

End Semester Examination

May-June 2023

EC213/CET2001A - Data Structures and Algorithms

Schedule ID: 18412

Faculty/School	Faculty of Engineering & Technology	Term	III
Program	Second Year B. Tech	Duration	2 Hours
Specialization		Max. Marks	50

Instructions to the Candidate:

1. Write the PRN on the top right-hand corner of the question paper.
2. Draw neat diagrams.
3. Assume suitable data, if necessary.

Section 1 (5 X 10 Marks)

Answer any 5 questions

1	A. What is recursive function in 'C'? Write a recursive function to obtain factorial of a number. B. Explain with the help of 'function for swapping of two variables' the concept of 'function call by value and call by reference'.	10 marks	CO1	Applying
2	A. Write a function for linear search. Compare the time complexity of linear search with binary search. B. Write a function to create a database of student with student_id and student name as fields of the table.	10 marks	CO2	Applying
3	A. Convert following infix expression into postfix using stack. Show all steps and stack content. $A+(B*C)/D-(E+F)*G$ B. Evaluate the following postfix expression using stack. $abc * + de-f / * g^.$ Note: ^ stands for power and values of variables are a=8,b=2,c=3,d=7,e=3,f=2 and g=2.	10 marks	CO3	Evaluating

4	A. What is queue? Explain circular queue with suitable diagram. B. Write a program to perform following operations: a. Enqueue numbers 1 to 10 in queue. b. Dequeue all elements from queue and display.	10 marks	CO3	Understanding
5	Write a program in C to perform following operations on Singly linked list. - Create - Add node at the beginning - Add node at the end - Delete first node - Print LL	10 marks	CO2	Creating
6	Explain different Graph terminologies. - Spanning tree - Degree of graph - Adjacent nodes & edges - Degree of graph - Complete Graph	10 marks	CO4	Remembering
7	Differentiate between Binary Tree and Binary Search Tree? Explain three types of Binary Trees with suitable diagram. Write a C function for Inorder traversal of Binary Tree.	10 marks	CO4	Applying
8	A. Explain with suitable examples, how will you represent a Binary Tree using array? B. Discuss various types of graph and its representations.	10 marks	CO4	Understanding

END OF QUESTION PAPER