Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD)
Re-accredited with 'A++' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Continuous Internal Assessment I – August 2025
III Semester

Class : II UG **Time : 2 Hours**
Major: Computer Science **Max Marks: 60**

23BCSC06 Algorithms

Course Outcomes:
CO1: Design and analyze programming problem statements.
CO2: Deploy sorting and search algorithms and analyze their computational complexities.
CO3: Implement standard operations on graph data structures
CO4: Analyse the time and space complexities.
CO5: To analyze Randomized, Distributed, Heuristics algorithms

Part – A **6x 1=6**
Choose the correct answer

1. Which of the given options provides the increasing order of asymptotic complexity of functions f1, f2, f3, and f4? CO1K2

   $f1(n) = 2^n$, $f2(n) = n$, $f3(n) = n*\log(n)$, $f4(n) = n^2$

a. f3, f2, f4, f1 b.f3, f2, f1, f4 c.f2, f3, f1, f4 d.f2, f3, f4, f1

2. What is the advantage of recursive approach than an iterative approach? CO1K1
   a) Consumes less memory b) Less code and easy to implement
   c) Consumes more memory d) More code has to be written

3. The given array is arr = {1, 2, 4, 3}. Bubble sort is used to sort the array elements. How many iterations will be done to sort the array? CO2K3
   a) 4 b) 2 c) 1 d) 0

4. Sort the following the list using Radix sort algorithm. CO2K3
   [121, 432, 564, 23, 1, 45, 788]
   What is the output of algorithm after second pass?
   a. 001,121,023,432,045,564,788 b.121,001,023,432,045,564,788
   c. 001,121,432,023,045,564,788 d. 001,121,023,432,564,045,788

5. Which of the following sorting algorithms is the fastest? CO2K3
   a) Merge sort b) Quick sort c) Insertion sort d) Bubble sort

6. The Data structure used in standard implementation of Breadth First Search is? CO3K2
   a) Stack b) Queue c) Linked List d) Tree

Part B **3 x 6 = 18**

Answer ALL questions

Each answer should not exceed 400 words or two pages

7. a. What do you understand by design and analysis of algorithms? Explain.	CO1K1
(or)	
7. b. Write Notes on Correctness of Algorithm.	CO1K1
8. a. Discuss the Basic Design and Analysis Techniques of Algorithms.	CO2K2
(or)	
8.b. Present the algorithm and logic behind Bubble Sort with example.	CO2K2
9.a. Explain Merge Sort algorithm with suitable example.	CO2K2
(or)	
9.b. Elaborate Binary Search Algorithm with example.	CO2K2

Part C **3 x 12 = 36**

Answer ALL questions

Each answer should not exceed 800 words or four pages

10.a. Discuss on the Divide and Conquer Algorithm Design Techniques.	CO1K1
(or)	
10.b. Write on Dynamic Programming Algorithm Design Techniques.	CO1K1
11.a. Explain Greedy Algorithm Design Techniques.	CO2K2
(or)	
11.b. Discuss Quick Sort algorithm with example and its complexity.	CO2K2
12.a. Write the algorithm, program and example of Insertion Sort.	CO2K2
(or)	
12.b. Explain Breadth First Search and Depth First Search techniques.	CO3K2

****

No.of Copies:115
Campus-I- 55
Campus-II - 60

Staff-In-Charge: Dr.G.Sudhamathy & Dr.M.Thilagu