

# MCQS (SET-I)

1. **What is the purpose of an instruction register (IR) in a computer system?**
  - A. To hold the address of the next instruction to be executed
  - B. To hold the current instruction being executed
  - C. To hold the data being processed by the ALU
  - D. To hold the results of ALU operations
2. **What is a control unit in a computer system responsible for?**
  - A. Performing arithmetic and logical operations
  - B. Storing and retrieving data
  - C. Coordinating the activities of other computer components
  - D. Processing data into useful information
3. **What type of computer organization uses a Harvard architecture?**
  - A. Von Neumann
  - B. Harvard
  - C. Princeton
  - D. RISC
4. **What is the purpose of a cache in a computer system?**
  - A. To store frequently used data for quick access
  - B. To store data that is no longer needed
  - C. To store the results of arithmetic operations
  - D. To store the instructions being executed
5. **What is an embedded system?**
  - A. A computer system designed for use in automobiles
  - B. A computer system designed for use in space missions
  - C. A computer system integrated into a device to perform specific tasks
  - D. A computer system designed for use in scientific experiments
6. **What is the purpose of a microcontroller in an embedded system?**
  - A. To control the flow of data in the system
  - B. To perform arithmetic and logical operations
  - C. To coordinate the activities of other embedded system components
  - D. To process data into useful information
7. **What is the difference between an embedded system and a general-purpose computer?**
  - A. An embedded system is designed for a specific task, while a general-purpose computer is not
  - B. A general-purpose computer has a larger memory than an embedded system
  - C. An embedded system has a faster processing speed than a general-purpose computer
  - D. A general-purpose computer has more input/output devices than an embedded system

8. What is the purpose of an interrupt in a computer system?
- To stop the current instruction from being executed
  - To start the execution of a new instruction
  - To store the results of arithmetic operations
  - To store the instructions being executed
9. What is the difference between a hard real-time system and a soft real-time system?
- A hard real-time system has more stringent timing requirements than a soft real-time system
  - A soft real-time system has more stringent timing requirements than a hard real-time system
  - A hard real-time system is used in embedded systems, while a soft real-time system is not
  - A soft real-time system is used in embedded systems, while a hard real-time system is not
10. What is the purpose of a timer in an embedded system?
- To measure the amount of time that has elapsed
  - To coordinate the activities of other embedded system components
  - To perform arithmetic and logical operations
  - To process data into useful information
11. What is the difference between a microprocessor and a microcontroller?
- A microprocessor is used in general-purpose computers, while a microcontroller is used in embedded systems
  - A microcontroller is used in general-purpose computers, while a microprocessor is used in embedded systems
  - A microprocessor has more processing power than a microcontroller
  - A microcontroller has more processing power than a microprocessor
14. What is the purpose of a DMA (direct memory access) controller in a computer system?
- To allow direct transfer of data between memory and I/O devices
  - To monitor the performance of the system and reset it if necessary
  - To convert analog signals into digital signals for processing by the system
  - To store the results of arithmetic operations
15. What is the purpose of a bus in a computer system?
- To provide a communication path between the different components of the system
  - To store the results of arithmetic operations
  - To store the instructions being executed
  - To monitor the performance of the system and reset it if necessary
16. What is the difference between a serial bus and a parallel bus?
- A serial bus transfers data one bit at a time, while a parallel bus transfers multiple bits at once
  - A parallel bus transfers data one bit at a time, while a serial bus transfers multiple bits at once
  - A serial bus is faster than a parallel bus
  - A parallel bus is faster than a serial bus
17. What is the purpose of a multiplexer (MUX) in a computer system?
- To select one of multiple input signals for output
  - To monitor the performance of the system and reset it if necessary
  - To store the results of arithmetic operations
  - To store the instructions being executed
18. What is the purpose of a demultiplexer (DEMUX) in a computer system?
- To distribute a single input signal to multiple outputs
  - To monitor the performance of the system and reset it if necessary
  - To store the results of arithmetic operations
  - To store the instructions being executed
19. What is the purpose of a decoder in a computer system?
- To translate binary code into a form that can be executed by the system
  - To monitor the performance of the system and reset it if necessary
  - To store the results of arithmetic operations
  - To store the instructions being executed
20. What is the purpose of a ROM (read-only memory) in a computer system?
- To store data that cannot be changed
  - To store data that can be changed
  - To store the results of arithmetic operations
  - To store the instructions being executed
21. What is the function of an Arithmetic and Logic Unit (ALU)?
- To perform arithmetic and logical operations on data
  - To store data
  - To process data into useful information
  - To coordinate the activities of other computer components

