

Differences in Information Technology

Note: You are reading the 9th thoroughly revised edition of the material.

Q.No.1. Data Vs. Information.

reading	Distinction	Data	Information
1.	Meaning	It is the smallest raw fact of life. It is the plural form of the word datum.	It is the processed data.
2.	Input/Output	It is the input for processing.	It is the output of processing.
3.	Usefulness to the user.	It is not directly useful to the user.	It is directly useful to the user because of its presentation, format and design.
4.	How is it collected?	It is generally collected in vouchers or source documents from which they are entered into computer.	It is always presented in a well designed format, either on paper or on computer terminal.
5.	From where it is collected?	Data used for a single application is collected from several departments.	Information in the form of report is distributed to more than one department or business function.
6.	Volume	Data for business applications is generally voluminous.	Information is the way of summarizing data so that it has some use and value to the user. Summarization brings down the volume of information.
7.	Nature	Data should be accurate but need not be relevant, timely or concise.	Information must be relevant, accurate, timely, concise and complete and apply to the current situation.

Q.No.2. Analog Vs. Digital Computer.

No.	Analog Computer	Digital Computer
1.	Analog computers represent numbers by a physical quantity i.e. they assign numbers by physically measuring some physical property such as voltage, temperature, etc.	Digital computers represent data as numbers. Counting on fingers is the simplest form of digital computers.
2.	Analog computers process analog signals which are continuous in nature.	Digital computers process digital signals which are in discrete form.
3.	These Computers are not accurate and have limited storage capacity.	These computers are highly accurate upto several decimal places.
4.	These are very much suitable for scientific and engineering applications.	These are very much suitable for business data applications.
5.	They are cheap and easy to program.	They are costly and complex to program.
6.	Programming is easy and cheap.	Programming is complex and costly.
7.	Storage capacity is limited.	Can store huge volume of data.
8.	Single purpose.	Multi purpose.

Q.No.3. Bit Vs. Byte

No.	BIT	BYTE
1.	It is the smallest unit of storage measurement.	It is a collection of 8 bits.
2.	A bit can represent either '0' or '1'.	It can represent an alphabet, number or some special symbol.
3.	It is represented in the form of ON or OFF in the memory.	It is used to represent several combinations of bits that indicate a character.
4.	It is used to represent small amount of memory.	It is used to represent large amount of memory.

Q.No.4. Data Processing Vs. Data Processing System.

No.	Data Processing	Data Processing System
1.	Data Processing is the restructuring, manipulating or recording of data by people or machines to increase their usefulness and value for some particular purpose.	Data Processing System is a system that accepts data as input, processes it into information and gives output.
2.	It refers to some operations, which are required to process data and to produce information. For example, classifying, sorting, summarizing etc.	It refers to some system which performs those functions.
3.	Processing involves some steps but does not include any components	The components in manual data processing system would be men. They will use simple tools such as paper, pencils and filing cabinets. Mechanical data processing systems utilise such mechanical devices as typewriters, calculating machines and book keeping machines. Automatic data processing implies the use of machines for data processing. It could be performed either by unit record method or electro mechanically by computer.
4.	The main objective of data processing is to increase the usefulness the data.	The system is designed to achieve the objectives of data processing.

Q.No.5. Data Processing System (DPS) Vs. Management Information System.

No.	Data Processing System (DPS)	Management Information System (MIS)
1.	It is a system that collects as well as processes data and distributes information in the organization.	MIS is a network of computer based data processing procedures developed in an Organization with manual or other procedures for the purpose of providing timely and effective information to support decision making and other necessary management functions.
2.	Data processing can be performed manually with the aid of such simple tools like paper, pencil and filing cabinets or Electro-mechanically with the aid of unit record machines or electronically with the aid of a computer.	MIS uses the information generated by DPS and external information as resource for effective and better achievement of organizational objectives.
3.	DPS is hardware oriented.	MIS are organizational and Application oriented.
4.	The source of data is internal.	The source of data is both internal and

		external.
5.	DPS acts as a subsystem to the MIS.	MIS uses the information from DPS with additional activities performed by people for collecting information.

Q.No.6. Different Generations of Computers.

Particulars	First	Second	Third	Fourth	Fifth
Year	1949-55	1956-65	1966-75	1976-95	1996 onwards
Size	Room Size	Cupboard Size	Desk Size Minicomputer	Typewriter Sized Computers & Laptops	Credit Card Sized Computers & Palmtops
Density	One Component per Circuit	100 Components per Circuit	1000 Components per Circuit	Hundreds of Thousands of Components per Circuit	Millions of Components per Circuit
Technology	Vacuum Tubes	Transistors	Integrated Semiconductor Circuits	Large Scale Integrated Semiconductor Circuits	Very Large Scale Integrated Semiconductor Circuits
Main Memory	Magnetic Drum	Magnetic Core	Magnetic Core	LSI Semiconductor Circuits	VLSI Superconductor circuits
Secondary Storage	Magnetic Drum Magnetic Tape	Magnetic Tape, Magnetic Disk	Magnetic Disk, Magnetic Tape	Magnetic Disk, Floppy Disk, Magnetic, Bubble, Optical.	Optical Disks & Magnetic Disks
Memory	10K - 20K Characters	4K - 64K Characters	32K – 4000K Characters	51K – 32000K Characters	Billions of Characters
Operating Speed	Milli Seconds 10^{-3}	Micro Seconds 10^{-6}	Nano Seconds 10^{-9}	Pico Seconds 10^{-12}	Still less than Pico seconds. 10^{-15}
External Speed	Few thousand Instructions	Upto 10 Lakh Instructions	Upto 1 Crore Instructions	100 mps	Billion Instructions /sec.
Input/output devices	Punched card, paper tape	Paper tape, Magnetic tape, VDU	VDU, MICR, OCR	VDU, MICR, OCR, Voice Recognition	Speech Input, Tactile Input, Graphics, Voice Responses
Cost	Very High	Lower than First Generation	Lower than Second Generation	Lower than Third Generation	Very Low
Other features	Generate heat, Relatively slow & rigid in operations.	Reliable & Accurate, fast	Faster, reliable, time sharing & Multi Processing Made possible	Sophistication & Complex usage, Improved storage	Sophistication & Complex usage, improved storage
Programming Language	Machine & Assembly Level Language	High Level Language FORTRAN, COBOL.	High level Languages: FORTRAN IV, COBOL 68, PL/1,	Fourth Generation Language: FORTRAN 77, PASCAL, C, C++, JAVA.	Fifth Generation Languages
Data Processing	Serial	Spooling	Multi-Programming	Multi-Processing	Multi-Processing

Q.No.7. Master File Vs. Transaction File.

No.	Master File	Transaction File
1.	Master file contains relatively permanently records for identification and summarizing statistical information.	These are created from source documents used for recording events or transactions.
2.	It contains current or nearly current data, which is updated regularly.	These files generally contain information used for updating master files.
3.	It rarely contains detailed transaction data.	It contains detailed data.
4.	The product file, customer file and employee file are examples of master files.	Examples of transactional files are purchase orders, job cards, invoices etc.
5.	These are usually maintained on direct access storage devices.	These can be maintained on sequential as well as direct access storage devices.

Q.No.8. Workstation Vs. Microcomputer.

No.	Workstation	Microcomputer
1.	Workstations are powerful desktop computers designed to meet the needs of engineers, architects and other professionals who need good graphic displays.	It is a full-fledged computer system which uses a microprocessor as its CPU.
2.	It looks like a personal computer and is used by a single user. Its CPU uses Reduced Instruction Set Computing (RISC), which results in faster processing of instructions	It uses a microprocessor as its CPU. It is also a single user computer.
3.	Workstations generally run on Unix Operating System or a variation of it.	Microcomputers run on Dos, Unix, OS/2, MS Windows NT, etc. Microcomputers enable the users to switch between tasks known as Multitasking, which is a great time saver.
4.	Workstations are commonly used for Computer-Aided Design (CAD) and are used as servers for Local Area network (LAN)	It is multi purposeful. If the required software is available, it can be used for any application.
5.	Relatively fast in processing.	Relatively slow in processing.

Q.No.9. Special purpose computers Vs. General Purpose computers.

No.	Special purpose computer	General purpose computer
1.	A special purpose computer is designed to perform a special task.	General purpose computers can be used for business, scientific and other applications.
2.	The instructions are in-built in the computer circuitry by the manufacturers.	It can be programmed by the user for different purposes.
3.	These are also called dedicated computers.	These are also called versatile machines.
4.	More efficient machines.	Less efficient than special purpose computers.
5.	Programs in the machine cannot be changed or upgraded.	As and when necessary, programs can be amended or dropped.
6.	Costly.	Comparatively cheap.

Q.No.10. Third Generation Computers Vs. Fourth Generation Computers.

No.	Third Generation Computers	Fourth Generation Computers
1.	They employed integrated circuits, in which all the elements are integrated on a tiny silicon wafer.	They appeared in 1970's. They still utilised still newer electronic technology and made the computer still smaller and faster than third generation computers.
2.	Mainframes, Mini Computers are one of the developments in this generation.	Micro computers and super computers were introduced in this generation.
3.	They consume more power.	They consume less power.
4.	These are bigger in size.	These are smaller, compact in size.
5.	These are costlier.	These are low cost machines.
6.	Third generation computers are used by large organisations.	Fourth generation computers are used by small organisations or individuals.
7.	Processor's speed started to be measured in nano seconds.	Processor's speed started to be measured in pica seconds.
8.	Third generation computers offer many salient features such as better operating systems, multi programming and support of secondary storage tapes and disks.	User oriented software, concept of virtual storage which expands the main storage capacity etc. are the significant features of this generation computers.
9.	Support high level languages such as FORTRAN and COBOL.	Object oriented languages such as C++, Visual Basic, etc. were introduced.

