

1. COMPONENTS OF INFORMATION SYSTEMS

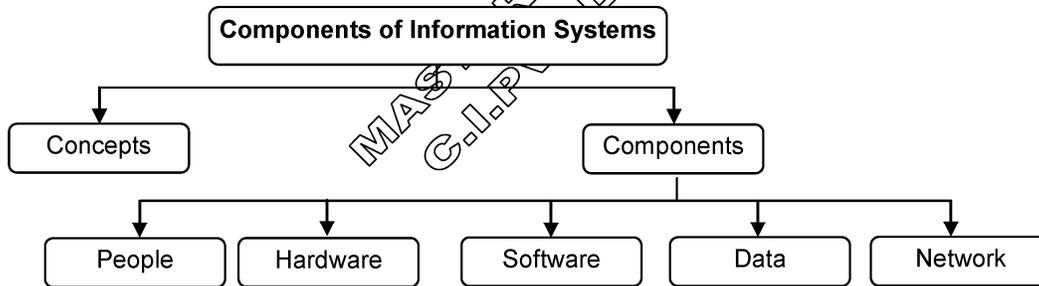
QUESTION WISE ANALYSIS OF PREVIOUS EXAMINATIONS

No.	M-14	N-14	M-15	N-15	M-16	N-16	M-17	N-17	M-18 (O)	M-18 (N)	N-18 (O)	N-18 (N)	M-19 (O)	M-19 (N)	N-19 (O)	N-19 (N)	N-20 (O)	N-20 (N)
THEORY FOR CLASSROOM DISCUSSION																		
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CHAPTER OVERVIEW

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SECTION 1: THEORY FOR CLASSROOM DISCUSSION



PART 1: CONCEPTS AND COMPONENTS OF IS

Q.No.1. Explain the following concepts 1) Information 2) System 3) Information System 4) Steps in an Information System (B)

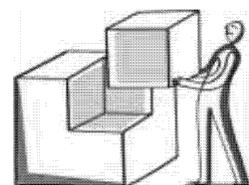
1) **INFORMATION:**

- a) Information is the processed data.
- b) Data is defined as raw or unprocessed information. The data may be in alphanumeric, text, image, video, audio, and other forms.



2) **SYSTEM:**

- a) A System can be defined as "a group of mutually related, cooperating elements with a defined boundary; working on reaching a common goal by taking inputs and producing outputs in organized transformation process".
- b) A system contains several subsystems with sub goals. All sub systems try to meet the overall system goal.
- c) For example, Finance, Operations and Marketing areas of an organization will have goals. They work together to achieve overall corporate objectives.



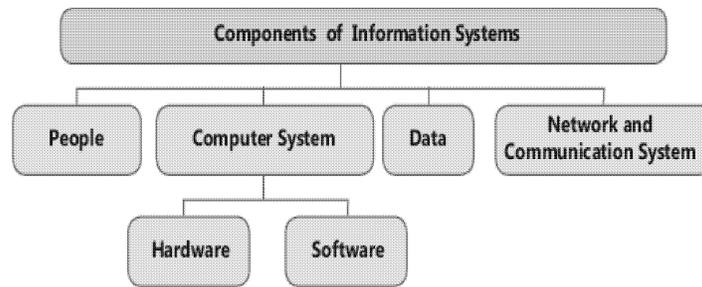
- 3) **INFORMATION SYSTEM:** Information System (IS) is a combination of people, hardware, software, communication devices, network and data resources that processes data and information for a specific purpose.
- 4) **STEPS IN AN INFORMATION SYSTEM:** An Information System model comprises of following steps:
- Input:** Data is collected from an organization or from external environment and converted into suitable format required for processing.
 - Process:** A process is a series of steps undertaken to achieve desired goal.
 - Output:** It is the information communicated to the user after applying some procedure.

Q.No.2. What are the main components of an Information System?

(B)

Information Systems are interrelated components working together to collect, process, and store and disseminate ^(=distribute) information to support decision-making, coordination, control, analysis and visualization in an organization.