22. What is an instruction format in a computer system?
- The format in which instructions are stored in memory
  - The format in which data is stored in memory
  - The format in which results of arithmetic operations are stored in memory
  - The format in which addresses are stored in memory
23. What is an addressing mode in a computer system?
- The way in which memory addresses are generated to access data
  - The way in which data is stored in memory
  - The way in which results of arithmetic operations are stored in memory
  - The way in which instructions are stored in memory
24. What is the purpose of a data transfer instruction in a computer system?
- To transfer data from one location to another
  - To perform arithmetic and logical operations on data
  - To process data into useful information
  - To coordinate the activities of other computer components
25. What is the purpose of a data manipulation instruction in a computer system?
- To manipulate data in memory
  - To transfer data from one location to another
  - To perform arithmetic and logical operations on data
  - To process data into useful information
26. What is the difference between a load instruction and a store instruction in a computer system?
- A load instruction transfers data from memory to a register, while a store instruction transfers data from a register to memory
  - A store instruction transfers data from memory to a register, while a load instruction transfers data from a register to memory
  - A load instruction performs arithmetic operations on data, while a store instruction does not
  - A store instruction performs arithmetic operations on data, while a load instruction does not
27. What is an immediate addressing mode?
- The mode in which an immediate value is used as an operand
  - The mode in which a memory address is used as an operand
  - The mode in which a register is used as an operand
  - The mode in which a constant value is used as an operand
28. What is a register indirect addressing mode?
- The mode in which an immediate value is used as an operand
  - The mode in which a memory address is used as an operand
  - The mode in which a register is used to hold the memory address of the operand
  - The mode in which a constant value is used as an operand
29. What is a base relative addressing mode?
- The mode in which a register is used as a base address and an offset is added to access the operand
  - The mode in which a memory address is used as a base address and an immediate value is added to access the operand
  - The mode in which a register is used as a base address and another register is used as an offset to access the operand
  - The mode in which an immediate value is used as a base address and another register is used as an offset to access the operand
30. What is an indexed addressing mode?
- The mode in which a register is used as an index to access the operand in memory
  - The mode in which a memory address is used as an index to access the operand in memory
  - The mode in which an immediate value is used as an index to access the operand in memory
  - The mode in which a constant value is used as an index to access the operand in memory
31. What is a stack addressing mode?
- The mode in which data is stored and retrieved from a stack in memory
  - The mode in which data is stored and retrieved from a queue in memory
  - The mode in which data is stored and retrieved from a linked list in memory
  - The mode in which data is stored and retrieved from a tree in memory
32. What is the purpose of a rotate instruction in a computer system?
- To rotate the bits of a data value to the left or right
  - To perform arithmetic and logical operations on data
  - To transfer data from one location to another
  - To process data into useful information
33. What is the purpose of a shift instruction in a computer system?
- To shift the bits of a data value to the left or right
  - To perform arithmetic and logical operations on data
  - To transfer data from one location to another
  - To process data into useful information
34. What is the purpose of a compare instruction in a computer system?
- To compare two values and set flags accordingly
  - To perform arithmetic and logical operations on data
  - To transfer data from one location to another
  - To process data into useful information
35. What is the purpose of a branch instruction in a computer system?
- To change the flow of execution to a different instruction
  - To perform arithmetic and logical operations on data
  - To transfer data from one location to another
  - To process data into useful information

