PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
M.Tech. Summer 2018-19 Examination

Semester: 2   Date: 06/05/2019
Subject Code: 203202152   Time: 10:30am To 01:00pm
Subject Name: Advance Algorithm   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) Define different key concepts to show a problem to be NP-complete. **(05)**

B) Define Randomized algorithm. Give suitable example for the same. **(05)**

C) Explain the master theorem. Apply master theorem on merge sort algorithm to find out complexity. **(05)**

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Calculate modulus of an exponential number using FEMA – 28^{10} mod 47

B) Interpolate the value of the function corresponding to X=4 using Lagrange's interpolation formula from the following set of data:

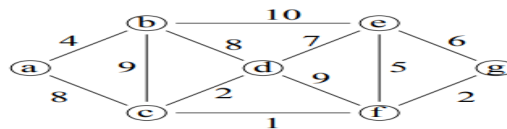| X	2	3	5	8	12
F(X)	10	15	25	40	60

C) Explain the use of Chinese Remainder Method.

D) Define Term:

1. Dynamic Programming
2. What is Flow network in terms of Edmond's algorithm?

Q.3 A) Apply the shell sort on the following data: **(07)**

62	83	18	53	07	17	95	86	47	69	25	28

B) Define MST. Find out minimum distance using Prims algorithm. **(08)**

OR

B) How to Convert the Linear Programming in to slack Form. Explain with suitable example. **(08)**

Q.4 A) What do you mean by Approximation algorithm? Give one example on it. **(07)**

OR

A) Find out Number of Coins required for the change of 10 Rupees using dynamic programming. The denominations value is 1, 4, 5. **(07)**

B) Write an algorithm to find out shortest path in the graph using Dijkstra's algorithm. Apply the same algorithm on below graph. **(08)**