The components of Information System are:



- PEOPLE:** people are the most important element in computer based information systems. The people involved include users of the system and information systems personnel, including all the people who manage, run, and program and maintain the system.
- HARDWARE:** It refers to physical components of a computer system. It is something we can touch and see. It consists of devices of input, processing, data storage and output.
- SOFTWARE:** It is defined as a set of instructions that tells the hardware what to do. Without software, the hardware would not be functional. Software can be broadly divided into two categories: **Operating Systems Software** and **Application Software.**
- DATA:** Data is the raw fact, which may be in the form of database. The data may be alphanumeric, text, image, video, audio, and other forms.
- NETWORKS:** **Computer Network** is a collection of computers interconnected by communication channels (wired or wireless) that allow sharing of resources and information. The network includes Internet, Intranet, and Extranet etc.

SIMILAR QUESTIONS:

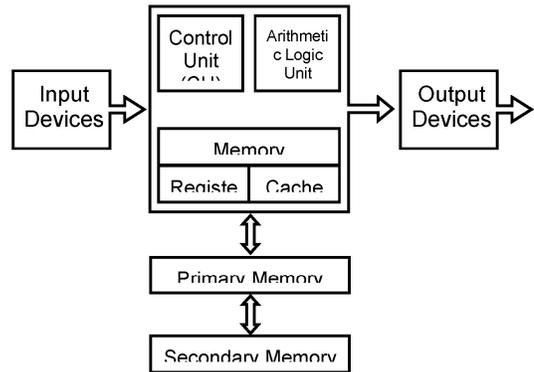
- An Information system is an exhaustive combination of technology and people which can provide holistic support for decision makers in business. Give a brief explanation about different components of Information systems.
 - Refer above answer.
- Building an information system is interplay of several of co-ordinated network of components, which combine together to convert data into actionable information. As an IS specialist make a list of all the indispensable components that join up to form an Information System?
 - Refer above answer.
- While information systems may differ in how they are used within an organization, they typically contain the same set of integrated fragments working together to bring value to an organization. The information system model highlights the relationships among the constituents and activities of information systems. Then what actually are the building blocks of Information Systems that provide consistent value to the organizations?
 - Refer above answer.

PART 2: HARDWARE

Q.No.3. What is meant by Hardware? What are the components of Hardware? (C)

Hardware is the tangible (=physical) portion of our computer systems; something we can touch and see.

It basically consists of devices that perform the functions of input, processing, data storage and output activities of the computer.



THE COMPONENTS OF THE HARDWARE ARE:

- 1) **Input devices** are the devices through which we interact with the systems. Keyboard, Mouse and Scanner are some examples of input devices.
- 2) **Processing devices:** The Central Processing Unit (CPU or microprocessor) is the actual hardware that executes the program (software) instructions and coordinates all the other hardware devices in a computer.
- 3) **Data Storage Devices** refer to the memory where data and programs are stored.
- 4) **Output Devices:** Computer systems provide output to decision makers by using output devices like Speakers, Headphones, Screen (Monitor), Printer, Plotter etc.

SIMILAR QUESTION:

1. Computer hardware is the physical, mechanical, magnetic, electronic, electrical and optical components making up a computer system. Give a brief note about the classification of different hardware components that comprises a computer system.
 - A. Refer above answer.
2. A Computer is an incredible combination of tangible and intangible elements. The intangible part of the computer tells the tangible counterpart what to do. Tangible elements are the real executors of the instructions. What term we use to collectively refer the tangible elements and what are their classification?
 - A. Refer above answer.

Q.No.4. What is CPU? Explain different functional units of CPU?— (C)

- 1) CPU is the actual hardware that executes the program (software) instructions and coordinates all other hardware devices in a computer.
- 2) It is made up of silicon material.
- 3) It is like the brain of a computer.
- 4) The main function of CPU is to execute programs stored in memory (RAM).



5) IT CONSISTS OF THREE FUNCTIONAL UNITS:

- a) **Control Unit (CU):** CU controls the flow of input, output data, interprets the instructions and controls which tasks to execute and when.
- b) **Arithmetic and Logical Unit (ALU):** Performs arithmetic operations such as addition, subtraction, multiplication and logical comparison of numbers such as Equal to, Greater than, Less than, etc.
- c) **Registers:** Registers are internal memory within CPU, which are very fast and very small.

