**Generated MCQs**

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**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, Σ, δ, q0, 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 ε-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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