Q.No.11. Hardware Vs. Software.

No.	Distinction	Hardware (HW)	Software (SW)
1.	Meaning	Refers to components that constitutes computer system.	Refers to means of controlling the computer equipment.
2.	Visibility	It refers to physical, visible components of a computer.	It refers to invisible components of a computer.
3.	Components	It is made up of input devices, output devices, C.P.U., storage devices, communication devices etc.	Software is made up of data and instructions.
4.	Producers	Hardware is produced by Hardware manufacturers. Eg. IBM, INTEL, HCL, WIPRO, HP, SONY, AMKETTEE.	System Software like WINDOWS are manufactured by big software companies like MICROSOFT. Some readymade application Software like "TALLY, Ex etc. are manufactured by Software companies like TCS, Infosys etc. Other application Software may be prepared by individual programmers and end users.
5.	Modularity	Most of the Hardware devices are purchased initially but few of them can be added later on.	Most of the Software can be purchased initially along with Hardware. But application software is procured in stages, depending on requirements.
6.	Changes/ Alteration	Hardware once procured does not go through frequent changes except for new additions or releases or updation.	System Software once procured do not go through frequent changes, except for updation. Application software goes through frequent changes whenever policies and procedures are changed.
7.	Virus	Do not get affected by computer virus.	Only Software gets affected by computer virus.

Q.No.12. Super computer Vs. Mainframe Computer.

No.	Super Computer	Mainframe
1.	Super computers are the largest and fastest computers available.	Mainframes are slower, less powerful and cheaper than super computers.
2.	These are used in specialised areas like defence, aircraft design, medical research etc. where huge processing speed is required.	These are used in handling all kinds of scientific and business applications.
3.	These computers can process upto 64 bits or more at a time.	Mainframes process 32 bits or less number of bits at a time.
4.	These can support upto 10,000 terminals.	These can support upto 1,000 terminals.
5.	Processes upto 1.2 billion instructions per second.	Processes upto 5 to 10 million instructions per second.
6.	These computers are very costly and are generally developed by government.	These are relatively cheaper and are owned by big companies.
7.	Not used in commercial data processing.	Useful in commercial data processing.
8.	CRAY, CDAC, Fujitsu, Thinking Machine Corporation, etc. are major suppliers.	IBM, Sun Microsystem, HP, NCR, Burroughs, etc. are major suppliers.

Q.No.13. Data Bus Vs. Address Bus.

No.	Data Bus	Address Bus (Or Memory Bus)
1.	The data bus is an electrical path that connects the CPU, memory & the other hardware devices on the motherboard.	The second bus that is found in every microcomputer is the address bus. The address bus is a set of wires similar to the data bus that connects the CPU & RAM & carries the memory addresses.
2.	Actually, the bus is a group of parallel wires. The number of wires in the bus affects the speed at which data can travel between hardware components.	The number of wires in an address bus determines the maximum number of memory addresses. For e.g. 1 byte of data is enough to represent 256 different values. If the address bus could carry only 8 bits at a time, the CPU could address only 256 bytes of RAM.
3.	It decides the data transfer speed between various peripheral devices attached to the computer.	It decides the data transfer speed between RAM and Micro Processor.
4.	It always carries data.	It always carries addresses.

Q.No.14. Dynamic RAM Vs. Static RAM.

No.	Dynamic RAM	Static RAM
1.	It is the most common type of memory. It is dynamic because each memory cell quickly loses its charge. So, it must be refreshed for hundreds of times each second.	It is the rarely used type of memory. It is static because each memory cell does not lose its charge. So, it is not required to refresh the data continuously. The static RAM retains the stored data as long as power remains on.

2.	It is slow, small and less expensive.	It is faster, larger and more expensive than DRAM.
3.	Dynamic RAM is the most common type of main memory.	This is used mainly in a special area of memory called cache memory.
4.	They contain a transistor that acts as a switch and a capacitor which is capable of storing electric charge. Depending on the switching action of the transistor, the capacitor either contains no charge or does hold a charge.	It is not necessary to refresh the contents continuously.
5.	In DRAM, the computer does the refreshing process taking time out from other activities. So, processing gets slow down.	Processing will be fast because it is not necessary to refresh the data continuously.
6.	The power consumption of Dynamic RAM is less than that of Static RAM. Thus higher amount of integration is possible.	The power consumption of Static RAM is more than Dynamic RAM. Thus higher amount of integration is not possible.

Q.No.15. RAM Vs. ROM.

No.	Distinction	ROM	RAM
1.	Expansion	Read Only Memory.	Random Access Memory
2.	Changes to contents	Contents of ROM can be read and used but can't be corrected or erased.	Contents of RAM can be read, used, corrected or erased.
3.	Volatility	ROM is not volatile i.e. the contents are not lost when power is switched off.	It is volatile i.e. its contents are lost when the power is switched off.
4.	Size	Very small in size.	Very large in size.
5.	Contents	Contains important instructions which are needed to activate the system at the time of starting or Booting.	It contains data and instructions of the applications which are under process.
6.	Permanence	It is a permanent storage which contains same instructions at all times.	It is a temporary storage which gets different sets of data and programmes at different times, depending on the application being processed.
7.	Who will load?	ROM instructions are loaded by the manufacturers.	RAM instructions are loaded by the user.
8.	Used by whom?	Programmers and machine use RAM.	Only machines use ROM.

Q.No.16. Virtual Memory Vs. Main Memory.

Main memory is a part of the computer hardware, which stores programs and data that are in active use. Storage locations in main memory are addressed directly by the CPU's load and store instructions. Access is slower from main memory than from CPA registers because of large capacity and the fact that it is physically separated from the CPU.

Virtual memory, on the other hand, is a technique that allows the execution of a process, even though the logical address space requirement of the process is greater than the physical available main memory. The technique works by dividing a program on disk into fixed length pages or into logical, variable length segments. Virtual memory thus extends primary memory by treating disk storage as a logical extension of the main memory.

Virtual memory helps in efficient main memory utilisation. The programs can be loaded partially in the main memory, so more programs can be run at the same time. Hence, efficient CPU utilisation and better throughput is possible by using the concept of virtual memory. Virtual memory makes the task of programming much easier, because the programmer no longer needs to worry about the amount of physical or main memory available.

Following table indicates the difference between virtual memory and main memory.

No.	Virtual Memory	Main Memory
1.	Virtual Memory does not exist in reality. Its presence can be experienced logically but not physically.	It is also known as primary memory and it exists physically.
2.	It is a technique adapted by the operating system.	It is directly addressed and controlled by CPU.
3.	With the help of this facility even large files can be operated on small amount of RAM.	This memory will decide the speed of processing. More the amount of RAM faster will be the processing.
4.	Virtual memory is a concept which depends on the software that is being used.	Main memory will exist inside the system unit and is independent of software being used.
5.	In this memory parts of programs are called segments or pages.	Here parts of programs are known as blocks.
6.	It is not expandable and its size depends on the program being used. Thus virtual memory being used by the computer, changes from time to time.	It is expandable and its size is independent of the program being used.

Q.No.17. Interface Vs. Port.

Interface: A user interface, consisting of the set of dials, knobs, operating system commands, graphical display formats, and other devices provided by a computer or a program to allow the user to communicate and use the computer or program. A graphical user interface provides its user a more or less “picture-oriented” way to interact with technology.

- ▶ A programming interface, consisting of the set of statements, functions, options and other ways of expressing program instructions and data provided by a program or language for a programmer to use.
- ▶ The physical and logical arrangement supporting the attachment of any device to a connector or to another device.
- ▶ In case of hardware equipment, to interface means making an appropriate physical connection so that 2 pieces of equipment can communicate or work together effectively.

Port: On the other hand, an interface connection is called a port. A port is a socket on the back of the computer, which is used to connect external devices to the computer. When the user needs to add a new piece of hardware to the computer, he/she can plug the device into an existing port. Most computers have several types of ports, each with a different capabilities and uses. Most common types of ports available on computer these days are 25-pin serial port, 25-pin parallel port, keyboard port, 9-pin serial port and 15-pin game port. RS-232 is a de-facto serial port.

Following table indicates the difference between virtual memory and main memory.

No.	Ports	Interfaces
1.	A connection point for interface is called port.	It is a facility which consists of tools & other components to communicate with the Computer hardware or software.
2.	It is a socket on the back of the computer & is used to connect external devices to the computer.	It is making an appropriate physical connection to make two pieces of equipment to communicate or work together.
3.	It is related to Hardware alone.	It is related to both hardware & Software.
4.	Ports are used for the transmission of data, with in a computer system and its peripherals.	Interfaces are used to translate the external data into internal codes and vice versa.

Q.No.18. Main Memory Vs. Cache Memory.