SIMILAR QUESTIONS:

1. A CPU is a foundational unit of the computer responsible for processing and executing instructions. The CPU is seen as the main and most crucial integrated circuitry (IC) chip in a computer consisting of several components. Make a brief note of various components of the CPU.
 - A. Refer above answer.
2. Throughout history, people have compared the brain to different inventions. These days, the favourite invention that the brain is compared to is a CPU in a computer. Then what actually is the CPU in a computer and what components does it have?
 - A. Refer above answer.

3. You will find a “It” in every electronic device including your desktop, laptop, smart TV, smartphone, and tablet, among others. In fact, anything that qualifies as a computer – which is a machine that receives input and then processes them and returns outputs – contains “ It” which is an indispensable tangible component of the computing device, what is that “It” we are referring to? Write about it along with its functional units.
- A. “It” in the above question refers to CPU + Refer above answer

Q.No.5. Explain different types of Data Storage Devices?

(B)

DATA STORAGE DEVICES refer to the memory where data and programs are stored.

Various types of memory devices are given as follows:

- 1) **INTERNAL MEMORY:** This includes Processor Registers and Cache Memory.
- 2) **PROCESSOR REGISTERS:** Registers are internal memory within CPU, which are very fast and very small.
- 3) **PRIMARY MEMORY / MAIN MEMORY:** These are devices in which any location can be accessed by the computer's processor in any order. These are primarily of two types:

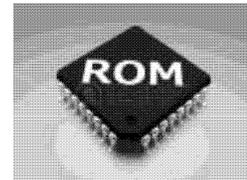
a) **Random Access Memory (RAM):**

- i) This is Volatile memory that means Information is lost as soon as the computer power is turned off.
- ii) In this memory information can be read as well as modified (write).
- iii) It holds instructions and data that the computer is using at that present moment.



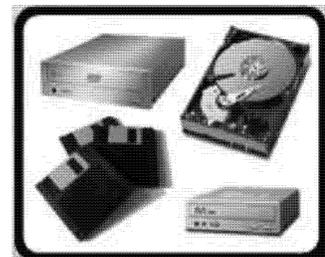
b) **Read Only Memory (ROM):**

- i) This is non-volatile memory (contents remain even when the power is turned off).
- ii) Usually, these are used to store small amounts of information for quick reference by CPU.
- iii) Information can be read but cannot be modified.
- iv) Generally used by manufacturers to store data and programs that are used repeatedly.



4) **SECONDARY MEMORY:**

- a) The secondary memory devices are non-volatile (contents are permanent in nature), greater capacity (they are available in large size), greater economy (the cost of these is lesser when compared to registers and RAM), slow speed (slower in speed compared to registers or primary storage).
- b) Ex: USB Pen Drives, Floppy disk, Hard Disk, CD, DVD and Smart cards.



5) **VIRTUAL MEMORY: Refer Question 8.**

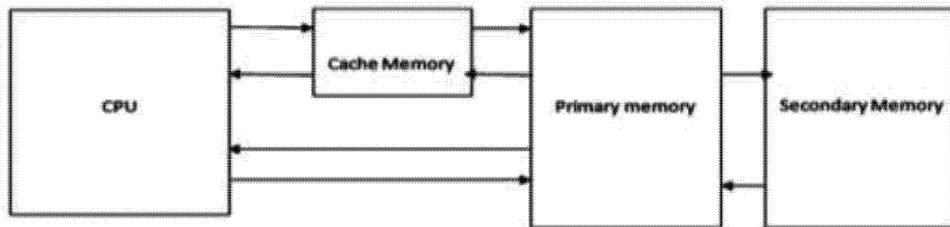
SIMILAR QUESTION:

1. Computer memory is a generic term for all of the different types of data storage technology that a computer may use, including RAM, ROM, and memory. Some types of computer memory are designed to be very fast, meaning that the central processing unit (CPU) can access data stored there very quickly. In this context write about the classification of Computer storage.
- A. Refer above answer.
2. A computer consists of both memory and storage devices. Whereas memory refers to the location of short-term data, storage is the component of your computer that allows you to store and access data on a long-term basis. Usually, storage comes in the form of a solid-state drive or a hard drive. Storage allows you to access and store your applications, operating system and files for an indefinite period of time. An important distinction between memory and storage is that the former clears when the computer is turned off. On the other hand, storage remains intact no matter how many times you shut off your computer. In this context write about memory and storage classifications in the computers.
- A. Refer above answer

Q.No.6. What is Cache Memory? Explain.

