K. J. Somaiya College of Engineering, Mumbai-77
(Autonomous College Affiliated to University of Mumbai)
Semester: January –May 2022
In-Semester Examination

Class: LY B. Tech **Semester : VIII**
Branch: Computer
Full name of the course: Advanced Algorithms: Design and Analysis
Course Code: 2UCE813
Duration: 1hr.15 min **Max. Marks: 30**

Q. No	Questions	Marks
Q1 a)	What is time complexity of algorithms? Define O, Ω and ϴ notations for time complexity.	02 marks 03 marks
b)	Explain P, NP, N- complete NP-hard complexity classes. Is NP-complete class a subset of NP class? Discuss.	04 marks 01 mark
Q2	Solve given knapsack instance by dynamic programming approach showing all steps. **OR** Solve given knapsack instance by branch and bound method showing all steps. Knapsack Instance: n=6, M(capacity)= 34 i 1 2 3 4 5 6 P. 6 10 4 5 6 4 W. 10 19 8 10 12 8	10 marks
Q3	Show all steps Floyd-Warshall algorithm for shortest path of following graph given in cost matrix. 0 3 8 ∞ -4 ∞ 0 ∞ 1 7 ∞ 4 0 ∞ ∞ 2 ∞ -5 0 ∞ ∞ ∞ ∞ 6 0 **OR** Write the steps of Johnson's algorithm for shortest path. Explain programming strategy used in this algorithm.	10 marks