36. What is the purpose of a jump instruction in a computer system?
- To change the flow of execution to a different instruction
  - To perform arithmetic and logical operations on data
  - To transfer data from one location to another
  - To process data into useful information
37. What is the purpose of a call instruction in a computer system?
- To call a subroutine and save the return address
  - To perform arithmetic and logical operations on data
  - To transfer data from one location to another
  - To process data into useful information
38. What is the purpose of a return instruction in a computer system?
- To return from a subroutine to the instruction after the call
  - To perform arithmetic and logical operations on data
  - To transfer data from one location to another
  - To process data into useful information
39. What is the purpose of a load effective address (LEA) instruction in a computer system?
- To compute the effective address of an operand and store it in a register
  - To perform arithmetic and logical operations on data
  - To transfer data from one location to another
  - To process data into useful information
40. What is the purpose of a clear instruction in a computer system?
- To clear the contents of a register or memory location
  - To perform arithmetic and logical operations on data
  - To transfer data from one location to another
  - To process data into useful information.
41. What is the purpose of a memory hierarchy?
- To ensure that data is stored in a single location for easy retrieval.
  - To provide a range of storage options to balance speed and cost.
  - To limit the amount of data that can be stored at any one time.
  - To prevent unauthorized access to data.
42. Which of the following is an example of internal memory?
- Hard disk
  - CD-ROM
  - RAM
  - USB flash drive
43. Which of the following is an example of external memory?
- Cache memory
  - Magnetic tape
  - Registers
  - Virtual memory
44. What is the purpose of cache memory?
- To provide additional storage for the operating system.
  - To store frequently accessed data for faster access.
  - To protect data from unauthorized access.
  - To provide backup storage in case of a system failure.
45. Which of the following is true about cache memory?
- It is larger in size than RAM.
  - It is slower than main memory.
  - It is located closer to the CPU than main memory.
  - It has a longer access time than main memory.
46. Which type of cache memory is integrated into the CPU?
- Level 1 (L1) cache
  - Level 2 (L2) cache
  - Level 3 (L3) cache
  - Virtual cache
47. Which type of cache memory is the largest in size?
- Level 1 (L1) cache
  - Level 2 (L2) cache
  - Level 3 (L3) cache
  - Virtual cache
48. Which type of memory is used to provide a bridge between main memory and secondary storage devices?
- Virtual memory
  - Cache memory
  - Flash memory
  - Magnetic memory
49. Which of the following is an advantage of using virtual memory?
- It reduces the amount of main memory required.
  - It improves the access time of data.
  - It allows multiple programs to run simultaneously.
  - It provides faster data transfer rates.
50. What is the role of a memory controller?
- To store data in the CPU cache.
  - To manage the transfer of data between main memory and the CPU.
  - To provide a backup of data in case of a system failure.
  - To prevent unauthorized access to data.
51. Which of the following is a characteristic of non-volatile memory?
- It requires power to retain its data.
  - It is faster than volatile memory.
  - It is used for temporary storage.
  - It retains data even when the power is turned off.
52. What is the difference between random access memory (RAM) and read-only memory (ROM)?
- RAM is non-volatile, while ROM is volatile.
  - ROM is used for temporary storage, while RAM is used for permanent storage.
  - RAM is faster than ROM.
  - ROM retains its data even when the power is turned off, while RAM does not.
53. Which of the following is an example of volatile memory?
- Hard disk
  - USB flash drive
  - CD-ROM
  - RAM
54. What is the purpose of a memory address?
- To identify the type of data being stored.
  - To identify the location of the data being stored.
  - To prevent unauthorized access to the data.
  - To provide additional storage for the data.

