

Daffodil International University
Department of Software Engineering
Faculty of Science & Information Technology
ID & Section:

Spring 2026; Course Code & Title: SE214, Algorithm Design & Analysis

Time: 35 Minutes

Marks: 15

- 1) A streaming platform wants to optimize the storage of subtitles for a popular documentary series. During analysis, the text-processing team found that certain characters appear far more frequently than others. They collected the following frequency for a sample subtitle file: Event with their frequency is : S-120, E-45, T-25, A-18, O-45-, R- 30.
- Construct the **Huffman Tree** for the given frequencies.
 - Determine the **Huffman Code** for each event character.
 - Calculate the **total number of bits required** to encode the logs using your Huffman codes.
 - Compare it with a **fixed-length encoding** and compute how many bits are saved.
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- 2) Given Capacity of the sack: 12 kg, Calculate the maximum profit with a greedy approach.

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Object	1	2	3	4	5	6
Profit	5	10	15	7	8	9
Weight	1	3	5	4	1	3

- 3) Total Amount =41, available denominator {4,10,25}, Find the minimum number of coins with greedy solution.