

NEP - Semester End Examination – October 2025

Program: S. Y. B. SC. (C.S.) SEM III Course: DATA STRUCTURES

Program Code: UGCS02 Course Code: NUCS303

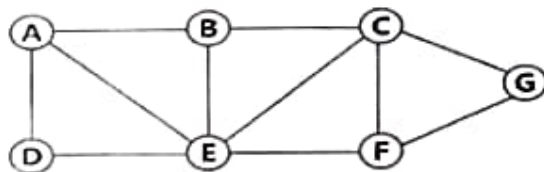
Duration: 1 Hour

Max. Marks: 30

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat diagrams wherever necessary.

Q. 1	Attempt any TWO of the following.	[10]	Course Outcome	Knowledge Level
(a)	Define data structure and classify its types.		CO1	L1, L2
(b)	Explain how insertion at the beginning of a singly linked list is performed.		CO2	L2
(c)	Convert the given prefix expression $*+AB-CD$ into its equivalent postfix expression using stack operations.		CO2	L3
(d)	Demonstrate the dequeue operation on a circular queue.		CO2	L3
Q. 2	Attempt any TWO of the following.	[10]	Course Outcome	Knowledge Level
(a)	Construct the Huffman tree for the given string $S="abbcdabccdaabbeeebeab"$.		CO3	L6
(b)	Define collision in hashing. Explain how separate chaining helps in resolving collisions in hashing.		CO4	L1, L2
(c)	Explain graph representation using adjacency matrix and adjacency list with examples.		CO4	L2
(d)	Define and describe priority queue with examples.		CO4	L1, L2
Q. 3	Attempt any TWO of the following.	[10]	Course Outcome	Knowledge Level
(a)	Design an algorithm or write pseudocode to perform Push and Pop operations in a stack.		CO2	L6
(b)	Explain how a linked list can be used to represent a polynomial with an example.		CO2	L2
(c)	Define binary tree. Explain types of binary tree with suitable diagram.		CO3	L1, L2
(d)	Apply depth-first search (DFS) traversal on the given graph.		CO4	L3



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