of the Sustainable Development Goals (SDGs). Having discussed the impact of ICTs on socio economic milieu of the society, you must appreciate the need for bridging the digital divide.

4.7 LET US SUM UP

In this unit you learnt about various ICTs across the world. You were given a brief insight into various components of these technological systems and the functions of each of them in the process. We also discussed the applications of these systems in society, ranging from education to economics and

environment. After a list of pros, we also covered few cons offered by ICTs. We ended with a brief peek into the future of ICT, its varied applications and what can one expect in the future.

4.8 FURTHER READINGS

Jesson, J., & Peacock, G. (2012). *The Really Useful Information and communication technologies Book: A practical guide to using technology across the primary curriculum*. Routledge.

Jesson, J., & Peacock, G. (2013). *Cambridge Information and communication technologies Starters: Initial Steps*. Cambridge University Press.

Jesson, J., & Peacock, G. (2013). *Cambridge Information and communication technologies Starters: On Track, Stage 2* (Vol. 2). Cambridge University Press.

Peacock, G. (2012). Creativity and Information and communication technologies. In *The Really Useful Information and communication technologies Book* (pp. 15-22). Routledge.

4.9 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress: 1

1. ICT has 5 major components named:

   a) Hardware: The devices that act as an interface between humans and machines.

   b) Software: A program which helps the user in navigating and using the device.

   c) Storage: Memory of the device, which stores data, information and programs.

   d) Data: Raw facts which are used to base decisions and further actions after sifting through and converting it to information in order to make it useful.

   e) People: Human beings that add data to the machine through various input devices and are needed to run these machines to keep the networks intact by following set of procedures.

2. A software is a program which helps the user in navigating and using the device for various purposes. There are two major types of software: Primary software and Application Software. The primary software of any device is known as operating system, such as Windows or iOS. Its primary function is to manage the operation of the device. Application software is designed for specific tasks, such as handling numbers through an excel sheet or designing a website.

Check Your Progress: 2

1. UNESCO(United Nations Education Scientific and Cultural Organization) endeavours to integrate ICTs into education as a part of school curriculums as a pedagogical tool. It will help students to interact more and learn better in classes.

2. As ICTs work on electricity, the consumption has increased many a fold over the years. With expansion of technology, the carbon footprint of the IT industry increases and thus impacts the environment adversely.

4.10 KEYWORDS

Artificial Intelligence: Capacity of certain machines to be programmed to think and behave like human beings.

Internet of Things: A vast connected network of physical devices which have sensors, processing abilities, are equipped with programmed software and that can collect, store and exchange data to facilitate functioning of human beings.

Augmented Reality: Augmented reality is an enhanced version of the real world that is achieved through addition of digital visual, aural and haptic elements delivered via use of various digital technologies.

Virtual Reality: Virtual reality is a computer generated world where the input to all senses including visual, auditory, smell and touch are programmed for an immersive experience.

User Interface: The point of contact between human and machine, facilitating interaction and communication within a device.

User Experience: It refers to the total experience of the user while using a digital product, application or service. It involves immersion, navigation and feedback.

Information Architecture: The discipline that works on dissemination of information in a systematic and organized manner with use of digital platforms and products. It is the primary concern while designing user interfaces and user experience.

Data base: It is a bank of information that eases the process of accessing, managing and updating data. This is required for running any software on any ICT device.

Big Data: It is a collection of data in different formats that can be mined forgathering information for various purposes. Data can be collected by various sources and could be structured, semi structured or even unstructured in nature. It is the purpose of mining that will dictate how this data will be utilized.

4.11 MULTIPLE CHOICE QUESTIONS

1. ICT stands for
    a. Information and Communication Technologies
    b. Information and Communication Tools
    c. Information and Communication Topology
    d. Internal Communication Technologies

2. ICT includes all methods and tools related to
    a. Storing digital information
    b. Recording digital information

c. Sending digital information
d. All of the above

3. Physical part of the computer is called
   a. Software
   b. Hardware
   c. Broadband
   d. None of the above

4. What acts as an interface between human and computer?
   a. Operating system
   b. Laptop
   c. Mouse
   d. Screen

5. Which of the following is not a mobile operating system?
   a. Android
   b. iOS
   c. Symbian
   d. Nokia

6. Which of the following is not a virtual assistant?
   a. Siri
   b. Alexa
   c. Google home
   d. WALL-E

7. Which of the following is a social networking site?
   a. Google
   b. Bing
   c. Yahoo
   d. Facebook

8. E-Mail stands for
   a. Electronic mail
   b. Electromagnetic mail

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c. Engine mail
d. Express mail

9. In which year Information Technology act was enacted in India?
   a. 2005
   b. 2000
   c. 1990
   d. 2010

10. Speed of Internet is measured in
   a. GHz
   b. Gbps
   c. GB
   d. dpi

Answers:

1. a
2. d
3. b
4. a
5. d
6. d
7. d
8. a
9. b
10. b

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