Main memory of a computer is very significant because it is used to store the operating system and an ever changing parade of programs and data. Main memory is a random access memory (RAM) since access time in RAM is independent of the address of the word i.e. each storage location (address) inside the memory is as easy to reach as any other location and takes the same amount of time. In a computer system, main memory is supported by cache memory.

Cache is a special area of high speed memory that is located between the CPU and main memory. When the processor needs data, it checks high-speed cache first to see if the data is there, If not, the processor then retrieves the data from the main memory.

Main memory generally uses dynamic RAM (DRAM) chip. It is dynamic because each memory cell quickly loses its charge, so it must be refreshed hundreds of times each second to prevent data from being lost. On the other hand, cache memory uses special chips often, static RAM (SRAM) chips. It is static because it is not required to be refreshed continuously. SRAM is faster, larger, and more expensive and consumes more power.

On some systems, cache memory is four times as fast as regular main memory. However, cache costs six times as much as main memory. On the other hand cache memory is used at 2 levels. Some amount of cache memory is loaded on the processor, known as level 1 cache. Some amount is loaded on the motherboard, known as level 2 cache.

Following table indicates the difference between main memory and cache memory.

No.	Main Memory	Cache Memory
1.	It is also known as primary memory.	It is also known as high speed buffer memory.
2.	It is directly addressed and controlled by the CPU.	It operates and exists between CPU and main memory.
3.	It is cheaper.	It is highly expensive.
4.	The operating speed low.	The operating speed is very high and it will run at the speed of CPU.
5.	It stores large segments of programmes.	It stores small segments of programmes.
6.	It can be addressed by the user.	It can not be addressed by the user.
7.	The memory transfer rate is low.	The memory transfer rate is high.
8.	Its access time is high.	Its access time is low.
9.	These are produced using bi-polar semi-conductor technology.	These are produced using metal-oxide semi-conductor technology.

Q.No.19. Cathode Ray Tube (CRT) Vs. Flat Panel Display Devices.

No.	Cathode Ray Tube (CRT) Display Monitor	Flat Panel Displays
1.	These are also known as Visual Display Units.	There are 2 popular technologies - Liquid Crystal Display (LCD) & Gas Plasma Technology.
2.	CRT devices use a large glass tube known as the CRT Tube. The screen of the tube is coated with tiny dots of phosphor material which glows when electrically charged. A gun inside the CRT Tube lights up the phosphorescent pixels on the screen surface.	LCD has special molecules called Liquid Crystals deposited between two sheets of material, which generates the image when electric current passes through them. Gas Plasma uses a layer of gas instead of Liquid Crystals in the LCD monitor, which glows when voltage is applied and produces image.
3.	Resolution is limited and poor.	Offer better resolution.
4.	Reliable but bulky in size.	These are lightweight and compact.
5.	Relatively inexpensive.	Relatively expensive.
6.	Consumes more power and not suitable for portable devices.	Consumes less power and are very much suitable for portable devices.
7.	Can't work effectively in the areas of magnetic interference.	Can work effectively even in the areas of magnetic interference.

Q.No.20. Direct Data Entry Vs. Remote Data Entry.

No.	Direct Data Entry	Remote Data Entry
1.	Under this method data is entered directly into the computer using machine-readable source documents or through use of on-line terminals.	Data is entered and grouped in blocks for transmission to computer from a terminal, which is located at remote site.
2.	DDE devices have the capability of scanning source documents magnetically or optically. For e.g. MICR, OCR, OMR etc.	These terminals have capability of receiving back information from computer and printing.
3.	These terminals are connected to keyboard or other input devices for direct data entry.	These terminals are connected either directly or through communication lines with the computer.

Note: Remote job entry can also be done using Direct Data Entry devices.

Q.No.21. Dumb Terminal Vs. Intelligent Terminal.

No.	DUMB TERMINAL	INTELLIGENT TERMINAL
1.	A dumb terminal is an input / output device that provides for data entry and information exit when connected to a computer.	An intelligent terminal is an Input/Output device that is user-programmable.
2.	It has no such additional capabilities.	An intelligent terminal is user programmable. It contains not only a storage area but also a microprocessor.
3.	It is totally dependent on the computer to which it is connected.	The terminal can be programmed to communicate with and instruct the user who is entering data.
4.	Dumb terminals do not have	It can also do some processing of data

	microprocessors. Therefore, they are simple input devices that can display output from the CPU to which they are connected.	internally such as sorting, summarizing, checking both input and computed values for reasonableness and so on. Thus it does not rely on minicomputer or mainframe computer for processing. This feature can reduce the load on the central CPU.
5.	They immediately transmit each keyed data character to the main processor. When a keying error occurs, the operator may need to backspace to the error and then re-key all later characters.	Intelligent terminals can be used on a stand-alone basis or can be part of a distributed network of terminals.
6.	Cost is very low.	Cost is very high.

Q.No.22. Key to Disk Vs. Key to Diskette.

No.	Key to Disk	Key to Diskette
1.	In this system data from a source document is directly keyed to a magnetic storage device.	It is a system in which data is keyed into a stand alone data station and recorded on floppy disks.
2.	The set up for a key to disk system comprises of several keying stations, a microprocessor, a magnetic storage unit and a supervisors console as a network.	It is a standalone data station and comprises of a keyboard with a visual display unit and a floppy disk drive with small memory to hold the keyed data.
3.	The data recorded in key to disk is subsequently transferred to a magnetic tape after the verification.	In this case data can be entered and verified later. The data recorded to floppy disk is later transferred to the magnetic tape.
4.	The key to disk system ensures the accuracy of input, security and monitoring of programs.	In key to diskette system the data is captured at source thereby reducing security and lack of monitoring.
5.	When there is a breakdown of mini-processor, the total network disturbs.	It works on standalone basis. If a particular data station fails, the entire network does not disturb.

Q.No.23. Smart Terminal Vs. Remote Terminal.

No.	Smart Terminal	Remote Terminals
1.	Smart Terminals are intelligent terminals that contain a microprocessor and storage facility.	They are also known as Remote Job Terminal or Remote Job Entry (RJE). They are placed in a distant location but can be accessed through telecommunication channels.
2.	They have local data editing and processing capability before transmitting to the Central Computer.	These terminals group data into blocks for transmission to a computer from a remote site. They have the capability to receive back and print the results of the application program.
3.	Smart Terminals are non-programmable by users.	These terminals are user programmable.

Q.No.24. MICR VS. OCR.

No.	MICR	OCR
1.	MICR stands for Magnetic Ink Character Recognition.	OCR stands for Optical Character Recognition.
2.	Magnetic ink is required for printing the characters, so that they may be interpreted for processing.	In case of OCR they can be interpreted both by human beings and by machines.
3.	MICR recognises characters, that were printed in a special type of font.	OCR recognises characters in any format.
4.	MICR is an effective method of inputting data in banking industry for encoding, decoding, sorting and keep processing of cheques.	OCR is used for automatic transcription of source documents into machine understandable format.
5.	By reading magnetic ink patterns, MICR recognises the characters and produces appropriate signals which are transmitted to computer.	Documents are passed through a light source where the matter is recognised by a photo electric device with the procedure of absorption or reflection.
6.	Under MICR, characters are printed using magnetic ink.	Under OCR, characters are not required to be printed using magnetic ink.
7.	Works on the principles of magnetism.	Works on the principles of optics i.e. light.

Q.No.25. OMR VS. OCR.

No.	OMR	OCR
1.	OMR stands for Optical Mark Recognition.	OCR stands for Optical Character Recognition.
2.	Under this system the document is required to be passed through an optical mark page reader. The page reader will read the printed marks by absorbing light emitted on the document. Reflected light is converted into electric pulses and are sent to recognition logic circuit, where signal is processed.	It is a method of recognition of printed characters by machines. OCR systems can recognise different OCR fonts, as well as type writer and computer printed characters.
3.	Recognises marks.	Recognises characters.
4.	These are used in scoring tests where the examinee has to select one among several options.	Used to process turn around documents and to enter data directly into the computer.
5.	It is very difficult to design the document.	It is easy to design the document.
Both work on the principles of optics i.e. light.		

Q.No.26. Impact Printers Vs. Non-Impact Printers.

No.	Distinction	Impact Printer	Non Impact Printer
1.	Hit	These printers use some form of striking device (hitting device) to transfer ink from an inked ribbon to the paper.	In this type of printer there will be no direct contact between the paper and the printing head. These printers form characters by chemical or electronic means.
2.	Noise	These printers make noise while	Does not make noise while printing.

		printing.	
3.	Copies	Multiple copies can be printed at the same time by using carbon papers.	This type of printers can print only one copy at a time.
4.	Multi colour	It is not possible in impact printers.	It is possible in most of the non impact printers.
5.	Usage	These are mainly used for printing text. Low quality graphics can also be printed with some of them.	This can print both high quality graphics and text.
6.	Different font sizes & styles.	Can print documents with different font sizes and styles.	Can permit documents with different font sizes and styles.
7.	Quality	Medium. (Draft or NLQ)	Very good. (Letter quality)
8.	Areas of usage.	Used in business data processing applications.	Used in the areas of advertising and publishing where quality should be very good.
9.	Stationery	Carbons, ribbons, cartridges are used.	Many of the printers use Tonor.
10.	Examples	DMP, DAISY WHEEL etc.	INKJET PRINTERS, THERMAL, LASER PRINTERS.

