

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- October 2022

B.Tech BI/BT V Semester

COURSE CODE: 18B11BI511

MAX. MARKS: 25

COURSE NAME: DESIGN AND ANALYSIS OF ALGORITHM

COURSE CREDITS: 03

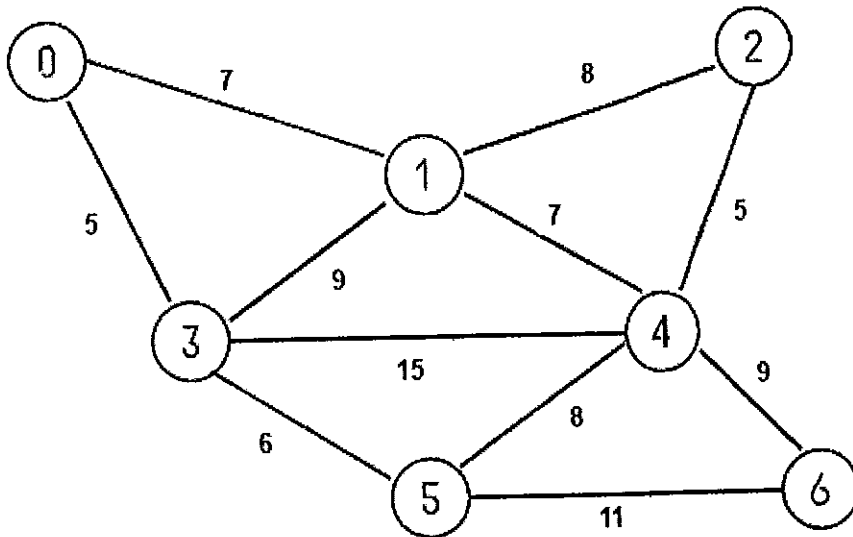
MAX. TIME: 1.5Hr

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

- For each of the following recurrences, give an expression for the runtime $T(n)$ if the recurrence can be solved with the Master Theorem. Otherwise, indicate that the Master Theorem does not apply.: **(Marks:5) CO-2**
 - $T(n) = T(n/2) + 2^n$
 - $T(n) = 2^n T(n/2) + n^n$
 - $T(n) = 16T(n/4) + n$
 - $T(n) = 2T(n/2) + n \log n$
- What is greedy approach? What is the difference between Dynamic Programming and Greedy Algorithms? **(Marks:2) CO-2**
- What is Divide and Conquer approach? Fill the Running time for following Shorting Algorithms: **(Marks:5) CO-2**

Algorithm	Worst-case running time	Best-case running time	Average-case running time
Selection sort			
Insertion sort			
Merge sort			
Quicksort			

- What is Minimum Cost Spanning tree? Difference between Prim's and Kruskal's Algorithm. Solve the following using Kruskal's Algorithm: **(Marks:5) CO-3**



5. Explain Strassen's Multiplication-DAC with each step. (Marks:5)
6. Consider a scenario where you have to perform sorting on an array. Due to limited memory resources, you are required to use memory judiciously. State which sorting algorithm will you use to perform sorting, prioritizing memory and then running time. (Marks: 3) CO-3

UNIT 5 EXAMINATION 2022