

CODE NO:- BL-103-2015
FACULTY OF ENGINEERING
S.E(CSE) Examination
NOV/DEC - 2015
NEW Course
COMPUTER ALGORITHMS

(08/12/2015 TUESDAY)**(10.00 AM TO 01.00 PM)****Time: Three Hours****Maximum Marks: 80**

“Please check whether you have got the right question paper.”

- N.B
- i) All questions are compulsory
 - ii) Assume suitable data if necessary.
 - iii) Figures to the right indicate full marks.

Section – A

- Q1. Solve any two 12
- a) State and explain master theorems
 - b) Write an algorithm of merge sort and sort the given an array :-
 $A = \{3, 41, 52, 26, 38, 57, 9, 49\}$
 - c) State and explain recursion tree method with an example
- Q.2 Solve any two :- 14
- a. Determine asymptotic tight bound
 $T(n) = 3T(n/4) + n \log n$.
 Verify using the substitution method.
 - b. Write an algorithm for MAX _ HEAP _ INSERT and HEAP _ INCREASE _ KEY.
 - c. Explain elements of Greedy method
- Q.3 Solve any two :- 14
- a. Explain the role of an algorithm in computing.
 - b. Compare divide and conquer method VS Dynamic programming
 - c. Determine the LCS for :-
 $X = \{A, B, C, B, D, A, B, \}$
 And
 $Y = \{B, D, C, A, B, A\}$

Section -B

- Q.4 Solve any two :- 12
- a. Explain disjoint set operations with application.
 - b. Write a short notes on analysis of quick sort
 - c. Explain assembly line scheduling in detail.
- Q.5 Solve any two :- 14
- a. Determine the cost structure of OBST for set of $n = 5$ keys with the following profanities
- | I | 0 | 1 | 2 | 3 | 4 | 5 |
|----|------|------|------|------|------|------|
| Pi | - | 0.15 | 0.10 | 0.05 | 0.10 | 0.20 |
| qi | 0.05 | 0.10 | 0.05 | 0.05 | 0.05 | 0.10 |
- b. Define Greedy method. Explain activity selection problem with example
 - c. Explain priority queues.

Q.6 Solve any two :-

14

- Explain p and NP-hard problem.
- Write an algorithm for Dijkstra's
- Construct MST for given graph using Kruskal's algorithm