Q.No.27. Microfilm Vs. Microfiche.

No.	Microfilm	Microfiche
1.	Micro film stays in a continuous form.	Microfiche is cut into pieces.
2.	They are 16mm/35mm roll of film contained in cartridges which can hold 2000-5000 pages.	They are 105 mm film measuring 4 X 6 inches sheets which can reproduce more than 270 page sized images.
3.	It can provide sequential access only i.e. to access a particular record, one has to pass on previous records.	It can provide direct access i.e. to access a particular record, it is not necessary to access previous records.
4.	Access of information is slow.	Access of information is faster.
5.	Can store huge amount of data.	Less storage capacity.

Q.No.28. Serial Printers Vs. Line Printers.

No.	Serial Printers	Line Printers
1.	Serial printers are printers which can print one line at a time, usually from left to right. However, some printers can also print in bi-directional format.	Line printers are printers, which can print one line at a time.
2.	Serial printers are generally used with microcomputers.	Line printers are generally used with mainframe and mini computers.
3.	The quality of output is high.	Quality of output is poor.
4.	They are low speed printers.	They are generally high-speed printers.

5.	These are capable of graphic applications.	Their graphics capability is limited.
6.	There are two types of serial printers - Dot matrix printers and Daisy wheel printers.	There are two types of line printers - Drum printers and Chain printers.
7.	Speed is measured in Characters Per Second (CPS).	Speed is measured in Lines Per Second (LPS).
8.	It is used where volume of output is limited.	They are used where volume of output is very high.

Q.No.29. Floppy Disk Vs. CD-ROM.

No.	Floppy Disks	CD ROM's
1.	These are direct access storage devices.	These are direct access storage devices.
2.	Their storage capacity is very less.	Their storage capacity is very high.
3.	It is possible to read, write and rewrite data.	Generally the data can be written only once and can be read many times. There is no scope for rewriting (except in some cases)
4.	Cost for storing 1MB of data is very high.	Cost of storing 1MB of data is very low.
5.	Works on the principles of magnetism.	Works on the principles of optics (Light).
6.	It uses mechanical heads for reading and writing.	It uses laser light for accessing data.
7.	The access time is very high.	Access time is very low.
8.	Consists of very less number of tracks and sectors i.e. data density is very less.	Consists of large number of tracks and sectors i.e. data density is very high.
9.	Data gets disturbed when subjected to magnetic interference.	Data does not get disturbed when subjected to magnetic interference.

Q.No.30. Floppy Disk Vs. Hard Disk.

No.	Floppy Disk	Hard Disk
1.	A floppy consists of a single disk.	Consists of number of disks called platters.
2.	The read-write head touches a floppy.	A read-write head does not touch a hard disk
3.	A floppy disk is inexpensive. But cost per 1 MB of memory is very high.	A hard disk is expensive. But cost per 1 MB of memory is very less.
4.	Slow access to data.	Fast access to data.
5.	They can be removed at any point of time. So they come under portable storage devices.	Hard disks are fixed. So, they are not portable.
6.	Floppy disk is made of flexible material called mylar.	The hard disk consists of rigid metal (aluminum) platters.
7.	Does not work in vacuum sealed chamber.	Work in vacuum sealed chamber.
8.	Less reliable.	More reliable.
9.	Very less storage capacity.	Very huge storage capacity.

Q.No.31. Magnetic Tape Vs. Magnetic Disk.

No.	Magnetic Tape	Magnetic disk
1.	It is a sequential access storage media.	It is a direct access storage media.
2.	Very much economical for making back up copies of data.	Most popularly used secondary storage device.
3.	Data is more secured.	Data is less secured than magnetic tape.
4.	Magnetic tapes are vulnerable to dust or careless handling.	Disks are relatively sturdier and less vulnerable to damage from dust.
5.	Easily portable.	Disk packs require special care during transportation.
6.	Cheap source of storage medium.	Costlier.
7.	Rarely used as it supports sequential access only.	It is widely used because it provides direct access to data.
8.	Slow access devices.	Faster access devices.

Q.No.32. Primary Storage Vs. Secondary Storage.

No.	Primary Storage	Secondary storage
1.	Added to the system as a part and parcel of the circuitry.	Added to the system as a supplementary to primary storage.
2.	It is electronic in nature and is usually supplied in the form of chips.	Magnetic or optical in nature and supplied in the form of tapes and disks.
3.	Provides Random access to data.	Provides Sequential / direct access to data.
4.	Volatile i.e. its contents are lost when power is lost.	Non volatile i.e. it does not lose its contents even when the power is lost.
5.	Low capacity.	High capacity.
6.	Fast access to data.	Slow access to data.
7.	High cost.	Low cost.
8.	Generally a computer consists of few MB's of memory.	Generally a computer consists of few GB's of memory.

Q.No.33. Application Program Vs. Utility Programs.

No.	Application Program	Utility Program
1.	Application programs are written for the purpose of solving specific business / scientific problems.	Utility programs are available for the purpose of supporting the data processing activity.
2.	It is developed using programming language.	It is used in developing application software.
3.	It is used in carrying out the data processing jobs.	It acts as a tool in carrying out the data processing job.
4.	It gives some general solutions for related problems.	It gives specific solutions for specific problems.
5.	Professional programmers write application programs.	Software manufacturers supply the utility programs.

Q.No.34. Interpreter Vs. Compiler. / Interpretation Vs. Compilation.

No.	<i>Distinction</i>	<i>Interpretation</i>	<i>Compilation</i>
1.	Meaning	It is a type of translation in which one line is translated at a time.	It is a type of translation where the entire source programme is translated at a time.
2.	Interpreter/ Compiler	The translation software which translates only one line at a time is called Interpreter.	The translation software which translates the entire source programme at a time is called compiler.
3.	Storage	In interpretation every line of source programme is read and translated. The object code is created and immediately executed. When the next line is read & translated, the object code created earlier is not stored.	The entire programme is read and translated at a time. The object programme is generated and stored in the secondary storage device. Using this object programme, the programme gets executed subsequently without compilation.
4.	Translation & Execution	In interpretation, programme translation and execution always happens together line by line.	Programme translation and execution need not happen together.
5.	Number of Translations	Translation has to be done every time the programme is executed.	Translation is one time activity. Future programme executions may be done with the object programme without having repeated translation.
6.	Speed	Programme execution is slow.	Programme execution is fast.
7.	Users/Preference	Interpreters are preferred by new learners. (Or) In case the data to be translated is less.	These are preferred by professionals, for business data processing applications at large centers.
8.	Future executions.	Source programme has to be permanently present for all future programme executions.	Source programme need not be present at all times. Future executions may be done only with object programme.
9.	Error detection	Syntax Errors are detected, displayed and corrected line by line.	All syntax errors can be detected, displayed and corrected together.
10.	Security to applications	Gives less security to applications because easily correctable source programmes are permanently stored for all future programme executions.	Gives more security to applications.

Q.No.35. Multiprogramming Vs. Multitasking.

No.	Multi Programming	Multitasking
1.	Multiprogramming is a technique used to execute number of programs simultaneously by a single processor.	It is the logical extension of multiprogramming and refers to the operating systems ability to execute two or more of a single user's tasks concurrently.
2.	In multiprogramming, number of processes resides in main memory at a time.	The CPU switching between them executes multiple jobs. The CPU scheduler selects a job from the ready queue and switches the CPU to that job. When time slot expires, the

		CPU switches from this job to another job.
3.	The operating system picks and begins to execute one of the jobs in the main memory.	Here, different processes share the CPU time. The main advantage of multitasking is efficient CPU utilization.
4.	The purpose of multiprogramming is to increase the utilization of the computer system as a whole.	It provides single user with multiprogramming capabilities.

Q.No.36. Multiprogramming Vs. Time Sharing System.

No.	Multiprogramming	Time sharing system
1.	Multiprogramming is a processing mode in which several partially completed tasks are processed concurrently.	Time Sharing is a processing system with number of independent, relatively low speed, on line, simultaneously usable stations which are geographically remote from the computer and from each other.
2.	At any time, only one task or job is actually being executed, but within a larger time span of several minutes, the computer is processing several jobs or programs, alternating between actually executing, and performing input/output activities.	Each station provides direct access to the central processor for obtaining instant responses to the questions asked or statements made in an interactive conventional mode.
3.	When one job needs to do input/output another can begin execution. Thus two or more independent programs are executed in the same time span by interleaving their execution.	The speed of the system and the use of multiprogramming allows the central processor to switch from one using station to another and to do a part of each job in the allocated "time slice" until the work is completed.
5.	The advantage of multiprogramming is that overall performance of the system can be enhanced. The speed of the CPU can be used to avoid the delays in waiting for input or output operations.	The response is so fast that the user has the illusion that no one else is using the computer, which creates an impression of having a computer for one's sole use.

Q.No.37. Multiprogramming Vs. Multiprocessing.

Multi programming is the term used to describe a processing approach in which 2 or more independent CPU's are linked together in a coordinated system. On the other hand, multiprogramming refers to the processing mode in which interleaved execution of 2 or more different and independent programs is carried out by the same computer.

Multiprogramming is not defined as the execution of instructions from several programs at the same instant in time. Rather, it means that there are number of programs available to the CPU and that a portion of one is executed, then a portion of another and so on. On the other hand, in multiprocessing, instructions from different and independent programs can be processed at the same instant time by different CPU's. Or, the CPUs may simultaneously execute different instructions from the same program.