(B)

- 1) There is a huge speed difference between Registers and RAM.
- 2) Cache memory can be used to overcome the speed differences between Registers and RAM.
- 3) Cache is a smaller, faster memory, which stores copies of most frequently used data by RAM.
- 4) These copies can be accessed by Registers more rapidly than RAM.
- 5) The cache acts as temporary memory and boosts processing power.
- 6) Cache memory resides between Main Memory and CPU. It improves the effective memory access time in a computer.



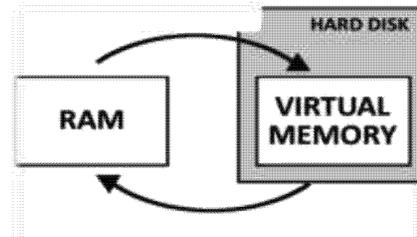
SIMILAR QUESTIONS:

1. Cache memory operates between 10 to 100 times faster than RAM, requiring only a few nanoseconds to respond to a CPU request. Then what is a cache memory? Write about it briefly.
 - A. Refer above answer.
2. Caching is a technique used by computers to store data that is likely to be used soon, in a faster form of memory so that it can be accessed more easily. Certain components, like the CPU, have a small amount of physical cache memory built into them so that they can quickly access the information they need, rather than waiting for the information to be sent to them through the busses.
 - A. Refer above answer
3. In a computer despite its small size compared to primary memory (RAM) or secondary memory (storage resources), this memory has a huge impact on the overall performance of the system. In fact, all modern computer systems have it which is a static random access memory (SRAM). What is it and how it functions?
 - A. Refer above answer.

Q.No.7. Explain about Virtual Memory?

(B)(MTP-N18, M18-4M)

- 1) Virtual Memory is really not a separate device but an imaginary memory area supported by some operating systems in conjunction with the hardware.
- 2) If a computer lacks the required size of RAM needed to run a program or operation, OS uses virtual memory to compensate.
- 3) Virtual memory combines computer's RAM with temporary space on the hard disk.
- 4) When RAM runs low, virtual memory moves data from RAM to a space on hard disk called a paging file. So, it frees up RAM to complete its work.
- 5) Thus, Virtual memory is an allocation of hard disk space to help RAM.



SIMILAR QUESTIONS:

1. One important use of virtual memory is multitasking. When the computer's physical memory is full, the excess data is stored in virtual memory. But what actually is virtual memory; make a brief note of it.
 - A. Refer above answer
2. It is a storage mechanism which offers user an illusion of having a very big main memory. It is done by treating a part of secondary memory as the main memory. Using it the user can store processes with a bigger size than the available main memory. In the above discussion what we are talking about? Explain about it.
 - A. Refer above answer

3. It is a memory management capability of an operating system (OS) which uses hardware and software, a storage allocation scheme in which secondary memory can be addressed as though it were part of main memory. What is it? Elaborate its technicalities.
- A. Refer above answer.

Q.No.8. Define the term Output and explain different types of outputs?

(C)

Computer systems provide output to decision makers to solve business problems. Different types of output are:

- 1) **Textual output** comprises of characters that are used to create words, sentences and paragraphs.
- 2) **Graphical outputs** are digital representation of non-text information such as drawings, charts, photographs and animation.
- 3) **Tactile output** such as raised line drawings may be useful for some individuals who are blind.
- 4) **Audio output** is any music, speech or any other sound.
- 5) **Video output** provides the appearance of full motion images.

SIMILAR QUESTION:

1. Computer output devices receive information from the computer and carry data that has been processed by the computer to the user. The purpose of these devices is to translate the machine's response to a usable form for the computer user. Output devices provide data in myriad different forms, what are the different forms in which computers produce output?

