[5059]-641

B.E. (Computer Engineering)
DESIGN & ANALYSIS OF ALGORITHMS
(2012 Course)

Time : 2.30 Hours]   *[Max. Marks : 70*

Instructions to the candidates:
  1)   *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 and Q.7 or Q.8.*
  2)   *Figures to the right indicate full marks.*
  3)   *Assume suitable data if necessary.*

Q1) a) Which Algorithm strategy used by quick sort? Write recurrence relation for quick sort & solve it.   **[6]**

   b) Compare following Algorithm strategies   **[6]**

   i)   Divide & Conquer

   ii)   G ready approach

   iii) Dynamic programming

   c) Solve following job sequencing problem using G ready approach.   **[8]**

   N = 7, Profit (P_1 .... P_7) = (3, 5, 20, 18, 1, 6, 30)

   dead: ne (d_1 .... d_7) = (1, 3, 4, 2, 3, 2, 1)

<p align="center">OR</p>

Q2) a) Explain the following for dynamic programming.   **[12]**

   i)   Principle of optionalizing with example.

   ii)   Matrix multiplication problem

   b) Given n = G and weight (w_1 w_2 w_3 w_4 w_5) = (7, 11, 13, 24, 10). Find all subset whose sum is 41, using sum of subsets Algorithm.   **[8]**

Q3) a) Which are different approaches of writing Randomized Algorithm? Write Randomized sort Algorithm. **[8]**

b) Explain following with relations with each other. **[8]**
   i) Polynomial Algorithms
   ii) Non-Polynomial Hard Algorithms
   iii) Non-polynomial complete Algorithms

OR

Q4) a) What is 0-1 Knap sack problem? Explain the Algorithm as deterministic & non-deterministic versions. **[10]**

b) What NP– complete Algorithm? How do we prove that algorithm is NP compiler? (Give example) **[6]**

Q5) a) What is mean by parallel Algorithms? What are way by which we can achieve parallelism is Algorithm? **[6]**

b) Explain sequential & parallel Algorithm for merge sort for the following arrays. **[10]**

   A[8] = [11, 4, 30, 11, 20, 5, 8, 2]

OR

Q6) a) How parallel Algorithm can be used to solve graph problem? **[8]**

b) How complete binary tree is useful for parallel algorithms? Give any example you are familiar with. **[8]**

Q7) a) What is clustering? How clustering is used in data management? Explain with any Algorithm used in clustering. **[12]**

b) Explain various elements of IOT (Internet of things). **[6]**

OR

Q8) a) State & explain different software engineering algorithms. **[9]**

b) Write KMP algorithm for string matching Algorithm. **[9]**

✳ ✳ ✳