Q.No.38. Source Code (Program) Vs. Object Code (Program).

No.	Distinction	Source program (Code)	Object programme (Code)
1.	Meaning	It is a set of instructions written in computer language.	It is a set of instructions written in machine language.
2.	Who will prepare?	It is written by the user in a computer language.	It is generated by a process called compilation or interpretation.

3.	Input/Output	It is input to compilation process	It is the output of compilation process.
4.	Readability	It is readable by the user since it is written by himself using an English like computer language.	It is not readable by the user since it is in machine language.
5.	Modifications	They can be read and modified by the user directly.	They cannot be directly modified by the user. To correct the object programme the corresponding source programme should be modified and re-compiled.
6.	Direct Execution	It cannot be directly executed without compilation.	It can be directly executed.
7.	Errors	It can contain both syntax errors and logical errors.	It can contain only logical errors. They cannot contain syntax errors since compilation process removes all syntax errors.

Q.No.39. Syntax errors Vs. Logical errors.

No.	Distinction	Syntax Error	Logical Error
1.	Meaning	These are programme errors which occur on account of wrong usage of computer language and its rules or syntax.	These are content errors that can be detected from the output of a computer programme. Here the output is different from what is expected either in value or in design or in format.
2.	Where they can Present	These can only be present in object programme since compiler will not convert it into object programme until it is syntax error free.	They may be present both in source programme as well as object programme.
3.	How identified	Can be identified by compilation Software during compilation	Cannot be identified by compiler during compilation.
4.	Both are errors that occur in computer system.		

Q.No.40. System Software Vs. Application Software.

No.	Distinction	System SW	Application SW
1.	Meaning	It is an important type of SW which is essential for computer system to be used by the user. Used to improve the performance and maximum utilization of system resources.	It is an important type of software which are created to achieve the end users or applications of the computer system. Used to improve the speed and quality of business activity.
2.	Examples	Operating system, Computer languages, Compilation SW, Utility programmes, Library functions, Diagnostic SW etc.	Software for stores accounting, Financial accounting, Invoicing SW, Payroll programmes etc.
3.	Who produce?	May be prepared by large SW companies like MICROSOFT. Some may also be written by system programmers.	Application SW in the form of readymade application packages may be produced by SW companies. Tailor made application SW may also be written by programmers or end-users.

4.	How prepared?	Prepared using any low level language.	May be prepared using any higher computer language or specification SW like DBMS.
5.	When procured?	It is generally procured along with HW at the time of initial purchase. But few modules may be added later also.	Generally prepared in stages one after another based on user priorities.
6.	Updatons	Once prepared doesn't change frequently except for new additions or versions.	Goes through more frequent changes whenever policies and procedures relating to the applications are changed or when application programmes need to be improved for better performance.
7.	Knowledge of Hardware	Detailed knowledge of hardware is required.	This requires detailed knowledge of organization.
8.	HW Independence	System software varies from computer to computer.	Application software varies from organization to organization.

Q.No.41. Compiler Vs. Assembler.

No.	Compiler	Interpreter
1.	Compiler is a standard program supplied by the manufacturer.	Assembler is also a standard program supplied by the manufacturer.
2.	It converts the high level language program into machine code.	It converts an assembly language program into machine code.
3.	Compiler will be loaded into the computer first and then source program will be input.	Assembler is available within the memory and accepts symbols and mnemonic codes.
4.	Compiler generates an object code of the source program as a result.	It generates machine codes as a result.
5.	Compilers scan the whole program at a time.	It scans the program line after line.
6.	Compiler generates one to many instruction relationship i.e. for one high level language instruction it may generate multiple machine language instructions.	Assembler converts on one to one basis i.e. for every instruction in source code it generates an equivalent machine code instruction.

Q.No.42. MS-Windows Vs. MS-DOS.

No.	MS-Windows	MS-DOS
1.	It offers graphical user interface. (GUI)	It offers character user interface. (CUI)
2.	Easy to operate (User friendly)	Cumbersome and difficult to use.
3.	Allows to execute multiple programs at a time.	Allows to execute only one program at a time.
4.	It enables to work with large database files, spread sheets and word processing files.	Cannot support large files. The file size will be limited by the availability of primary memory.
5.	Suitable when the processing is required on a specific set of records.	Suitable when the processing is required on a specific set of columns.

6.	Easy to learn. The user need not remember the commands.	Difficult to learn. The user has to remember the commands.
7.	It is a 32 bit operating system.	It is a 16 bit operating system.

Q.No.43. Third Generation Languages (3 GL's) Vs. Fourth generation Languages (4 GL's).

No.	Third Generation Languages	Fourth generation Languages
1.	These languages are intended for use by professional programmers.	These languages are used by non-programming end-users as well as professional programmers.
2.	These languages require to specify how to perform a particular task.	It is just sufficient to specify the task required to be performed.
3.	Requires that all alternatives should be specified.	Some default alternatives are built in. User need not specify these alternatives.
4.	To solve a particular problem, it requires large number of procedural instructions.	To solve a particular problem it requires less number of instructions.
5.	Program code is difficult to read, understand and maintain.	Code is easy to understand and maintain because of English like commands.
6.	Difficult to learn.	Easy to learn.
7.	Difficult to locate errors and debug.	It is easy to locate and debug errors.
8.	E.g. FORTRAN, COBOL, PASCAL, BASIC, C, etc.	E.g. Visual Basic, Java, C++ etc.

Q.No.44. High Level Language Vs. Low Level Language.

No.	Distinction	High Level Language	Low Level Language
1.	Hardware independence	It is a computer language which is hardware independent i.e. it can be used in all computers irrespective of their types, sizes and manufacturers.	It refers to hardware dependent computer language. The language differs from one model to another model of the computer.
2.	English like language	These are highly English like languages.	These are not English like languages.
3.	Learning	They can be learned faster with minimum effort and learning is a one time activity.	These can be learned with more effort and time and learning has to be repeated whenever hardware changes.
4.	Coded languages	These are not coded languages.	These are coded languages which use special codes close to the machine language and are called mnemonic codes.
5.	Where used	Used for developing all types of general applications.	Used only for the following specialised requirements. a. To programme and control internal devices of computer. b. To connect or link computers with other equipment. c. In special purpose computers like ATM.

6.	Execution	Slow	Fast
7.	Who uses?	These are used by all software development professionals or application programmers.	These are used only by specialized system programmers.

Q.No.45. Self (Direct) Addressing Method Vs. Indexed Sequential File organisation.

No.	Self (Direct) Addressing Method	Indexed Sequential File organisation
1.	In this method a record key is used as its relative address. Therefore, we can compute the record's address directly from the record key and the physical address of the first record in the file.	The indexed sequential file organization or indexed sequential access method (ISAM), is a hybrid between sequential and direct access file organisations. The records within the file are stored sequentially but direct access to individual records is possible through an index.
2.	To access a particular record some calculations are required to be performed.	To access a particular record it is not required to do any calculations.
3.	It does not use any indexes.	It uses cylinder and track indexes for locating records.
4.	There is no simple relationship between the keys of adjacent records.	There exists some simple relation between the keys of two adjacent records.
5.	Insertions and deletions can be easily made.	Insertions and deletions take more time because every time it is required to update the index.

Q.No.46. Fixed Word Length Vs. Variable Word Length.

No.	Fixed Word Length	Variable Word Length
1.	In this system all words will have same length.	In this system words will vary in number of bytes.
2.	In fixed word length system every storage location is identified by a specific address.	In this system each set of bytes will have one unique address.
3.	Machines operating with fixed word length have faster calculating capabilities.	The calculating speed of variable word length machines is low.
4.	Fixed word length system maintains memory with less efficiency i.e. lot of memory will be wasted.	Variable word length machines utilise the systems memory with higher efficiency.
5.	Access time (time required to access a particular data) is low.	Access time is high.

Q.No.47. Sequential File Organization Vs. Direct access File Organization.

No.	Sequential File Organization	Direct File Organization
1.	Data are arranged / stored in sequence either in ascending or descending order of the record key.	Data are arranged / stored without any sequence or in any specific order.
2.	Only sequential access is possible.	Accessing can be either sequential or direct.
3.	This type of organization is efficient only when there is no need for accessing records in between.	This method is suitable for accessing records in between process runs.
4.	It is suitable for batch processing system.	It is suitable for online and real-time systems.

5.	Identifying individual records is time consuming.	Identifying individual records requires no time.
6.	Does not require any calculation or index for storing and accessing records.	Requires either calculation or index for storing and accessing records.

Q.No.48. Sequential File Organization Vs. Indexed Sequential Organization.

No.	Sequential File Organization	Indexed Sequential Organization
1.	In sequential file organization, records are written in the same sequence in which they are collected, but they are organized into certain order.	Indexed Sequential Organization is a combination of sequential and direct access file organization.
2.	Ordering of records within the file is according to a specific data field, which is known as key field.	Here files are recorded serially in a logical sequence; indexing or reference techniques are used so that access can be done on a random basis as well as sequentially.
3.	Records appear in sequential file one after another, in key sequence.	Records are updated in place, without the need to create entirely new files during processing.
4.	Sequential files can be read and processed only in the order in which they are recorded.	This method of file organization is used for applications that might require both sequential and random access references.
5.	Sequential organization can be used on all storage media.	It can done only on direct access storage devices.

