SNS COLLEGE OF ENGINEERING

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UNIT 3- COMPUTER FUNDAMENTALS

PUZZLES

1. What is the main characteristic of Von Neumann Architecture?

a) It uses multiple processors for execution.
b) It has a single memory space for both instructions and data.
c) It processes data in parallel.
d) It uses separate memory for instructions and data.

Answer:
b) It has a single memory space for both instructions and data.

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2. In Von Neumann Architecture, the CPU fetches instructions from the memory using which of the following?

a) Program Counter (PC)
b) Data Register
c) Stack Pointer
d) Instruction Register (IR)

Answer:
a) Program Counter (PC)

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3. Which of the following is a component of the instruction cycle?

a) Fetch
b) Decode
c) Execute
d) All of the above

Answer:
d) All of the above

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4. In an Instruction Set Architecture (ISA), the 'operand' refers to:

a) The address of the memory location.
b) The operation to be performed.
c) The data or value that the operation will be applied to.
d) The instruction format.

Answer:
c) The data or value that the operation will be applied to.

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5. Which of the following addressing modes is used when the operand is given explicitly within the instruction itself?

a) Immediate addressing
b) Direct addressing
c) Indirect addressing
d) Register addressing

Answer:
a) Immediate addressing

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6. What is the purpose of the Instruction Register (IR) in a computer?

a) To store the address of the next instruction to be fetched.
b) To store the current instruction being executed.
c) To store the data being processed.
d) To store the program’s execution status.

Answer:
b) To store the current instruction being executed.

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7. Which of the following statements about Assembly language and High-level language is correct?

a) Assembly language instructions are executed directly by the CPU, whereas high-level languages require compilation.
b) High-level languages are closer to machine language than Assembly language.
c) Assembly language requires a compiler for execution, while high-level languages do not.
d) Both Assembly language and high-level language are compiled into machine code.

Answer:
a) Assembly language instructions are executed directly by the CPU, whereas high-level languages require compilation.

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8. Which of the following addressing modes involves the use of a register to hold the address of the operand?

a) Register Indirect addressing
b) Direct addressing
c) Indirect addressing
d) Immediate addressing

Answer:
a) Register Indirect addressing

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9. In the context of machine instructions, what is the "opcode"?

a) The operand or data to be processed.
b) The part of the instruction that specifies the operation to be performed.
c) The address of the data in memory.
d) The number of bits required to encode the instruction.

Answer:
b) The part of the instruction that specifies the operation to be performed.

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10. Which of the following is true about the encoding of machine instructions?

a) It converts high-level language into assembly code.
b) It converts assembly code into binary machine code.
c) It determines the format of the CPU’s registers.
d) It is used to load data into memory.

Answer:
b) It converts assembly code into binary machine code.

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11. In the context of computer architecture, what is an "Instruction Set"?

a) A set of instructions the processor can execute.
b) A set of data the computer uses for processing.
c) A group of registers used by the CPU.
d) A program that manages memory allocation.

Answer:
a) A set of instructions the processor can execute.

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12. Which of the following is the role of the "Control Unit" (CU) in a digital computer?

a) It executes arithmetic and logical operations.
b) It stores data for future processing.
c) It decodes and coordinates the flow of data and instructions in the CPU.
d) It directly interacts with input/output devices.

Answer:
c) It decodes and coordinates the flow of data and instructions in the CPU.

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13. What does the term "Instruction Sequencing" refer to in a digital computer system?

a) The process of organizing memory locations for data.
b) The order in which instructions are fetched and executed.
c) The process of converting high-level language into machine code.
d) The way operands are accessed in memory.

Answer:
b) The order in which instructions are fetched and executed.

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14. Which of the following is an example of a “Register Addressing Mode”?

a) The operand is a direct memory address.
b) The operand is stored in one of the CPU's registers.
c) The operand is a constant value provided in the instruction.
d) The operand is stored in the stack memory.

Answer:
b) The operand is stored in one of the CPU's registers.

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15. In computer architecture, which of the following is used to address data in different memory locations, and is based on a base register and an offset?

a) Direct Addressing
b) Indirect Addressing
c) Indexed Addressing
d) Immediate Addressing

Answer:
c) Indexed Addressing

16. Which of the following is the primary purpose of the Arithmetic and Logic Unit (ALU)?

a) To decode instructions.
b) To manage memory operations.
c) To perform arithmetic and logical operations.
d) To store intermediate data during execution.

Answer:
c) To perform arithmetic and logical operations.

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17. In Von Neumann Architecture, the data and instructions are fetched from the same memory, which can lead to which issue?

a) Cache coherence.
b) Memory latency.
c) Bus contention or bottleneck.
d) Lack of processing power.

Answer:
c) Bus contention or bottleneck.

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18. Which addressing mode is used when the operand's address is stored in a register?

a) Direct Addressing.
b) Indirect Addressing.
c) Register Addressing.
d) Immediate Addressing.

Answer:
c) Register Addressing.

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19. Which of the following is NOT a component of the Central Processing Unit (CPU)?

a) Control Unit (CU)
b) Arithmetic and Logic Unit (ALU)
c) Input/Output Unit
d) Registers

Answer:
c) Input/Output Unit

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20. Which of the following is a feature of the "Immediate Addressing Mode"?

a) The operand is fetched from memory based on an address.
b) The operand is specified directly within the instruction.
c) The operand is stored in a register.
d) The operand is indirectly referenced via a pointer.

Answer:
b) The operand is specified directly within the instruction.

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21. What does the term “Instruction Fetch” refer to in the instruction cycle?

a) Executing the instruction.
b) Fetching the data required by the instruction.
c) Loading the next instruction from memory into the Instruction Register (IR).
d) Decoding the instruction to understand the operation.

Answer:
c) Loading the next instruction from memory into the Instruction Register (IR).

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22. Which of the following is true about “Indirect Addressing”?

a) The operand is directly available in the instruction.
b) The address of the operand is stored in a memory location.
c) The address of the operand is stored in a register.
d) The operand is an immediate value.

Answer:
b) The address of the operand is stored in a memory location.

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23. Which of the following best describes a "Program Counter" (PC)?

a) It holds the result of the last executed instruction.
b) It keeps track of the memory location of the next instruction to be executed.
c) It stores the current instruction being executed.
d) It is used to store immediate values.

Answer:
b) It keeps track of the memory location of the next instruction to be executed.

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24. Which of the following is an example of a control unit function?

a) Perform addition and subtraction.
b) Store data in memory.
c) Decode instructions and control the execution sequence.
d) Retrieve data from registers.

Answer:
c) Decode instructions and control the execution sequence.

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25. In a computer system, what does an "Addressing Mode" specify?

a) The structure of the data in memory.
b) The method used to access operands for an instruction.

c) The format of the instruction itself.
d) The type of operation to be performed by the CPU.

Answer:
b) The method used to access operands for an instruction.