**D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY**

**Set-: I**

**Q. Paper Code:**

**KASABA BAWADA KOLHAPUR-416006**

**(An Autonomous Institute)**

S. Y. B. Tech/ B. Arch

**END SEMESTER EXAMINATION, JULY. – 2021-22**

Course Name: Computer Algorithms Course Code: 201AIMLL212

Seat No:

**Day and Date: Friday, 17/06/2022**

**Time: Max. Marks- 100**

***Instructions:***

1. *Question No. 1 is compulsory.*
2. *Figure to the right indicate full marks.*

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| **BT** | **CO’s** | **Q. No.** |  | | **Marks** | **Weight age** |
|  |  | **Q.1** | **Attempt the following** | | **40** | **40%** |
| **5**  **2** | **CO1, CO2** | **a** | *(10 Marks)*   1. Explain Time and Space Complexity. 2. Find an optimal solution to the Knapsack instance: n=7, m=15, (p1,p2,….p7)=(10,5,15,7,6,18,3) and (w,1w2,…..w7)=(2,3,5,7,1,4,1) | Unit: 1,2 & 3 | **4**  **6** |
| **5** | **CO1, CO2** | **b** | *(10 Marks)*   1. Explain any three pseudo code conventions. 2. Explain only recursive algorithm of Merge Sort. 3. Explain Optimal Merge Pattern with example. | **3**  **3**  **4** |
| **2** | **CO1, CO2** | **c** | *(10 Marks)*   1. What is the solution generated by the function Job Scheduling when n=4 (p1,p2,….p5)= (20,15,10,5,1) and (d1,d2, ….d5) = (2,2,1,3,1) 2. Find out Single Source Shortest Path for below figure. | **5**  **5** |
| **5** | **CO1, CO2** | **d** | *(10Marks)*   1. Explain Prim’s Algorithm with example. 2. Explain in detail All Pairs Shortest Path. | **5**  **5** |
|  | | | | | |  |
|  |  | **Q.2** | **Attempt the following** | | **20** | **60%** |
| **5** | **CO1, CO2** | **a** | Explain Inorder, Preorder and Post order Traversal in short. | Unit: 4 | **6** |
| **5** | **CO1, CO2** | **b** | Explain Breadth First Search and Traversal with example.  OR  Explain Depth First Search and Traversal with example. | **7** |
| **5** | **CO1, CO2** | **c** | Explain AND/OR graph with example. | **7** |
|  | | | | | |
|  |  | **Q.3** | **Attempt (any four questions)** | | **20** |
| **2** | **CO2** | **a** | Let W={5,10,12,13,15,18} m=30. Find all possible subsets of W that sum to m. | Unit: 5 | 5 |
| **5** | **CO2** | **b** | Explain Graph Coloring with example. | 5 |
| **5** | **CO2** | **c** | Explain String Matching Algorithm with Brute Force Method. | 5 |
| **5** | **CO2** | **d** | Explain 8/4 queens problem with example. | 5 |
| **2** | **CO2** | **e** | Solve Knapsack problem using Backtracking for the following data. Wi={2,3,4,5} Pi={3,5,6,10} m=8 KG | 5 |
|  | | | | | |
|  |  | **Q.4** | **Attempt the following** | | **20** |
| **5** | **CO3** | **a** | Explain Non Deterministic algorithm.  OR  Explain Deterministic algorithm. | Unit: 6 | 4 |
| **5** | **CO3** | **b** | Explain Classes NP -Hard and -NP Complete. | 4 |
| **5** | **CO3** | **c** | Explain Clique Decision Problem | 6 |
| **5** | **CO3** | **d** | Explain Node Cover Decision Problem*.*  OR  Explain Chromatic Number Decision Problem. | 6 |  |