Question Paper

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
END SEMESTER THEORY EXAMINATION - MAY 2023
II SEMESTER B.Sc (Applied Sciences) in Engg.

Data Structure [ICS 121]

Marks: 50   **Duration: 180 mins.**

Answer all the questions.

Missing data, if any, may be suitably assumed

1)

A) Write a recursive C++ function to solve the problem of Tower of Hanoi with n discs. Solve Hanoi of a tower for 3 discs considering three pillars/bars/pegs. Draw all the steps neatly. (7)

B) Find the time complexity of the following code using the step count method: (3)

```
float sum (float *a, const int n)
1 {
2      float s = 0;
3      for (int i = 0; i < n; i++)
4              s += a[i];
5      return;
6 }
```

2)

A) Write an algorithm to convert an infix expression to postfix notation and trace that algorithm to convert the following infix expression to a postfix expression. (6)

A - (B / C + (D % E * F) / G)* H

B) What is Big oh notation? Find the value of C and n_0 for the following expression: (4)