A. Refer above answer.
2. Finally the information generated by the computer has to be made available in a human perceivable form for a user to use it. In this context in how many ways computers offer information for human perception.

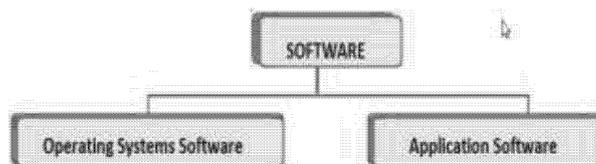
A. Refer above answer.

PART 3: SOFTWARE

Q.No.9. What is software? What are different types of software?

(C)

- 1) **Software** is defined as a set of instructions that tells the hardware what to do.
- 2) Software is created through the process of programming.
- 3) Without software, the hardware would not be functional.
- 4) Software can be broadly divided into two categories: **Operating Systems Software** and **Application Software**.



- 5) **Operating systems software:** OS manages the hardware and creates an interface between the hardware and the user.
- 6) **Application software:** Application software is the set of programs that do some specific tasks for the user.

SIMILAR QUESTION:

1. This makes the hardware functional and is the most incredible intangible component of the computer system. What it is and what are its types?

A. Refer above answer
2. It's an invisible component of a computer system which essentially directs all of the peripheral devices on the entire computer system - what exactly to do and how exactly to perform a task. In the absence of it, a user essentially can't perform any task on a computer. It makes computers programmable and consists of two main divisions. What actually we are referring to in the above discussion. Elaborate on it.

A. Refer above answer.

Q.No.10. What is an Operating System (OS)? What are the activities executed by Operating system? (A) [MTP-N19, M19-4M]

OPERATING SYSTEM:

- 1) An **Operating System (OS)** is a set of computer programs that manages computer hardware resources and acts as an interface between a computer and the user.
- 2) Computer hardware with operating system is more powerful and easy to use.
- 3) Some Operating systems used nowadays are Windows 8, Windows 10, Linux, UNIX, etc.

FUNCTIONS OF AN OPERATING SYSTEM:

- 1) **Performing hardware functions:** Operating System acts as an intermediary between the application program and the hardware by obtaining input from keyboards retrieve data from disk and display output on monitors.
- 2) **User Interface:** Nowadays, Operating Systems are Graphic User Interface (GUI) based which uses icons and menus like in the case of Windows.
- 3) **Hardware Independence:** OS provides Application Program Interfaces (API), which can be used by programmers to create application software. APIs helps to avoid the need to understand the inner workings of OS and hardware. *Thus, OS gives us hardware independence.*
- 4) **Memory Management:** Operating System controls memory access and maximize available memory and storage.
- 5) **Task Management:** OS facilitates a user to work with more than one application at a time i.e. multitasking and allows more than one user to use the system i.e. time sharing.
- 6) **Networking Capability:** Operating systems can provide systems with features and capabilities to help connect computer networks running on Linux & Windows platforms.
- 7) **Logical Access Security:** Operating systems provide logical security by using User ID and Password.
- 8) **File management:** The operating system maintains all information about files like where each file is stored and who can access it. Based on this one can retrieve a file.

SIMILAR QUESTIONS:

1. By any standard of measure, an operating system is the most critical software installed on a computer. Not only does an operating system act as the administrator of many computer processes, but it also allows users to harness the power of the various sound, graphics and memory assets within the computer's hardware infrastructure. Then it is interesting to know the functions of OS. Can you make a brief note about OS functions? [M18]
- A. Refer above answer
2. The operating system gives personality and character to the computer, it enables a computer user to come to understand how to approach/access a particular platform, whether that platform be Apple Mac or Microsoft Windows etc., Being a prominent example for system software, it is essentially a collection of software which handles resources as well as offers general services for various other applications which actually run over them. In this context write about the operating system and its functions.
- A. Refer answer above.
3. When a brand new computer comes off the factory assembly line, it can do nothing. The hardware needs System software to make it work. OS being a prominent example for system software, acts as a communication bridge (interface) between the user and computer hardware. Being a resource manager it provides a platform on which a user can execute programs in a convenient and efficient manner. Then explore on the concept and functional importance of the OS in Detail?
- A. Refer above answer

Q.No.11. What is Application software? Explain different types, Advantages and Disadvantages of Application Software? (B)

- 1) **APPLICATION SOFTWARE:** It is a collection of programs designed for specific purpose or problem of end users which they may face in their real-life.