55. Which of the following is an example of primary memory?  
 A. Hard disk      B. Cache memory  
 C. CD-ROM      D. RAM
56. What is the purpose of a memory bus?  
 A. To store data in the CPU cache.  
 B. To manage the transfer of data between main memory and the CPU.  
 C. To provide a backup of data in case of a system failure.  
 D. To prevent unauthorized access to data.
57. Which of the following is true about memory bandwidth?  
 A. It is a measure of the amount of data that can be transferred between the CPU and memory in a given time.  
 B. It is a measure of the amount of storage capacity available in a given memory device.  
 C. It is a measure of the access time for a given memory device.  
 D. It is a measure of the number of memory devices that can be connected to a single bus.
58. Which of the following is an example of a secondary storage device?  
 A. Hard disk      B. RAM  
 C. Cache memory    D. Registers
59. Which of the following is true about solid-state drives (SSDs)?  
 A. They are faster than traditional hard disk drives (HDDs).  
 B. They are less expensive than traditional HDDs.  
 C. They have a larger storage capacity than traditional HDDs.  
 D. They use spinning disks to store data.
60. Which type of external memory is typically used for long-term storage and backup?  
 A. Magnetic tape    B. SSD  
 C. USB flash drive   D. CD-ROM
61. Which of the following is an important principle of cache design?  
 A. Data should always be stored in the cache.  
 B. Only frequently used data should be stored in the cache.  
 C. Data should be stored in the cache in the order it is accessed.  
 D. Data should be stored in the cache based on its age.
62. What is the purpose of a cache line?  
 A. To identify the location of data in the cache.  
 B. To identify the location of data in main memory.  
 C. To group multiple blocks of data into a single cache entry.  
 D. To manage the transfer of data between the CPU and cache.
63. What is cache hit rate?  
 A. The percentage of cache accesses that result in a cache hit.  
 B. The percentage of cache accesses that result in a cache miss.  
 C. The time it takes to access data in the cache.  
 D. The time it takes to transfer data between main memory and the cache.
64. Which of the following is an example of a direct-mapped cache?  
 A. Set-associative cache  
 B. Fully-associative cache  
 C. Virtually-addressed cache  
 D. Physically-addressed cache
65. What is the purpose of a cache replacement policy?  
 A. To determine the size of the cache.  
 B. To determine the location of data in the cache.  
 C. To determine which cache entry to replace when the cache is full.  
 D. To determine which block of data to load into the cache.
66. Which of the following is a disadvantage of a fully-associative cache?  
 A. It has a higher hit rate than other types of caches.  
 B. It is more expensive to implement.  
 C. It is more difficult to manage than other types of caches.  
 D. It has a larger cache size than other types of caches.
67. Which of the following is a disadvantage of a direct-mapped cache?  
 A. It has a higher hit rate than other types of caches.  
 B. It is more expensive to implement.  
 C. It is more difficult to manage than other types of caches.  
 D. It can suffer from cache conflicts.
68. Which of the following is an example of a write-back cache?  
 A. Write-through cache  
 B. Victim cache  
 C. No-write allocate cache  
 D. Write-allocate cache
69. What is the purpose of a victim cache?  
 A. To store data that has been evicted from the cache.  
 B. To store data that is not frequently accessed.  
 C. To store data that has not yet been written to main memory.  
 D. To store data that has been modified in the cache.
70. Which of the following is an advantage of a set-associative cache?  
 A. It has a higher hit rate than other types of caches.  
 B. It is less expensive to implement than other types of caches.  
 C. It is easier to manage than other types of caches.  
 D. It has a smaller cache size than other types of caches.
71. Which of the following is a type of primary memory?  
 A. Hard Disk Drive  
 B. Random Access Memory (RAM)  
 C. Compact Disc (CD)  
 D. Floppy Disk
72. What is the main difference between primary and secondary memory?  
 A. Primary memory is faster, but less storage capacity.  
 B. Secondary memory has a longer lifespan, but slower access time.  
 C. Primary memory is volatile, while secondary memory is non-volatile.  
 D. Secondary memory is more expensive, but more reliable.
73. Which of the following is a type of secondary memory?  
 A. Cache  
 B. Read-Only Memory (ROM)  
 C. Magnetic Tape  
 D. Graphics Processing Unit (GPU)
74. What is the primary use of secondary memory?  
 A. To store programs and data that are currently in use.  
 B. To provide long-term storage for data and programs.  
 C. To speed up the processing of data.  
 D. To display graphics on a computer screen.

75. What is the maximum storage capacity of a typical secondary memory device?

- A. A few gigabytes
- B. A few terabytes
- C. A few petabytes
- D. A few exabytes

76. What is the main purpose of peripheral devices in a computer system?

- A. To provide a large amount of non-volatile storage for data and programs.
- B. To speed up the processing of data.
- C. To provide a way for users to interact with the computer.
- D. To display graphics on a computer screen.

