

Candidates are required to give their answers in their own words as far as practicable.

Group A

Brief Answer Questions:

[10x1=10]

1. Write any four characteristics of computer.

Answer: A computer is an electronic programmable device that takes raw data as input, process it and convert into a meaningful output as information. Some characteristics of computer are:

- i) Computers execute at a very high speed.
- ii) The degree of accuracy of computer is very high.
- iii) Computers can perform task repeatedly without getting tired and bored i.e. diligence.
- iv) Computer can operate itself with a minimal human intervention i.e. automation.

2. Define AI with example.

Answer: Artificial Intelligence (AI) refers to the simulation of human intelligence processes by machines, especially computer systems. For Example: Chatbots.

3. What is packaged software?

Answer: Packaged software is a type of application software that are developed and sold on the open market. These software are developed for a mass audience. For Example: Microsoft Office.

4. Define deadlock.

Answer: Deadlock is a situation when a process waits endlessly for a resource and the requested resource is being used by another process that is waiting for some other resource. It mainly occurs due to mutual exclusion.

5. What are the types of operating system on the basis of user and interface?

Answer: On the basis of User: Single User & Multi User

On the basis of Interface: GUI & CUI

6. Why do we need different types of primary memory?

Answer: Variety in primary memory types allows for tailored optimization to suit different computing needs efficiently, so we need different types of primary memory.

7. Is GUI better than CUI? Why?

Answer: GUI is better than CUI because of the following reasons:

- i) GUI supports pointing devices while CUI does not support pointing devices.
- ii) GUI is easy to learn and whereas CUI is difficult to learn.
- iii) GUI is multi user OS while CUI is single user OS.

8. Give the meaning of DSS.

Answer: A Decision Support System (DSS) is a computer-based information system that supports business or organizational decision-making activities. It provides analytical tools and databases to help users make informed decisions by analyzing data, generating reports, and offering various decision-making models and simulations.

9. Explain hardcopy output with example.

Answer: Hardcopy output refers to a physical, tangible output of data produced by a computer or printer on paper or another physical medium. For example, a printed document, such as a report, spreadsheet, or photograph, is a hardcopy output.

10. What is job scheduling?

Answer: Job scheduling refers to the process of allocating and managing computing resources to execute tasks or jobs in a timely and efficient manner.

Group B

Short Answer Questions:

[5x4=20]

11. What are the differences between RAM and ROM?

Answer: RAM (Random Access Memory) and ROM (Read-Only Memory) are both types of primary memory in a computer, but they serve different purposes and have distinct characteristics.

The difference between them is shown below:

Random Access Memory (RAM)	Read Only Memory (ROM)
1. They are volatile in nature.	1. They are non volatile in nature.
2. Data can be read as well as write.	2. Data can be read but cannot be written.
3. It is temporary storage.	3. It is permanent storage.
4. It is divided into SRAM and DRAM.	4. It is divided into PROM, EPROM, and EEPROM.
5. It is used in normal operation of computer.	5. It is primarily used in startup process of computer or bootstrapping.
6. The instructions are written into the RAM at the time of execution.	6. The instructions are written into the ROM at manufacturing time.
7. RAM has large storage capacity.	7. ROM has very low storage capacity.
8. They are larger than ROM.	8. They are smaller than RAM.
9. It can be directly accessed by the processor.	9. It cannot be directly accessed by the processor.
10. Data can be accessed randomly.	10. Data can only be accessed in a sequence.

12. Explain about roles of information system in business.

Answer: Information systems play several crucial roles in businesses, facilitating various functions and processes to ensure efficiency, effectiveness, and competitiveness.

Some roles of information systems in business are:

A) **Data Management:** Information systems help in managing vast amounts of data generated by business operations. They store, organize, and retrieve data efficiently, ensuring its accuracy and availability when needed.

B) **Decision Support:** Information systems provide decision-makers with timely, relevant, and accurate information to support strategic, tactical, and operational decision-making processes. They facilitate analysis, forecasting, and scenario planning to optimize business outcomes.

C) **Compliance and Risk Management:** Information systems help businesses comply with regulatory requirements and manage risks effectively. They facilitate data security, privacy, and compliance initiatives by implementing access controls, encryption, audit trails, and other security measures to protect sensitive information and mitigate risks of data breaches or non-compliance.

D) **Performance Monitoring and Control:** Information systems enable businesses to monitor and control their performance against predefined objectives and key performance indicators (KPIs). They provide real-time dashboards, reports, and analytics to track progress, identify deviations, and take corrective actions as needed.

Overall, information systems serve as critical enablers of business success, driving efficiency, innovation, and competitive advantage across various functions and processes.

13. What is an operating system? Explain with its functions.

Answer: An Operating System (OS) is an integrated set of programs that is used to manage the various resources and overall operation of the computer system. It also provides the basis for application programs and acts as a mediator between users and hardware.

Some functions of Operating Systems are explained below:

A) **Resource Management:** The OS manages hardware resources such as CPU, memory, disk space, and peripherals. It allocates these resources efficiently among various processes and applications, ensuring fair and optimal utilization.

B) **Process Management:** The OS oversees the execution of multiple processes concurrently. It schedules processes, switches between them, and manages their execution, allowing users to run multiple programs simultaneously without interference.

C) **Memory Management:** The OS manages system memory, allocating memory to processes as needed and ensuring efficient use of available memory space. It handles memory allocation, deallocation, and swapping to disk when memory becomes scarce.