2) DIFFERENT TYPES OF APPLICATION SOFTWARE:

- a) **Application Suite:** Has multiple applications bundled together. These applications have related functions, features and user interfaces to interact with each other. E.g. MS Office has MS Word, MS Excel, MS Access, etc.
- b) **Enterprise Software:** Addresses an enterprise's needs in a huge distributed environment. E.g. ERP Applications like SAP.
- c) **Enterprise Infrastructure Software:** This software mainly supports enterprise software systems. E.g. email servers, Security software.
- d) **Information Worker Software:** This software is used to manage and create information for individual projects within departments. E.g. Spreadsheets, CAAT (Computer Assisted Audit Tools) etc.
- e) **Content Access Software:** Used to access and publish digital content. E.g. Media Players, Adobe Digital etc.
- f) **Educational Software:** Holds content adopted for use by students. E.g. Examination Test CD's.
- g) **Media Development Software:** Addresses individual needs to generate and print electronic media for others to consume. E.g. Desktop Publishing software, Video Editing software, etc.

SIMILAR QUESTIONS:

1. Application software is a subclass of computer software that employs the capabilities of a computer directly and thoroughly to a task that the user wishes to perform. What are the different types of application softwares available to the users?
 - A. Refer above answer
2. Application softwares become handy to users to fulfill their different needs personally or professionally. Even though they depend on the OS to run they offer lot of user required functionality. Write about application software and its types.
 - A. Refer above answer
3. These softwares are also popularly known as end-user programs or even productivity programs which assist the user in completing various tasks like conducting online research, making notes, designing graphics, maintaining accounts, carrying out calculations or even playing computer games. They essentially lie above the system software. They are actually used by the end-user as well as have specific functionality or tasks which they are designed to perform. These softwares are often developed through custom software development, based on the requirements of the users. What classification of the software we are talking about? List out its types with brief explanation.
 - A. Refer above answer

PART 4: NETWORKS

Q.No.12. What is computer network? Discuss the types and issues of computer network? (B)

- 1) **Computer Network** is a collection of computers interconnected by communication channels (wired or wireless) that allow sharing of resources and information.
- 2) Each component, namely the computer in a computer network is called a 'Node'.
- 3) **NETWORKS COULD BE OF TWO TYPES:**
 - a) **Connection Oriented networks:** Wherein a connection is first established and then data is exchanged like it happens in case of telephone networks.
 - b) **Connectionless Networks:** Here no prior connection is made before data exchanges.
- 4) The real-world networks have helped to model the computer networks. Each of these networks is modeled to address the following basic issues:
 - a) **Routing:** It refers to the process of deciding on how to communicate the data from source to destination in a network.
 - b) **Bandwidth:** It refers to the amount of data which can be sent across a network in given time.
 - c) **Resilience:** It refers to the ability of a network to recover from any kind of error like connection failure, loss of data etc.

- d) **Contention:** It refers to the situation that arises when there is a conflict for some common resource in a network. For example, network contention could arise when two or more computer systems try to communicate at the same time.

SIMILAR QUESTIONS:

1. Computer networks are, after all, highly complex systems that comprise various components and are in use by multiple users. These structures may bring many benefits, but they can also be a recipe for disaster. And, if your network fails or affected. What are the basic issues that are to be addressed while designing a computer network?
 - A. Refer point 4 in the above answer.
2. A computer network is a broad term for one of the biggest technological advances in computer science over the last 40 years. Computer networks are fairly ubiquitous in today's hyper-connected world and are critical to the functioning of most organizations. Then what exactly is a computer network? Write its types along with different issues that are to be addresses while building computer networks.
 - A. Refer above answer.

Q.No.13. What are the Important benefits of Computer Networks?

(A)

FOLLOWING ARE THE IMPORTANT BENEFITS OF A COMPUTER NETWORK:

1) DISTRIBUTED NATURE OF INFORMATION:

- a) There would be many situations where information must be distributed geographically.
- b) E.g. in the case of Banking Company, accounting information of various customers could be distributed across various branches but to make Consolidated Balance Sheet at the year-end, it would need networking to access information from all its branches.

