

B. TECH. (COMPUTER SCIENCE & BUSINESS SYSTEMS) (CBCS - 2018 COURSE)

B.Tech. (CSBS) Sem - V : : SUMMER - 2022

SUBJECT : DESIGN & ANALYSIS OF ALGORITHMS

Day : Monday
Date : 30-05-2022

S-20460-2022

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N. B. :

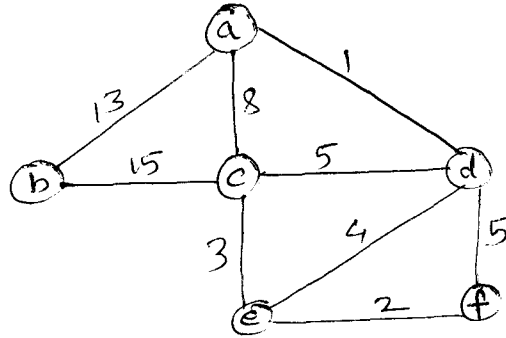
- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labelled diagrams **WHEREVER** necessary.
- 4) Assume suitable data, if necessary

Q.1 How are recursive algorithms analysed? Explain analysis of any suitable recursive algorithm. Enlist the techniques used for recursive algorithm analysis. (10)

OR

Elaborate the purpose and techniques of performance measurements of algorithm. (10)

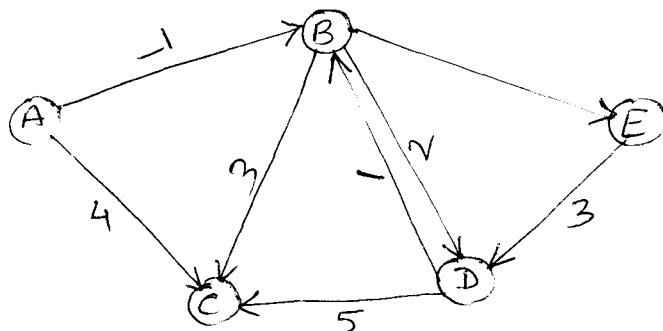
Q.2 What are the approaches used to find minimum spanning tree from a graph? Stepwise apply two of these approaches to find minimum spanning tree of following graph and compare the results and performance. (10)



OR

State and explain with example any one sorting algorithm which uses brute force technique. (10)

Q.3 Which dynamic programming algorithm shall be used to find shortest path in following graph? (10)



Find the shortest path from A in the above graph.

OR

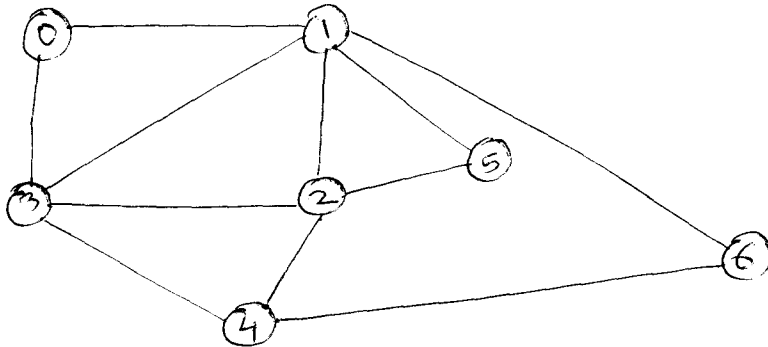
What is a state space tree? When and how is it used? Illustrate in detail the solution of any one problem that uses a state space tree. (10)

P. T. O.

- Q. 4** What is the maximum flow problem in networking? Elaborate the Ford-Fulkerson algorithm for maximum flow with an example. (10)

OR

- What are graph traversals? How to decide which traversal method is to be applied? Apply both Graph Traversals for the following graph: (10)



- Q. 5** State any one NP-complete problem for computing. Justify why it is a NP-complete problem. (10)

OR

- What is NP –complete problem? How to determine whether a problem is NP-complete? Justify whether Traveling salesman problem is NP-complete. (10)

- Q. 6** What is quantum algorithm? Where are quantum algorithms applied? State and explain the unique properties of quantum algorithms. (10)

OR

- What are approximation algorithms? Explain their characteristics and importance with example. (10)

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