D) **Deadlock Management:** Deadlock management is an important function of an operating system aimed at preventing and resolving deadlocks in a computer system. A deadlock occurs when two or more processes are unable to proceed because each is waiting for a resource held by the other, creating a circular wait condition. Deadlocks can

lead to system instability and a loss of productivity if not managed properly.

14. Differentiate between super computer and microcomputer with example.

Answer: Super computer and microcomputer are the types of computer classified on the basis of size and its performance.

The difference between them is shown below:

<i>Super Computer</i>	<i>Micro Computer</i>
1. These computers are extremely powerful computers.	1. These computers are general purpose computers mostly used for day to day work.
2. They are larger in size equivalent to a room.	2. They are smaller in size as compared to super computers.
3. It generates more heat.	3. It generates less heat.
4. It consumes high power.	4. It consumes less power.
5. They have high storage capacity.	5. They have low storage capacity.
6. They have faster processing speed.	6. They have lower processing speed than super computers.
7. They are expensive.	7. They are less expensive.
8. Portability is low.	8. Portability is high
Example: Fugaku	Example: Laptop

15. Write short notes on:

a) **Cache Memory:** Cache memory is a small, high-speed memory located between the CPU and main memory (RAM) in a computer system. It is used to temporarily store frequently accessed data and instructions to improve CPU performance. It serves as a buffer between the CPU and slower main memory, reducing the time needed to access data and instructions. When the CPU requests data or instructions, the cache controller checks if the data is available in the cache. If the data is found in the cache (cache hit), it is retrieved quickly. If the data is not in the cache (cache miss), it must be fetched from main memory, which takes longer.

b) **Printer:** Printers are output devices used to produce hard copies of digital documents or images on paper. Printers receive data from a computer or other devices via a wired or wireless connection and produce printed output on paper. They can print text, graphics, photos, and other types of content, depending on their capabilities and settings.

Group C

Long Answer Questions:

[2x5=10]

- a) Explain the types of memory in computer system.

Answer: Computer memory is the storage space in the computer, where data is to be processed and instructions required for processing are stored. Computer memory is divided into primary memory, secondary memory and cache memory.

They are explained below:

Primary Memory:

It is also known as main memory or internal memory. It is used to store data that are actively being used and processed by the computer's CPU. They are made up of semiconductors and usually volatile in nature. It can be directly accessed by the CPU. It has limited storage capacity. These memory are faster and expensive than secondary memory. Example of Primary Memory include RAM and ROM.

RAM: RAM stands for Random Access Memory. It is a volatile memory. Data can be both read as well as write in RAM. RAM is used in the normal operation of computer. The data and instructions are written into the RAM at the time of execution. It has a large storage capacity. RAM is divided into Static RAM and Dynamic RAM.

ROM: ROM stands for Read Only Memory. It is non-volatile memory. Data can only be read on ROM. It is used in startup process of computer or bootstrapping. It is permanent in nature. It is divided into Programmable ROM, Erasable Programmable ROM and Electrically Erasable Programmable ROM. The instruction on ROM are inserted during manufacturing time. It has a very low storage capacity. Data is sequentially accessed by ROM.

Secondary Memory:

It is also known as auxiliary memory or external memory. It is a non volatile memory. It is used for long term storage of data. It is used for permanent storage of data.

These types of memory are not directly accessed by the CPU. The data transfer between CPU and secondary storage device takes place by the help of I/O processors.

It is cheaper but slower than primary memory. Secondary Memory are made up of Magnetic Memory, Optical Memory and Flash Memory.

Magnetic Memory: Magnetic Memory are the memory which uses the magnetic property for the storage of data. Some examples of magnetic memory include: Hard Disk, Floppy Disk etc.

Optical Memory: Optical Memory are the secondary storage devices which uses light beams to store data. Some optical storage devices are: CD, DVD, and Blu-ray Disk.

Flash Memory: Flash Memory are those memory that uses chips for storing data. Examples of flash memory include: Pen Drive, Solid State Drive, Memory Card etc.

Cache Memory

It is a small, quick and expensive memory placed between main memory (RAM) and

CPU. It contains copy of main memory's data and when the processor requests for data, it send data to processor for processing.

b) What is language translator? Write in detail.

Answer: Language translator is an utility application that is used to convert programs written in Assembly or High Level language into machine level language. As a computer can only understand program written in machine level language i.e. 0 and 1 form. We need a language translator to execute the programs written in any other language than machine level language. There are three types of language translators i.e. Assembler, Compiler and Interpreter.

Assembler: It is a type of language translator that converts programs written in Assembly level language to machine level language. In Assembly level language, programs are written in the form of pseudocodes like ADD(for addition), SUB(for subtraction) etc. which is not understood by the computer directly.

Compiler: It is a type of language translator that translates the program written in High Level Language to Machine Level Language. Compiler converts the whole program at once.

Interpreter: It is a type of language translator that translates the program written in High Level Language to Machine Level Language. It translates the program line by line.

Though both compiler and interpreter convert High Level Language to Machine Level Language. They have many dissimilarities. The differences between them is shown below:

<i>Compiler</i>	<i>Interpreter</i>
1) It converts whole program at once.	1) It converts the program line by line.
2) Execution is faster.	2) Execution is slower.
3) Debugging is difficult.	3) Debugging is easy.
4) It generates object code.	4) It doesnot generate object code.
5) It does not allow the program to execute until it is completely error free.	5) It allows the program to execute and the execution stops at the line of error.