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

Computer Science & Business Systems

B.Tech. (CSBS) Sem - V :SUMMER : 2023

SUBJECT : DESIGN & ANALYSIS OF ALGORITHMS

Day : Tuesday | Time : 10:00 AM-01:00 PM

Date : 09-05-2023 | S-20460-2023 | Max. Marks : 60

N.B.:

1) All questions are **COMPULSORY**
2) Figures to the right indicate **FULL** marks.
3) Draw neat labelled diagram **WHEREVER** necessary.
4) Assume **SUITABLE** data whenever necessary.

Q.1 Write a recursive function in C for implementing the procedure of bubble sort. Deduce the asymptotic analysis of this function and compare it with the analysis of its non-recursive implementation. **(10)**

OR

Q.1 State an algorithm for quick sort procedure of n numbers. Infer the asymptotic analysis of this algorithm. **(10)**

Q.2 Compare the greedy and brute force approaches of problem solving. Consider a case of sequential searching. In what circumstances a brute force approach is recommended? Justify with example. **(10)**

OR

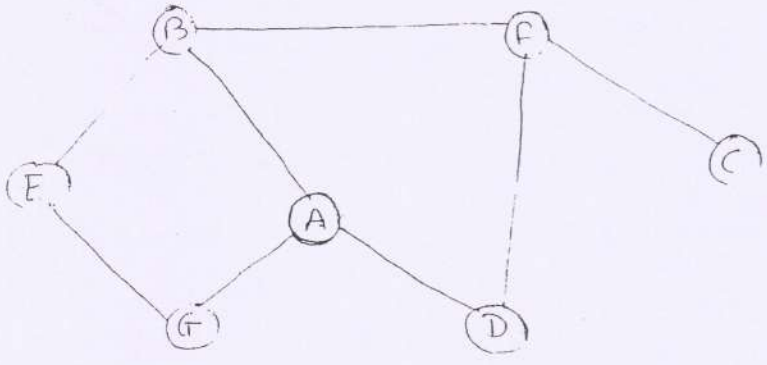
Q.2 Analyze the characteristics of greedy technique of problem solving. Discuss an example of constructing Huffman Codes and identify these characteristics in it. **(10)**

Q.3 When is branch and bound algorithm a good choice for problem solving? Is it similar or different to backtracking? Justify your answer with highlighting the differences or similarities. **(10)**

OR

Q.3 What is the knapsack problem? How can the problem be solved using greedy and dynamic programming? How to determine which of these approaches to be applied to solve the knapsack problem at a particular situation? **(10)**

Q.4 Differentiate between the two traversal techniques of graphs. Stepwise traverse the following graphs using both these methods separately. (Consider A as starting vertex) **(10)**



(P.T.O.)