

2024/TDC (CBCS)/EVEN/SEM/
CACCC-401T/124

TDC (CBCS) Even Semester Exam., 2024

COMPUTER APPLICATION

(4th Semester)

Course No. : CACCC-401T

(Design and Analysis of Algorithm)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks
for the questions

UNIT-I

1. Answer any two of the following questions :

2×2=4

- (a) What is hashing? What are its applications?
- (b) What are structured programs?
- (c) What is an algorithm? Give the diagram representation of notation of algorithm.

24J/755

(Turn Over)



(2)

2. Answer any one question : 10

(a) What is the difference in operations of a stack & a queue? List the operations of both of them. 5+5=10

(b) Suppose we are sorting an array of eight integers using heapsort and we have just finished some heapify operations. The array now looks like this :

16 14 15 10 12 27 28

How many heapify operations have been performed on root of heap? Discuss in detail.

10

UNIT—II

3. Answer any two of the following : 2×2=4

(a) Which of the following is not an application of binary search?

(i) To find the lower/upper bound in an ordered sequences

(ii) Union of intervals

(iii) Debugging

(iv) To search in unordered list

(b) Justify : Every graph has only one minimum spanning tree.

(True or False)

24J/755

(Continued)

(3)

(c) Justify : Dijkstra's algorithm is the prime example for : Dynamic programming / Backtracking / Greedy algorithm.

4. Answer any one question : 10

(a) With an example, explain the working of Merge sort.

(b) Explain the working of selection sort.

UNIT—III

5. Answer any two of the following : 2×2=4

(a) What is flow shop scheduling?

(b) Explain the general method.

(c) What is multi-stage graph?

6. Answer any one question : 10

(a) What are the best complexities for all pairs shortest path using various algorithms?

(b) What is Reliability Design Problem? What is it concerned with?

24J/755

(Turn Over)

(4)

UNIT—IV

7. Answer any two of the following : 2×2=4

- (a) Can BFS be used to detect a cycle in an undirected graph?
- (b) What are basic search and traversal techniques used for?
- (c) What is DFS used for?

8. Answer any one question : 10

- (a) What is the use of game tree? What are the rules for the game of trees? What are the parts of a game tree?
- (b) (i) Explain the concept of AND/OR graph with an example. 7
- (ii) What are biconnected components? 3

UNIT—V

9. Answer any two of the following : 2×2=4

- (a) What is 8-queen problem in algorithm?
- (b) What is NP-hard problem?
- (c) What is NP-complete problem?

24J/755

(Continued)

(5)

10. Answer any one question : 10

- (a) List the differences between NP-hard and NP-complete.
- (b) What are applications of queen problem?

2024/TDC (CBCS)/EVEN/SEM/
CACCC-401T/124

24J—140/755