Q.No.49. Sequential File Organization Vs. Random File Organization.

No.	Sequential File Organization	Random File Organization
1.	In a Sequential File Organization, records are written in the sequence of their occurrence.	In Random File Organization Method, record can be written randomly.
2.	Ordering of records within the file is according to a specific sequence.	Ordering of records in random file does not include any specific sequence.
3.	Sequential files can be read and processed in the order in which they are recorded.	Records can be processed or read and written in many locations throughout the stored file.
4.	To process a required record in sequential file it is necessary to read all the records preceding to the required record.	To process or access the required record in random file prior records need not be examined first.
5.	Sequential files can be created on all storage media.	Random file can be created only on direct access storage media.
6.	Sequential file is not suitable for instant inquiry or updating.	Random file is suitable for instant inquiry or updating.

Q.No.50. Batch System Vs. Real-Time System (or) Batch processing Vs. Real Time processing.

Aspect	Batch System	Real-time System
Time Lag	There is a time lag between the point at which economic event occurs and point at which it is reflected.	No time lag. Transactions are processed the moment the economic event occurs.
Resources	Less organizational resources needed. Shorter development period and easier to maintain	Cost is more for designing the user-interfaces. Pop-up menus, online tutorials, special help menu require

	programs. • No idle time. Computer used only when program is run.	additional programming. • Dedicated computer system needed. Therefore, sometime remains idle.
Data Input	Data collected is accumulated over a definite period of time and then processed in batches.	Data can be input at any time and it is processed immediately.
Efficiency Vs. Effectiveness	Processing more transactions at lower unit cost makes it efficient. If process time is not important batch system can be used.	Individual transaction is processed effectively. Very much useful when the system requires latest information at any point of time.
Application	This method of processing is suited in the applications of payroll processing, customer billing etc.	This method is very much suited in the areas of airline reservation, inventory management, railway reservation, sales order processing, etc.
Storage	It is sufficient to store data on sequential access storage devices like magnetic tape, tape cartridges, etc.	Data must be stored on direct access storage devices like magnetic disc, floppies, CD's, etc.
Delay	Some amount of delay is inevitable.	Even minute delay is not acceptable.

Q.No.51. Interactive Processing Vs. Batch Processing.

Aspect	Interactive Processing	Batch Processing
Meaning	It is a type of processing mode in which continuous dialogue exists between the user & the computer. It is also called "transaction driven processing". In this method transactions are completely processed on an individual basis.	Under this method, a batch of transactions is accumulated; batch totals are calculated and stored on a floppy diskette or other media. The transactions are processed and the required master files are updated.
Transaction Method	Transactions are processed completely on an individual basis through all the relevant processing operations before dealing with next transaction.	It processes transactions in batches through each processing stage at a definite interval.
Human Interaction	Human interaction is very high i.e., every transaction processing requires human interaction.	Human interaction is very limited.
File Updation	It updates files instantaneously as transactions occur & are executed.	Files are updated only for the previous run.
Query Response	It can provide immediate response to a query.	Can't provide latest and updated information at any point of time.
Cost	It is very costly to develop such a system.	Comparatively it is cheaper to develop a system under batch processing mode.

Q.No.52. On line System Vs. Real Time System.

The term on-line processing and real time processing are used interchangeably but there is a basic difference between the 2. On line processing refers to processing of individual transactions as they occur from their point of origin. This processing mode utilises direct access devices such as magnetic disk and number of terminals connected to and controlled by a central processor. It provides multi access to information files by terminal users and also enables them to update files with transaction data. Aside from transaction processing and file updating, inquiries are also handled by the online processing system. It also ensures that the records are in updated status at any time.

The term real time processing, on the other hand, refers to the technique of updating files with transaction data immediately after the event to which it related occurs. Real time processing is

basically, on line processing with one specialty in inquiry processing. On line updating in real time usually leads to transactions as a by-product. The response of the system for the inquiry itself is used to control the activity. It would normally differ from one activity to another activity. The response of a real time system is one type of feedback control system. An on-line production data collection system that simply accepts input and utilised it for payroll and costing purposes can't be treated real time, but if, on the other hand, the system is designed to provide immediate information to monitor the production process, it is real time processing.

Q.No.53. Online Systems Vs. Batch Applications.

No.	Online Systems	Batch Applications
1.	Under online processing, individual transactions will be processed as they occur, from their point of origin. Data can be captured through terminals located at several crucial points. Data collected through these terminals will be processed and stored at central location.	Under this method, a batch of transactions is accumulated; batch totals are calculated and stored on a floppy diskette or other media. The transactions are processed and the required master files are updated.
2.	At any point of time the system provides latest and updated information.	It can't provide latest and updated information at any point of time.
3.	No such system exists.	To verify the validity of data entry batch totals are computed.
4.	Cost of development and maintenance is high.	Cost of development and maintenance is low.
5.	To collect data from the point of horizon terminals are installed at required places.	No need to place such terminals. Even if they are used, only dumb terminals are used.

Q.No.54. Voice Synthesizer System Vs. Voice Recognition System.

No.	Voice Synthesizer System	Voice Recognition System
1.	Voice Synthesizer (or Voice-Output Device) is a system which converts data in main storage to vocal sounds understandable to human beings.	Voice Recognition system (VRS) is a hands-free voice interactive computer interface in which user can access the computer system by talking to it.
2.	It is an output technique.	It is an input technique.
3.	These systems are designed to replicate the voice of human beings.	They were designed for the help of physically handicapped and non-typists people to work with the computer efficiently.
4.	The output is in the form of speech and the speed and pitch of the speech can be adjusted.	Voice command driven applicants are very effective and are very well received by inexperienced users.
5.	They are commonly used in a voice output presentation in different languages for different users, multimedia presentation and children education software.	Most speech systems are used for text dictation or for single command voice menu option.
6.	Even though it is expensive it widely being used in several areas.	VRS technology is still embryonic and somewhat restricted in use.
7.	Dedicated voice synthesizing systems are available which can be connected to the computer through parallel port. The same work can also be performed by software.	It is completely software oriented. Total work will be performed by a special purpose software.

Q.No.55. Computer Network Vs. Distributed System.

A computer network is a collection of computers and terminal devices connected together by a communication system. The computer may include large-scale computers, mini computers, terminals, workstations and miscellaneous devices. 2 computers are said to be inter connected if they are capable of exchanging information. The connection need not be via a copper wire; but lasers, u-waves and earth satellites can also be used. Computer networks increase the reliability of computer resources and facilitate overall system development. They also satisfy the prime objective of resource sharing which includes device sharing, file sharing, program sharing and program segmentation.

A distributed system is one in which the computing functions are dispersed among several physical computing elements. Computer systems are arranged in a computer network, with each system connected to one or more other systems. A distributed system is both a technological and organisational concept. Its premise is that information processing can be more effective if computer hardware, data, software and in some cases, personnel are moved physically closer to the people who use these resources. In distributed system, users have greater control over their computing environment.

Network may or may not be distributed system, depending on how it is used.

Q.No.56. Local Area Network (LAN) Vs. Wide Area Network (WAN)

No.	Difference	Local Area Network	Wide Area Network
1.	Spread/ Coverage	A LAN is restricted to a limited geographical coverage of few kilometers.	WAN spreads over greater distance and may operate nationwide or even worldwide
2.	Data transmission errors.	Fewer data transmission errors occur in case of LAN because the distance covered is less.	When compared to LAN, error rate is more because the distance covered is more.
3.	Data transmission speed.	Data transmission speed is much higher in LAN than in WAN. Typical transmission speeds in LAN'S are 0.1 to 10 MBPS.	In a WAN the data transmission speed ranges from 180 to 9600 Bits per second
4.	How nodes are connected?	In a LAN, computers, terminals and peripheral devices are usually connected with wires and coaxial cables.	But in WAN there may not be direct physical connection between various computers.
5.	Cost of transmission.	The cost to transmit data in a LAN is negligible since the transmission medium is usually owned by the user organisation.	Cost will be high because the transmission medium used is leased lines or public systems such as telephone lines, microwaves and satellite links.
6.	Communication Mode	Communication may take place just by a way of direct cabling.	Communication takes place by way of telecommunication cables, satellites or microwaves.
7.	Security	Security is not that much important because the network runs within the organisation.	Security is very important because the network has to run outside organisation also.

Q.No.57. Serial Transmission Vs. Parallel Transmission.

Serial Transmission: Serial Transmission is the most commonly used method of communication. In serial transmission bits of each byte are transmitted one after the other along a single path. Then the receiver assembles the incoming bit stream into characters. In serial transmission, the bits of each byte are sent along a single path one after another. An example is the

serial port (RS-232), used for Mouse or MODEM. Serial transmission can occur in any of the two ways - Asynchronous & Synchronous transmission.

Advantages:

- ▶ It is a cheap mode of transferring data.
- ▶ It is suitable to transmit data over long distances.

Disadvantage: This method is not efficient (i.e. slow) because it transfers data in series.

Parallel Transmission:

- ▶ In parallel transmission all bits of each byte are transmitted simultaneously i.e. each bit will have a unique channel dedicated to it. For ASCII character we need eight channels. All bits are transmitted together and arrive at the destination together.
- ▶ Example – Parallel port being used for printers.

