6 Lecture - CS402

Important Mcqs

1. **What is the significance of equivalent FAs in computer science?**
   a) Equivalent FAs are used in cryptography.
   b) Equivalent FAs are used in software testing.
   c) Equivalent FAs are used in computer graphics.
   d) Equivalent FAs are used in computer networking.
   Answer: b

   Which of the following is true for equivalent FAs?
   a) Equivalent FAs accept different languages.
   b) Equivalent FAs accept the same language.
   c) Equivalent FAs accept only regular languages.
   d) Equivalent FAs do not accept any language.
   Answer: b

   Which of the following algorithms is used to check the equivalence of FAs?
   a) Breadth-First Search (BFS)
   b) Depth-First Search (DFS)
   c) Hopcroft-Karp algorithm
   d) Prim's algorithm
   Answer: c

   Can two FAs with different numbers of states be equivalent?
   a) Yes
   b) No
   Answer: a

   What is the time complexity of the Hopcroft-Karp algorithm?
   a) O(n log n)
   b) O(n^2)
   c) O(n^3)
   d) O(n^4)
   Answer: b

   Which of the following is a property of equivalent FAs?
   a) They have the same number of final states.
   b) They have the same alphabet.
   c) They have the same number of transitions.
   d) They have the same number of initial states.
   Answer: a

   Which of the following is a technique used to check the equivalence of FAs?
   a) Brute force
   b) Dynamic programming

c) Heuristic search
d) All of the above
Answer: d

What is the minimum number of states required to recognize the language {0, 1} using an FA?
a) 1
b) 2
c) 3
d) 4
Answer: b

Which of the following is a necessary condition for two FAs to be equivalent?
a) They must have the same number of states.
b) They must have the same number of transitions.
c) They must accept the same language.
d) They must have the same initial state.
Answer: c

Which of the following is true for equivalent FAs?
a) They have the same transition function.
b) They have the same set of final states.
c) They have the same set of initial states.
d) All of the above
Answer: d