DAA Questions Unit 2

Attempt any 3 of the following !!

Q1. A text comprises the characters a, b, c, d, and e, each occurring with the probability 0.08, 0.40, 0.25, 0.15 and 0.12, respectively. What will be the average length with optimal coding?

Q2. Consider a sequence of matrices A_1,A_2,A_3,A_4 with dimensions as follows: A_1 is 10*20, A_2 is 20*5, A_3 is 5*30 and A_4 is 30*10. What is the minimum number of scalar multiplications needed to compute the product of A_1*A_2*A_3*A_4 using Matrix Chain Multiplication?

Q3. Given two strings:

String 1: "ABCDGH"

String 2: "AEDFHR"

Find the length of the Longest Common Subsequence (LCS)

Q4. Differentiate between the Greedy and Dynamic approaches in tabular form.

Q5. Define a matroid and discuss its properties.

Q6. Apply the Rabin-Karp algorithm to find all occurrences of the pattern "ABC" within the text "ABCDABCEABCDEFABC". Use a prime number q = 13, h(x) for a substring x, computed using its characters' ASCII values.