Advantages: Data can be transmitted at a very high speed.

Disadvantage:

- ▶ Not suitable for transferring data over long distances. As it uses parallel paths, cross talk may occur. To minimise cross talk, cable length should be limited.
- ▶ It is costly. (Because there should be separate channel for each bit)

Q.No.58. Difference between Serial transmission and parallel transmission.

No.	Serial transmission	Parallel transmission
1.	The bits of each byte are sent along a single path one after the other.	In parallel transmission, there are separate parallel paths corresponding to each bit of byte.
2.	Bits in a byte are transmitted one by one.	All character bits are transmitted in parallel, at a time.
3.	It is used to transfer data over long distances.	It is used to transfer data to limited distances.
4.	The rate of data transmission is very slow.	The rate of data transmission is very high.
5.	It is used where less volume of data is to be transmitted.	It is used where more volume of data is to be transmitted.
6.	It is economical.	It is costly.

Q.No.59. Synchronous Transmission Vs. Asynchronous Transmission.

No.	Synchronous	Asynchronous
1.	In this transmission bits are transmitted at fixed rate.	In this transmission takes place in form of words accompanied by stop and stop bits.
2.	This allows characters to be sent down the line without start-stop bits.	Transfers the data with start-stop bits.
3.	It allows data to be sent as a multi-word blocks.	Data transfer takes place in the form of words.
4.	Uses a group of synchronization bits.	No special synchronization bits to synchronize the equipment.
5.	Rate of transferring data is faster.	The transfer rate is slow.

Q.No.60. Star Network Vs. Ring Network.

No.	Star Network	Ring Network
1.	It is a type of network topology in which all nodes are connected to a central computer/hub through dedicated cables.	It is a type of network topology in which all nodes are connected in the form of a circular chain.
2.	The communication takes place between the nodes through the hub/computer only i.e. all communication between terminals must pass through hub/computer.	The communication takes place by each node to receive and check for the message i.e. every node receives message and passes it to the next node.
3.	A broken connection between hub/central computer and node does not affect the rest of the network.	A broken connection between nodes leads to failure of entire network.
4.	Failure in the hub/central computer affects all nodes connected to that hub.	Failure in one node does not affect the entire system.
5.	The signal becomes weak when it has to travel long distances. To avoid it, repeaters are required to be used.	Repeaters are not needed. Every computer acts as a repeater.
6.	It is very easy to add/remove a node from the network.	It is difficult to add/remove a node from the system.

Q.No.61. Internet Vs. Intranet.

No.	Internet	Intranet
1.	The Internet is a global network of computer networks that are formed by various educational, commercial, Government, non-profit and military organizations.	On the other hand intranet is a type of information system that facilitates communication within the organization, among widely dispersed departments, divisions and regional locations. Intranet connects people together with Internet technology using web browsers, Web Servers and Data warehouses in a single view.
2.	This is not being developed and controlled by a single person or organisation.	It is developed and controlled by private individuals and organisations.
3.	Internet is a public network. So, any body can log into the network and perform any action at his choice.	It is a private network and access to private individuals is restricted by user names and passwords.
4.	Thousands of databases exist which can be accessed and used by private individuals.	Only authorised persons are allowed to access the data available in organisation's databases.
5.	An internet can be defined as a network of networks.	An intranet can be a LAN or WAN that belongs exclusively to a corporation.
6.	Any node can transmit a message to any other node, along with communication channels, via the intermediate nodes. Internet uses are many; some of them are given below: Communication, Data Retrieval, Data publishing, etc.	Several applications of Intranet include: (a) Supplier management (b) Inventory management (c) Distribution management (d) Channel management
7.	Acts as an information service to retrieve the information world wide.	Acts as an information service to retrieve and share files within the organisation.

Q.No.62. Firewall Vs. Encryption.

No.	Firewall	Encryption
1.	They control the flow of traffic between the Internet and the firm's internal LANs and systems. They are setup to implement the security policies desired by the organisation.	This allows information to transit the Internet while being protected from interception. There are two basic approaches to encryption: Hardware encryption and Software encryption.
2.	It is software oriented.	It is both hardware and software oriented.
3.	Controls the flow of traffic between the Internet and the firms internal LANS and systems.	It protects the information transmitted through Internet from eavesdroppers.
4.	It is defined based on specific security policies of the organisation.	It is a generalized policy with reference to information transmission.
5.	It is an effective means of protecting the firm's internal resources from unwanted intrusion.	Restricts the tampering of information from interception while in transmission.
6.	May be established for the entire LAN or for a specific application.	It will be application specific.

Q.No.63. Data Administrator (DA) Vs. Data Base Administrator (DBA)

No.	Data Administrator (DA)	Data Base Administrator (DBA)
1.	A Data Administrator logically defines data and also advises the users on data collection procedures.	Data Base Administrators physically define the data and prepare programs to create data.
2.	They answer and educate the end users and determine their requirements.	They answer and educate the programmers and define the programming requirement.
3.	They develop standards for data definition.	They implement the standards for data definition.

Q.No.64. Data Definition Language Vs. Data Manipulation Language.

No.	Data Definition Language	Data Manipulation Language
1.	Data definition language is the link between the logical and physical structures of the databases.	It provides techniques for processing the database.
2.	It is used to define the physical characteristics of each record.	It is used to perform operation on data such as retrieval, sorting and display.
3.	It provides for physical and logical data independence.	It provides for independence of programming languages.
4.	It describes the schema and sub-schemas.	It enables the user and application programs to process data on a symbolic logical basic rather than on physical location basis.
5.	It takes care as to how the data is maintained in physical storage.	It separates the user from physical storage.

Q.No.65. Database Vs. Database Management System (DBMS)

No.	Data Base	Data Base Management System
1.	Database is a collection of related data necessary to manage an organization and excludes temporary data like input documents, reports and intermediate results obtained during processing.	DBMS is a set of procedures which manage the databases and provide access to the database in the form required by an application program.
2.	It models the data resource of an organization using the relationships between different data items, which is independent of any application program.	It ensures that the necessary data in the required form is available for different applications of different users of an organization.
3.	When data is stored in a database it becomes independent of other programs. So, it can be processed, retrieved very easily.	Database management system (DBMS) provides flexibility in storage and retrieval of data and production of information.
4.	Database represents data belonging to the entire organisation.	It represents software which manages such database.
5.	Data can be arranged in any of the following ways – Hierarchical, Relational or Network databases.	Such data can be maintained by ordinary database management systems or relational database management systems.

Q.No.66. Logical Record Vs. Physical Record.

No.	Logical Record	Physical Record
1.	A logical record contains all the data related to a single item. It may be a payroll record for an employee, or a record of all of the charges made by a customer in a departmental store.	A physical record refers to the actual portion of a medium on which data is stored. It may be a group of pulses recorded on a magnetic tape or disk, or a series of holes punched into paper tape.
2.	A logical record is independent of its physical environment.	Portions of the same logical record may be located in different physical records or several logical records or parts of logical records may be located in one physical record.
3.	It refers how data is presented to the user.	It refers how data is actually stored in the computer.

Q.No.67. Structured Query Language (SQL) Vs. Query By Example (QBE).

No.	Structured query Language (SQL)	Query By Example (QBE)
1.	SQL is a query language for finding out the required data from the RDBMS by asking some standard questions.	QBE is a query language where queries are framed through examples.
2.	It is usually a Character oriented interface.	It is Graphic oriented interface.
3.	The users request data by issuing instructions that are close to English.	The users can request data by typing values or expressions into the fields of a form or grid.
4.	It contains the statements that describe the data contained in the database.	It uses grid like structures to receive the criteria data.
5.	It requires the internal structure of the data	It displays a list of tables in the form of a

	tables.	window grid or dialog boxes and allows selecting interactively.
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Q.No.68. Vertical Partitioning Vs. Horizontal Partitioning

No.	Horizontal Partitioning	Vertical Partitioning
1.	Horizontal Partitioning breaks a relation into multiple record specifications by placing different rows into different records based upon common column values.	Vertical Partitioning distributes the columns of a relation into separate files, repeating the primary key in each of the files.
2.	Each file created from the partitioning has the same record layout.	Each file created from a vertical partitioning does not have the same record layout since different record fields will be extracted.
3.	It is beneficial when different categories of rows of a table are required to be processed separately.	It is beneficial when different particulars about the same record should be made available to different departments.
4.	Example: Breaking of a Customer Record File into different regional customer files based on the value of a field Region.	Example: An employee related details can be broken into Payroll Particulars for the Finance Department; and Past Experience, Performance Evaluation Particulars for the HR Department.

Q.No.69. Auditing Around the Computer Vs. Auditing Through the Computer.

Particulars	Auditing around the Computer (Black Box Approach)	Auditing through the Computer (White Box Approach)
Recognition of Computers	Under this approach computers are treated as mechanical book keeping aids.	Computers are used as “live” and dynamic devices, which add value to the process of auditing. They are the target of auditing.
Focus of Audit & Means of Audit Assurance	The focus of audit is to take voluminous reports and outputs, and compare “input vouchers” with “system outputs” to obtain audit assurance.	The focus of audit is to peruse the accounting system and software used-to ensure that they provide audit assurance on the various aspects of control.
Use of Computers	Computers are only considered as systems, which provide legible printouts of the accounting transactions. Auditors traced transactions to the “black box” and picked up the trail on the other side by examining printouts.	Computers are used to check calculations, to compare the contents of two files, to examine files for missing amounts, and to analyse accounting data by finding ratios etc.
Use of CAAT's	No regard is paid to the transformation of data that takes place inside the computer.	CAAT's and audit software tools are used to analyse transformation of data.

