University of Sargodha

BS 4th Term Examination 2016

Subject: Computer Science   Paper: Design & Analysis Algorithms (CS:3143)

Time Allowed: 2:30 Hours   Maximum Marks: 80

Note: Objective part is compulsory. Attempt any three questions from subjective part.

OBJECTIVE PART   (Compulsory)

1.   Write short answers of the following in 2-3 lines each on your answer sheet.   (2*16)

A.   Name any 3 algorithms?
B.   What is a heuristic?
C.   Name any linear data structure.
D.   Name any two heuristics?
E.   What are the conditions when we use dynamic programming instead of greedy algorithms?
F.   What is Big O notation?
G.   What is Non Deterministic Computer?
H.   What is average case efficiency?
I.   What are NP problems?
J.   Is space complexity affected by size of cache memory?
K.   Is space complexity affected by size of registers?
L.   Name any divide and conquer technique.
M.   Give an example where recursion is used.
N.   What is good solution?
O.   Discuss any two properties of an algorithm.
P.   What is radix sort?

[Handwritten margin notes: It is effected by no of instructions & data to execute a program. Good Solution have the following characteristics. → Resolve the Contradiction. → Increase the ideality of the System. → Use idle, easily available resources.]

SUBJECTIVE PART

2.   Explain how dynamic programming can get the solution of 10! quickly as compared to greedy algorithm.   [16]

3.   Show Huffman coding for a data string that has following character frequency. Use greedy technique. [16]

Character	Frequency
A	24
B	12
C	10
D	8
E	8

4.   Explain Bellman-Ford algorithm with help of an example.   [16]

5.   Discuss substitution method for solving recurrences with help of an example.   [16]

6.   Explain Rabin-Karp algorithm of string matching with help of an example.   [16]