77. Which of the following is an example of an I/O module?

- A. Keyboard
- B. Processor
- C. Hard Disk Drive
- D. Graphics Processing Unit (GPU)

78. What is the purpose of an input-output interface in a computer system?

- A. To manage data transfer between the CPU and the memory.
- B. To manage input and output operations.
- C. To manage the power supply to the memory.
- D. To manage the storage and retrieval of data on a hard disk.

79. What is the purpose of Direct Memory Access (DMA)?

- A. To allow peripheral devices to directly access and transfer data to and from memory without involving the CPU.
- B. To speed up the processing of data by temporarily storing frequently accessed data.

C. To provide a way for users to interact with the computer.

D. To manage the storage and retrieval of data on a hard disk.

80. What is a characteristic of a multiprocessor system?

- A. It has a single processor.
- B. It has multiple processors that work independently of each other.
- C. It has a single processor that is shared by multiple peripherals.
- D. It has multiple processors that are tightly coupled and work together as a single entity.

81. What is the main purpose of inter-processor communication in a multiprocessor system?

- A. To coordinate the actions of multiple processors to ensure that they work together effectively.
- B. To manage the power supply to the processors.
- C. To manage the storage and retrieval of data on a hard disk.
- D. To display graphics on a computer screen.

82. What is the main purpose of interconnection structure in a multiprocessor system?

- A. To provide a way for the processors to communicate with each other.
- B. To manage the power supply to the processors.
- C. To manage the storage and retrieval of data on a hard disk.
- D. To display graphics on a computer screen.

83. What is the main purpose of synchronization in a multiprocessor system?

- A. To coordinate the actions of multiple processors to ensure that they work together effectively.
- B. To manage the power supply to the processors.
- C. To manage the storage and retrieval of data on a hard disk.
- D. To display graphics on a computer screen.

84. What is the main difference between programmed I/O and Interrupt-driven I/O?

A. Programmed I/O requires the CPU to actively monitor the status of the I/O operation, while Interrupt-driven I/O relies on the peripheral device to generate an interrupt to signal the completion of the I/O operation.

B. Interrupt-driven I/O requires the CPU to actively monitor the status of the I/O operation, while Programmed I/O relies on the peripheral device to generate an interrupt to signal the completion of the I/O operation.

C. Programmed I/O and Interrupt-driven I/O are the same thing.

D. Programmed I/O is faster, but less reliable, while Interrupt-driven I/O is slower, but more reliable.

85. What is the main purpose of VHDL?

- A. To provide a way to design and simulate digital circuits.
- B. To provide a way to program microcontrollers.
- C. To provide a way to create and edit text documents.
- D. To provide a way to create and edit images.

86. How is overflow handled in VHDL?

- A. By default, VHDL does not handle overflow.
- B. Overflow is handled automatically by VHDL.
- C. Overflow is handled using specific VHDL constructs, such as overflow flags or saturation arithmetic.
- D. Overflow is handled using error handling techniques, such as exceptions.

87. How is data representation performed in VHDL?

- A. By using binary or hexadecimal representation.
- B. By using ASCII or Unicode representation.
- C. By using standard data types, such as integers or floating-point numbers.
- D. By using custom data types, such as arrays or records.

88. How can combinational logic be designed using VHDL?

- A. By using gates, such as AND, OR, and NOT gates.
- B. By using the case or if-then-else statements.
- C. By using state machines or finite state machines (FSMs).
- D. By using lookup tables or memory elements.

89. How can pipelining be performed using VHDL?

- A. By using pipelines, such as pipeline stages or pipeline registers.
- B. By using parallel processing techniques, such as parallel execution or parallel threads.
- C. By using state machines or finite state machines (FSMs).
- D. By using lookup tables or memory elements.

