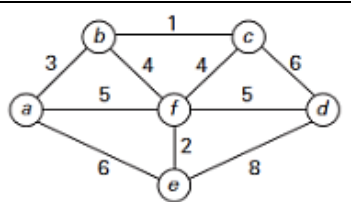


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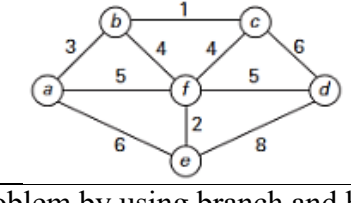
|  |   |             |          |            |           |          |              |       |    |     |
|--|---|-------------|----------|------------|-----------|----------|--------------|-------|----|-----|
| Sub:   | <b>Analysis and Designs of Algorithms</b>   |             |          |            | Sub Code: | BCS401   | Branch:      | ISE   |    |     |
| Date:  | 30-05-2026  | Duration:   | 90 min's | Max Marks: | 50        | Sem/Sec: | IV / A, B, C |       |    |     |
| <b>Answer any FIVE FULL Questions</b>  |   |             |          |            |           |          |              | MARKS | CO | RBT |
| 1.   | Design Horspool's Algorithm for string Matching Apply Horspool algorithm to find pattern BARBER in the test JIM SAW ME IN A BARBERSHOP. |             |          |            |           |          | 10           | CO3   | L3 |     |
| 2.   | Define Heap. Apply heap sort to sort the list of numbers: 2, 9, 7, 6, 5, 8 in ascending order using array representation.               |             |          |            |           |          | 10           | CO3   | L3 |     |
| 3.   | What are Huffman trees? Construct the Huffman tree for the following data   |             |          |            |           |          | 10           | CO4   | L3 |     |
|  |   | Character   | A        | B          | C         | D        | -            |       |    |     |
|  |   | Probability | 0.4      | 0.1        | 0.2       | 0.15     | 0.15         |       |    |     |
| i) Encode the text ABAC-ABAD ii) Decode the code100010111001010                    |   |             |          |            |           |          |              |       |    |     |
| 4.   | Construct minimum cost spanning tree using Kruskal's algorithm for the following graph.   |             |          |            |           |          | 10           | CO4   | L3 |     |
|  |   |             |          |            |           |          |              |       |    |     |
| 5.   | Solve the following instance of the knapsack problem by using branch and bound method. Capacity $W = 10$ .                              |             |          |            |           |          | 10           | CO5   | L3 |     |
|  |   | Item        | 1        | 2          | 3         | 4        |              |       |    |     |
|  |   | Weight      | 4        | 7          | 5         | 3        |              |       |    |     |
|  |   | Value       | \$40     | \$42       | \$25      | \$12     |              |       |    |     |
| 6.   | Explain the following terms: (i)P- Problems (ii) NP - Problems (iii) NP- Complete Problems (iv) NP- Hard Problems.                      |             |          |            |           |          | 10           | CO5   | L2 |     |

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|  |   |             |          |            |           |          |              |       |    |     |
|--|---|-------------|----------|------------|-----------|----------|--------------|-------|----|-----|
| Sub:   | <b>Analysis and Designs of Algorithms</b>   |             |          |            | Sub Code: | BCS401   | Branch:      | ISE   |    |     |
| Date:  | 30-05-2026  | Duration:   | 90 min's | Max Marks: | 50        | Sem/Sec: | IV / A, B, C |       |    |     |
| <b>Answer any FIVE FULL Questions</b>  |   |             |          |            |           |          |              | MARKS | CO | RBT |
| 1.   | Design Horspool's Algorithm for string Matching Apply Horspool algorithm to find pattern BARBER in the test JIM SAW ME IN A BARBERSHOP. |             |          |            |           |          | 10           | CO3   | L3 |     |
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|  |   | Item        | 1        | 2          | 3         | 4        |              |       |    |     |
|  |   | Weight      | 4        | 7          | 5         | 3        |              |       |    |     |
|  |   | Value       | \$40     | \$42       | \$25      | \$12     |              |       |    |     |
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