2) RESOURCE SHARING:

- a) Data could be stored at a central location and can be shared across different systems.
- b) Even resource sharing could be in terms of sharing peripherals like printers, which are normally shared by many systems.
- c) E.g. In the case of a CBS, Bank data is stored at a Central Data Centre and could be accessed by all branches as well as ATMs.

3) COMPUTATIONAL POWER:

- a) The computational power of most of the applications would increase drastically if the processing is distributed amongst computer systems.
- b) For example: Processing in an ATM machine in a bank is distributed between ATM machine and the central Computer System in a Bank, thus reducing load on both.

4) RELIABILITY:

- a) Many critical applications should be available 24x7. If such applications are run across different systems which are distributed across network then the reliability of the application would be high.
- b) E.g. In a city, there could be multiple ATM machines so that if one ATM fails, one could withdraw money from another ATM.

- 5) **USER COMMUNICATION:** Networks allow users to communicate using e-mail, newsgroups, video conferencing, etc.

SIMILAR QUESTIONS:

1. Computer networks and internet connectivity have changed the face of the modern workplace, allowing users and devices across the globe to interact with each other as if they were located in the same room. In this context what are the ways in which computer networks help to increase business productivity?
 - A. Refer above answer.
2. A good computer network can be very beneficial for your business. It lets you store important business data in a centralized location. This allows various computers in the network to retrieve important data from the main location. Additionally, computer networking lets you access the data from other computers on the same network, and modify it according to your needs and list of benefits of computer networks goes on. As a networking specialist explore on the prime benefits of computer networks to organizations.
 - A. Refer above answer.

3. Information and communication are two of the most important strategic issues for the success of every enterprise. While today nearly every organization uses a substantial number of computers and communication tools there is a need to merge computers and communications to build a borderless communication and information environment thus increasing the organizational learning rate, which is a fundamental advantage in competition, In how many ways the merging of computers and communication capabilities help an organization.
- A. Refer above answer

Q.No.14. What are the impacts that telecommunications created on business operations? (B)

Telecommunications may provide different advantages to businesses through the following impacts:

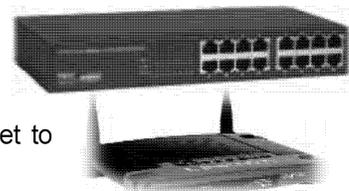
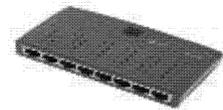
- 1) **TIME COMPRESSION:** Telecommunications enable a firm to transmit raw data and information quickly and accurately between remote sites.
- 2) **OVERCOMING GEOGRAPHICAL DISPERSION:** Telecommunications enable an organization with geographically remote sites to function, to a degree, as though these sites were a single unit. The firm can then reap benefits of scale and scope which would otherwise be unobtainable.
- 3) **RESTRUCTURING BUSINESS RELATIONSHIPS:** Telecommunications make it possible to create systems which restructure the interactions of people within a firm as well as a firm's relationships with its customers. Operational efficiency may be raised by eliminating intermediaries from various business processes.

Similar questions:

1. In today's digital era, telecom services are critical for business success and continuity. They not only enable more effective communication but also increase flexibility in the workplace and allow companies to expand their reach. Telecommunications enable companies to improve the productivity and efficiency of their workforce. In this context write your observations about the impact of telecommunications on business operations?
- A. Refer above answer.
2. The latest telecommunication systems take business communications way beyond basic voice calls. By running telecommunication systems on the same network as video and data systems, companies can develop applications that enable employees to work more productively, collaborate more easily and improve service to customers. In this context what are your insights about the impacts that telecommunications created on business operations.
- A. Refer above answer.

