Printed Pages – 4

CBCS-242

B. Sc. (Hon's) (Third Semester) Examination, Dec. 2023

(CBCS Course)

COMPUTER SCIENCE

Paper : 301

(Data Structure and Algorithm)

Maximum Marks : 60

Mininim Pass Marks : 21

Note : *Attempt questions of all* ***two*** *sections as directed. The distribution of marks is given with sections.*

Section-A

(Short Answer Type Questions) **5×6=30**

Note : *Attempt all* ***five*** *questions.* ***One*** *question from each unit is compulsory. Each question carries 6 marks.*

Unit-I

1. Differentiate between iterative and recursive approach of solving problems.

Or

Explain best case, average case and worst case complexity.

Unit-II

2. Write the essential characteristics of a good algorithm.

Or

Why recursive approach well suits for sorting problems.

Unit-III

3. Explain Depth First Search (DFS) and Breadth First Search (BFS).

Or

Define Hash function and Hash Table.

Unit-IV

4. Explain binary tree and binary search trees.

Or

Create a binary search tree, from left to right value

$$Q = \{7, 6, 5, 4, 3, 2, 1\}$$

Unit-V

5. Explain the advantages of parallel algorithm.

Or

Explain distributed algorithm.

Section-B

(Long Answer Type Questions) **3×10=30**

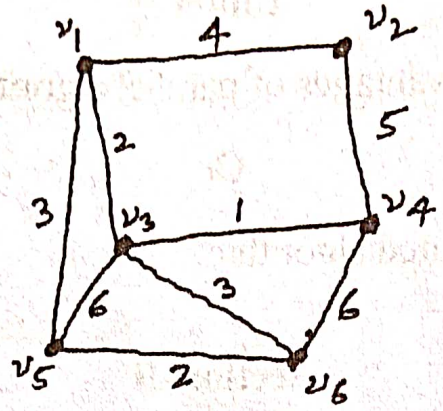
*Note : Attempt any **three** questions. Each question carries 10 marks.*

6. Explain various computer algorithm techniques to solve problems.

7. Explain briefly about the sequence of steps involved in the design and analysis of an algorithm.

8. Write an algorithm for Quick Sort and apply on the list 5, 3, 1, 9, 8, 2, 4, 7.

9. How do you solve a minimum spanning tree? Find the minimum spanning tree for the following graph :



10. Explain the Knuth-Morris-Pratt algorithm.