

ADMISSION NUMBER											

School of Computing Science and Engineering

Bachelor of Computer Applications
Semester End Examination - Nov 2023

Duration : 180 Minutes
Max Marks : 100

Sem V - E1UA502B - Algorithm analysis and Design

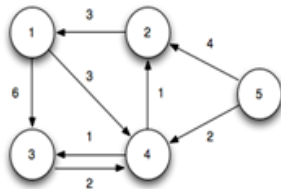
General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Identify the key characteristics of an algorithm. K1 (2)
- 2) Explain Dijkstra's algorithm for finding the shortest path in a graph. K2 (4)
- 3) Define P, NP, NP-Hard and NP-Complete Problem. K2 (6)
- 4) Compare the various programming paradigms such as divide-and-conquer, dynamic programming and greedy approach. K3 (9)
- 5) Determine the LCS of H,B,C,F,G,M,N,A,P,Q and C,B,H,G,R,S,F,N,M,Q. K3 (9)
- 6) Evaluate the trade-offs between dynamic programming and greedy algorithms. K5 (10)
- 7) Write down Floyd Warshall's algorithm to find solution to the all-pairs shortest path algorithm. Run your algorithm on the following graph. K4 (12)



- 8) Explain all the cases of master theorem. Apply master theorem to solve $T(n) = 2T(n/2) + n$. K5 (15)
- 9) Critique the limitations of the Big-O notation in analyzing algorithm efficiency. K5 (15)
- 10) Write an algorithm implement Dijkstra's Algorithm and also analyze its complexity. K6 (18)