- 90. What is the main function of an operating system?**
- To provide a user interface for interaction with the computer.
  - To provide a platform for running applications and managing computer hardware.
  - To provide a way to create and edit text documents.
  - To provide a way to play video games.
- 91. What is the difference between a task, process, and thread?**
- A task is a single instance of a program, a process is a collection of tasks, and a thread is a single path of execution within a process.
  - A task is a collection of processes, a process is a single instance of a program, and a thread is a single path of execution within a process.
  - A task is a collection of threads, a process is a single path of execution within a task, and a thread is a single instance of a program.
  - A task is a single path of execution within a process, a process is a collection of tasks, and a thread is a single instance of a program.
- 92. What is the main difference between multiprocessing and multitasking?**
- Multiprocessing refers to the use of multiple processors to run multiple tasks, while multitasking refers to the ability of an operating system to run multiple tasks simultaneously.
  - Multitasking refers to the use of multiple processors to run multiple tasks, while multiprocessing refers to the ability of an operating system to run multiple tasks simultaneously.
- C. Multiprocessing and multitasking are the same thing.**
- D. Multiprocessing refers to the ability of an operating system to run multiple tasks simultaneously, while multitasking refers to the use of multiple processors to run multiple tasks.**
- 93. What is the main purpose of task scheduling in an operating system?**
- To determine which tasks should be run next and allocate resources accordingly.
  - To manage the storage and retrieval of data on a hard disk.
  - To manage the power supply to the computer.
  - To display graphics on a computer screen.
- 94. What is the main purpose of task synchronization in an operating system?**
- To coordinate the actions of multiple tasks to ensure that they work together effectively.
  - To manage the storage and retrieval of data on a hard disk.
  - To manage the power supply to the computer.
  - To display graphics on a computer screen.
- 95. What is the main function of a device driver in an operating system?**
- To provide a standard and consistent interface between the operating system and hardware devices.
  - To provide a secure interface between the operating system and hardware devices.
  - To provide a fast interface between the operating system and hardware devices.
  - To provide a user-friendly interface between the operating system and hardware devices.
- 96. What is the main difference between an open-loop and closed-loop control system?**
- A. An open-loop control system does not use feedback to control the output, while a closed-loop control system uses feedback to control the output.**
- B. A closed-loop control system does not use feedback to control the output, while an open-loop control system uses feedback to control the output.**
- C. An open-loop control system is faster, but less accurate, while a closed-loop control system is slower, but more accurate.**
- D. An open-loop control system is slower, but more accurate, while a closed-loop control system is faster, but less accurate.**
- 97. What is the main purpose of control in an operating system?**
- To regulate the behavior of tasks and processes, and to manage the allocation of resources.
  - To manage the storage and retrieval of data on a hard disk.
  - To manage the power supply to the computer.
  - To display graphics on a computer screen.
- 98. What is virtual memory in an operating system?**
- A feature that enables an operating system to run more applications than the available physical memory by temporarily transferring data to a hard disk.
  - A feature that enables an operating system to run more applications than the available physical memory by temporarily transferring data to a flash memory.
  - A feature that enables an operating system to run more applications than the available physical memory by temporarily transferring data to a cloud storage.
  - A feature that enables an operating system to run more applications than the available physical memory by temporarily transferring data to a network storage.
- 99. What is the main goal of cache memory in a computer system?**
- To reduce the access time for frequently accessed data.
  - To increase the access time for frequently accessed data.
  - To provide a low-cost memory for storing large amounts of data.
  - To provide a high-capacity memory for storing large amounts of data.
- 100. What is the main function of a control unit in a computer system?**
- To control the flow of data and instructions in the computer system.
  - To store and retrieve data from memory.
  - To perform arithmetic and logical operations.
  - To display output on a screen.

**ANSWER SHEET**

1.B	2.C	3.B	4.A	5.C	6.C	7.A	8.A	9.A	10.A
11.B	12.A	13.A	14.A	15.A	16.A	17.A	18.A	19.A	20.A
21.A	22.A	23.A	24.A	25.A	26.A	27.A	28.C	29.A	30.A
31.A	32.A	33.A	34.A	35.A	36.A	37.A	38.A	39.A	40.A
41.B	42.C	43.B	44.B	45.C	46.A	47.C	48.A	49.A	50.B
51.D	52.C	53.D	54.B	55.D	56.B	57.A	58.A	59.A	60.A
61.B	62.C	63.A	64.A	65.C	66.B	67.D	68.D	69.A	70.A
71.B	72.C	73.C	74.B	75.D	76.C	77.A	78.B	79.A	80.D
81.A	82.A	83.A	84.A	85.A	86.C	87.C	88.B	89.A	90.B
91.A	92.A	93.A	94.A	95.A	96.A	97.A	98.A	99.A	100.A