Q.No.70. System Flowchart Vs. Program Flowchart.

No.	System Flowchart	Program Flowchart
1.	It is designed to present an overview of the data flow through all parts of a data processing system.	It is designed to present the logic involved in the problem.

2.	It represents the flow of documents, the operations or activities to be performed and the persons or workstations involved.	It represents the flow of data in the processing of the problem logic.
3.	It represents how input data is prepared and the medium or device used.	It represents the input required and output generated by the program.
4.	It indicates the intermediary and final output prepared and the medium and devices used for their storage.	Represents actual processing of data to convert into information.
5.	It includes the sequence of operations involved.	It includes the sequence of operations in solving a specific problem.

Q.No.71. Centralized Processing Vs. Distributed Processing.

No.	Centralized Processing	Distributed Processing
1.	It refers to an environment consisting of a large mainframe computer system that supports multiple users and multiple application programs.	Distributed processing seeks to spread the computing needs across the organization. There may be one large central computer with a series of small computers or mini or microcomputers or there may be number of computers of equal size scattered geographically.
2.	Users can access computer resources via hundreds of remote communication devices including on line terminals used to input data and printers to obtain reports.	In distributed processing the individual computers are tied together through a high-speed data communication network.
3.	Highly skilled, technically trained specialists are required to operate the system.	People with functional knowledge can also manage the system.
4.	This mode of processing is comparatively cheap. It also offers better control and protection of data.	This mode of processing incurs more expense with limited security, controls and protection of data.
5.	Can work effectively in small organisations.	Suitable even for big organisations.
6.	Generally, a dumb terminal will be allotted to each employee.	Generally, an intelligent terminal will be allotted to each employee.
7.	If the central computer fails, the entire network stops performing.	Even if the central computer fails, the network continues to function.

Q.No.72. File Access Method Vs. File Organization Method.

No.	File Access Method	File Organization Method
1.	Access refers to reading of data from the file.	Organization refers to the physical arrangement of data on the files.
2.	There are two ways of accessing the data i.e. sequential and direct.	There are five ways of organizing the data.
3.	Sequential access refers to reading the data sequentially.	Serial and sequential access allows storing data in a particular order.
4.	Direct access refers to reading data without any order.	Self-addressing, ISAM, random methods allows to store data without any order.
5.	Direct access is possible only on direct access storage devices like magnetic disk or compact disk.	Depending upon the organization requirement, one of the media will be selected.

Q.No.73. Loader Vs. Linker.

Both loader and linker are system software. However, a loader is a component of the operating system that locates a given program which can be an application program or even a part of the operating system from the offline storage such as a hard disk, and then loads it into the random access memory.

On the other hand, a linker is used to perform the linking process. Any program written in high level or assembly language has to be translated into machine language (object program) before it can be run on a computer. Usually, a program is split into number of small modules. These modules are compiled or assembled individually. This results in number of object programs or modules. All these individual object modules are to be combined or linked to create one single object module before executing the program on the computer. This process of linking is done by Linker.

A linker enables a computer system to access modules, subroutines, overlays and other segments of an application program that are stored on the disk. The linker finds the required program segment and supervises the transfer of computer control to the segment to be executed. The linker also enables the program to access standard subroutines stored for the convenience of users.

No.	Loader	Linker
1.	It is system software provided as an additional component of operating system.	It is system software provided as a component of language translators.
2.	It is used to load operating system components or application from secondary memory to main memory.	It is used to look the modules of an application and to load them to main memory.
3.	It is used in loading individual components of operating system or application.	To link and load the components of applications.
4.	It controls and supervises the transfer of operating system components.	It controls and supervises the transfer of program modules.

Q.No.74. Parity Check Vs. Echo Check.

No.	Parity Check	Echo Check
1.	Parity check is among the most effective hardware controls that provide a check on the integrity of data representation system.	Echo check is a hardware check applied to check the mechanism of the input/output devices.
2.	Parity checks provide timely detection of errors of loss/gain in a bit as a result of dirt, magnetic storm etc.	It verifies whether a device has been activated to carry out an operation, which it has been instructed to perform.
3.	It is an extra bit that is added to the code for each character in order to make the number of 1 bit odd (or even).	The echo check verifies that the equipment was activated rather than testing the actual results obtained.
4.	The oddness (or evenness) of the bits is checked to detect loss of bits during transmission of data.	Example: When the data channel is ready to transmit data to the printer, it transmits a signal that activates the printer. If the printer is ready, it sends an echo signal to the data channel. If the printer does not send the echo signal, the data channel postpones transmission and signals the operator that the printer needs attention.

Q.No.75. Throughput Time Vs. Turnaround Time.

Distinction	Throughput Time	Turnaround Time
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Meaning	Throughput is measure of the total amount of processing that a computer system can complete over a fixed period of time.	Turnaround time refers to the elapsed time between the submission of a batch job and the availability of the output from the computer center.
Operating Time	In batch-serial environment, throughput time of a computer will be comparatively lesser than Turnaround Time.	In batch-serial environment turnaround time is longer.
Use of Multiprogramming	By using multiprogramming, the total throughput of a computer can be increased since the CPU does not wait for input-output of the programs it is executing.	In multiprogramming environment, the turnaround time for short jobs can be reduced.

Q.No.76. Virus Vs. Worms.

No.	Virus (May 1999, Nov 2001)	Worms
1.	Viruses are self-replicating program code that are inserted into other executable code.	Worms are destructive programs that may destroy data or utilize computer and communication resources by duplicating themselves.
2.	They may lie dormant for some time before getting triggered by certain events or occurrences, such as a date or on being copied at a pre-specified number of times.	Worms run independently and travel from machine to machine across network connections.
3.	They are not capable of self-actuating.	They are self-actuating and self-sustaining.

Q.No.77. ALU Vs. CU

No.	ALU	CU
1.	It performs all arithmetic and logical operations.	It controls input-output devices as in the brain (or) Central nervous system of the human body.
2.	It performs the real execution of instructions.	It does not perform any actual processing on the data.
3.	It receives the data and information stored in the storage unit and performs all necessary operations and are released to an output device.	It selects, interprets and looks after the execution of the program instructions and it is used to direct the entire system's operations.
4.	The data flows between this unit and the storage unit during processing.	It orders and directs the flow of sequence of operations and data within the computer.

Q.No.78. Difference between PROM and EPROM.

No.	PROM	EPROM
1.	It is programmable Read Only Memory.	It is Erasable Programmable Read Only Memory.
2.	Data can be stored only for one time. Data once stored can't be changed or erased.	Data can be stored for any number of times i.e. old data can be removed and fresh data can be recorded once again.
3.	Alteration of data is not possible here. Once	Alteration of data is possible here. If it is

	data is stored it is permanent.	required to change data, it is sufficient to expose it to ultraviolet rays. Now it is ready to use once again.
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Q.No.79. Semi-conductor memory Vs. Bubble memory.

Semi Conductor memory is made up of very thin silicon chip which contains number of small storage cells that can hold data. Instead of being made up of a series of discrete components, these units are constructed as integrated circuits, meaning that number of transistors are integrated or combined together on a thin silicon wafer to form a complete set of circuits. The faster and more expensive bipolar semi conductor chips are often used in ALU and high speed buffer storage sections of the CPU, while the slower and less expensive chips that employ metal-oxide semi-conductor technology are used in main memory section.

On the other hand, bubble memory is composed of small magnetic domains formed on a thin single-crystal film of synthetic garnet. These magnetic bubbles, which are actually magnetically charged cylinders, only a few thousandths of a centimeter in size, can be moved across the garnet film by electric charge. The presence or absence of a bubble can be used to indicate whether a bit is 'on' or 'off'. Since data stored in bubble memory is retained when power to the memory is turned off. Thus it can be used for auxiliary storage. Bubble memory has high potential because of its low production costs and direct access capabilities, thus it may become widely employed as main memory technology. Since it is small, lightweight and does not use very much power, bubble memory is finding a great deal of use as an auxiliary storage in portable computers.

Q.No.80. Text editor Vs. Word processor.

Text Editors can edit plain text only and does not offer formatting features. The user must hit ENTER at the end of each line. They are good for short documents or e-mail text bodies, HTML, web pages and writing programs.

Word Processors edit text and allow embedded formatting for words, paragraphs and whole documents. They also support word wrap, margins and different typefaces in the same document.

Word processors are specifically designed to prepare such document material as letters and reports whereas text editors are designed to manipulate non-document instructions in computer programs or data. Text editors lack the text formatting and document printing capabilities of word processors.

Q.No.81. Type face Vs. Font.

A typeface is set of characters making up an alphabet that all share similar design characteristics (this says nothing about size, weight, style, etc). A font is a typeface of a particular point size, weight and style. For example, "Times-Roman" is a typeface, but "Times-Roman, 12 point, bold, italic" is a font.

The End

