

**SYNERGY INSTITUTE OF ENGINEERING AND TECHNOLOGY, DHENKANAL**

Near NH-55, Banamali Prasad – 759001

**Quiz-X**

**Full Marks-05**

**Duration-05 Min**

**Subject with Code:** DAA\_LAB (CSPC2206)

**Year & Semester:** 2nd & 4th

**Course & Branch**: B. Tech. & CSE

**Name: Registration No-**

**Roll No-**

Answer All Questions

**Tick the Correct Answer/Answers**

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| **Course Outcome** | **Total Marks** | **Marks Secured** | **Signature of Evaluator** |
| **CO5** | **05** |  |  |

**1.The Hamiltonian Cycle Problem is about: [0.5 Mark][CO5][L3]**  
a) Visiting all edges exactly once  
b) Visiting all vertices exactly once and returning to the starting point  
c) Visiting all vertices and edges exactly once  
d) Minimizing the total path cost

**2.Which algorithmic strategy is commonly used to solve the Hamiltonian Cycle problem? [0.5 Mark][CO5][L3]**  
a) Greedy  
b) Dynamic Programming  
c) Backtracking  
d) Divide and Conquer

**3.The Hamiltonian Path Problem is classified as: [0.5 Mark][CO5][L3]**  
a) Polynomial-time solvable  
b) Greedy solvable  
c) NP-Complete  
d) Logarithmic

**4.What is the time complexity of the backtracking approach to solve the Hamiltonian Cycle problem for** n **vertices? [0.5 Mark][CO5][L3]**  
a) O(n)  
b) O(n²)  
c) O(n!)  
d) O(2ⁿ)

**5.In a backtracking solution for Hamiltonian Cycle, we use a boolean array to: [0.5 Mark][CO5][L3]**  
a) Mark the path cost  
b) Mark visited edges  
c) Track visited vertices  
d) Track adjacency

**6.A necessary condition for a graph to have a Hamiltonian Cycle is: [0.5 Mark][CO5][L3]**  
a) Graph must be complete  
b) All vertices must have even degree  
c) Number of edges must be greater than n  
d) It must be connected with at least 3 vertices

**7.Which type of graph guarantees the existence of a Hamiltonian Cycle? [0.5 Mark][CO5][L3]**  
a) Tree  
b) Bipartite graph  
c) Complete graph with n ≥ 3  
d) Disconnected graph

**8.Which step is key in backtracking for Hamiltonian Cycle? [0.5 Mark][CO5][L3]**  
a) Always picking the next adjacent vertex  
b) Trying every possible vertex and backtracking if a dead end is reached  
c) Choosing the vertex with highest degree  
d) Picking random vertices

**9.Hamiltonian Cycle Problem differs from Eulerian Cycle Problem in that: [0.5 Mark][CO5][L3]**  
a) Hamiltonian uses edges, Eulerian uses vertices  
b) Eulerian uses only complete graphs  
c) Hamiltonian visits all vertices, Eulerian visits all edges  
d) Hamiltonian is easy to solve, Eulerian is hard

**10.In a backtracking solution for Hamiltonian Cycle, what happens when a vertex cannot be placed in the current path? [0.5 Mark][CO5][L3]**  
a) Program terminates  
b) Vertex is removed permanently  
c) We backtrack to the previous vertex  
d) Next vertex is forcibly added