

Generated MCQs

**Q1: What is another name for a Basic Machine because it produces an output based on a combination of inputs?**

A) Sequential Machine

B) State Machine

**C) Combinational Machine**

D) Memory Machine

**Correct Answer: C**

**Q2: What does a basic machine lack according to the features listed?**

A) Input processing

B) Output generation

**C) Memory and internal states**

D) A function table

**Correct Answer: C**

**Q3: Why is it necessary to consider internal states when improving a basic machine?**

A) To make it combinational

B) To limit its capacity

**C) To handle potentially infinite languages or complex tasks**

D) To remove the need for input

**Correct Answer: C**

**Q4: What is a machine with a finite number of internal states called?**

- A) Basic Machine
- B) Combinational Machine
- C) Infinite State Machine

**D) Finite State Machine (FSM)**

**Correct Answer: D**

**Q5: In an FSM, what does the State Function (STF) determine?**

- A) The output based on the current state and input
- B) The next state based on the current state and input**
- C) The initial state of the machine
- D) The set of possible inputs

**Correct Answer: B**

**Q6: What does the 'F' represent in the tuple definition of a Finite Automaton  $FA = (Q, \Sigma, \delta, q_0, F)$ ?**

- A) The set of all states
- B) The input alphabet
- C) The start state

**D) The set of final states**

**Correct Answer: D**

**Q7: What is a key characteristic of a Deterministic Finite Automaton (DFA)?**

- A) It can have multiple transitions for the same input from a state
- B) It uses epsilon transitions
- C) For each state and input symbol, there is exactly one transition**
- D) It has no start state

**Correct Answer: C**

**Q8: What does an  $\epsilon$ -move allow an NFA to do?**

- A) Reject the input string immediately
- B) Change its state without consuming an input symbol**
- C) Read multiple input symbols at once
- D) Reverse the direction of the read head

**Correct Answer: B**

**Q9: In a Moore machine, the output is determined solely by which component?**

- A) Current input symbol
- B) Current state**
- C) Start state
- D) Transition function

**Correct Answer: B**

**Q10: How is the output determined in a Mealy machine?**

- A) Only by the current state
- B) Only by the current input symbol

**C) By both the current state and the current input symbol**

D) By the sequence of states visited

**Correct Answer: C**

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