

University of Sargodha

BS 5th Term Examination 2015

Subject: Computer Science

Paper: Design & Analysis of Algorithms (CS-310)

Time Allowed: 2:30 Hours

Maximum Marks: 80

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

Objective Part

Compulsory

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

- i. ✓ What is an algorithm?
- ii. ✓ What is asymptotic complexity?
- iii. ✓ What is data structure?
- iv. ✓ Do we need fast machine or fast algorithms?
- v. ✓ What is constant time?
- vi. ✓ What is Big O notation?
- vii. ✓ What is worst case efficiency?
- viii. ✓ What is average case efficiency?
- ix. ✓ What are NP problems?
- x. ✓ What are recurrence relations?
- xi. ✓ What are B Trees?
- xii. ✓ What is hashing?
- xiii. ✓ What are heaps?
- xiv. ✓ What is good solution?
- xv. ✓ What is heuristic?
- xvi. ✓ What is linear search?

Subjective Part (3*16)

- Q.2.** Show the steps of merge sort on the following data.
10, 5, 90, 65, 50, 35, 100, 30, 85, 15, 70, 75, 55, 40, 20, 80
- Q.3.** Explain greedy algorithms with the help of an example.
- Q.4.** Store the following data in a Hash Table of size 16. Use linear probing for collision resolution.
10, 5, 90, 65, 50, 35, 100, 30, 85, 15, 70, 75, 55, 40, 20, 80
- Q.5.** Explain dynamic programming with help of an example.
- Q.6.** Differentiate between P, NP, and NPC.