Q.No.15. Some technical terms related to Networks (C) (Students can expect 2 Marks definitions from these concepts)

- 1) **PACKET:** When a device intends to send a message to another device, it breaks the message down into smaller pieces, called packets. Each packet has the sender's address, the destination address, a sequence number.
- 2) **REPEATER:** A repeater regenerates or boost up the signal over the same network before the signal becomes too weak. So, the length of the signal can be increased. (MTP-M18)
- 3) **HUB:** A simple network device that connects other devices to the network and sends packets to all the devices connected to it. Hubs cannot filter data, so data packets are sent to all connected devices as it is.
- 4) **BRIDGE:** Bridge is a communications processor that connects two Local Area Networks (LANs) working on the same protocol. A bridge filters the content by reading the MAC addresses of source and destination.
- 5) **MAC (MEDIA ACCESS CONTROL) ADDRESS:** MAC Addresses are assigned by the manufacturer of a Network Interface Controller (NIC) and are stored in its hardware, such as NIC's read-only memory.
- 6) **SWITCH:** A network device that connects multiple devices together and filters packets based on their destination within the connected devices.
- 7) **ROUTER:** A device that receives and analyses packets and then routes them towards their destination. In some cases, a router will send a packet to another router; in other cases, it will send it directly to its destination.



8) NETWORK TOPOLOGY:

- a) The term 'Topology' defines the physical or logical arrangement of computer systems (usually called Nodes) in a network.
- b) Common topologies are **Star Network, Bus Network, Ring Network and Mesh Network**.

9) TRANSMISSION MODE:

- a) There are three types of transmission modes characterized as per the direction of the exchanges:
- b) **Simplex** (wherein the data flows in only one direction - unidirectional),
- c) **Half-Duplex** (where in the data flows in both directions but one direction at a time) and
- d) **Full Duplex** (in which the data flows in both directions at a time).

10) PROTOCOL: In computer networking, a protocol is the set of rules that allow two (or more) devices to exchange information across the network.

11) IP ADDRESS:

- a) Every device that communicates on the Internet, whether it be a personal computer, a tablet, a smartphone, or anything else, is assigned a unique identifying number called an IP (Internet Protocol) address.
- b) Presently we are using IPv4 (version 4), IPv6 standards Ex: domain wikipedia.org has the IP address of 107.23.196.166.

12) DOMAIN NAME: A Domain Name is a human-friendly name for a device on the Internet. These names generally consist of a descriptive text followed by the top-level domain (TLD). For example, Wikipedia's domain name is wikipedia.org;

13) DOMAIN NAME SYSTEM (DNS): DNS which acts as the directory on the Internet. When a request to access a device with a domain name is given a DNS server is queried. It returns the IP address of the device requested, allowing for proper routing.

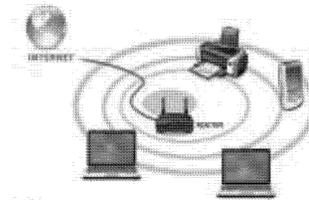


14) PACKET SWITCHING:

- a) When a packet is sent from one device out over the Internet, it does not follow a straight path to its destination. Instead it is passed from one router to another across the Internet until it reaches its destination.
- b) In fact, sometimes two packets from the same message will take different routes.
- c) Sometimes, packets will arrive at their destination out of order. When this happens, the receiving device restores them to their proper order.

15) WI-FI:

- a) Wi-Fi stands for wireless fidelity. Wi-Fi is a technology that takes an Internet signal and converts it into radio waves. These radio waves can be accessed by devices around approximately 65 feet with a wireless adapter.
- b) One of the primary places where Wi-Fi is being used is in the home.
- c) However, with increase in smart phone sales, Wi-Fi hotspot services are being provided at various public places like bus stands, hotels etc. to provide better customer service.



16) VOICE OVER IP (VOIP):

- a) The voice communication over the Internet is popular now.
- b) A protocol called VoIP enables sounds to be converted to a digital format for transmission over the Internet and then recreated at the receiver.
- c) By using many existing technologies and software, voice communication over the Internet is now available to anyone with a browser (think Skype, Google Hangouts, and Whatsapp calls).



SECTION 2: POINTS FOR ACADEMIC INTEREST - FOR STUDENTS SELF STUDY

- 1) A Computer Based Information system is a combination of people, IT and business processes that helps management in taking important decisions to carry out the business successfully.
- 2) Information Systems are networks of hardware and software that people and organizations use to create, collect, filter, process and distribute data.

THE END

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