

University of Sargodha

BS 3rd Semester, Final Term Exam 2014

Subject: I.T Course: Discrete Structures (CMP-200)

Time Allowed: 2:30 Hours

Session:2011-15

Maximum Marks: 80

Objective Part (Compulsory)

Q. No. 1: Write short answers of the following questions. (16*2=32).

- i. How can you produce the terms of a sequence if the first 10 terms are 5, 11, 17, 23, 29, 35, 41, 47, 53, 59?
- ii. Determine whether each of these functions is a bijection from \mathbb{R} to \mathbb{R} . (i) $f(x) = x^2 + 1$ (ii) $f(x) = x^3$
- iii. What is a relation on a set?
- iv. How many ways are there to select five players from a 10 members tennis team to make a trip to a match at another school?
- v. Construct truth table for $(p \vee q) \vee \sim p$.
- vi. What is a bipartite graph?
- vii. Define Euler path.
- viii. Prove that $p \rightarrow (q \rightarrow r)$ and $(p \wedge \sim r) \rightarrow \sim q$ are logically equivalent.
- ix. What is worst case complexity of bubble sort?
- x. Define a Tree.
- xi. State the division algorithm.
- xii. What is the space complexity of linear search algorithm?
- xiii. What is minimum spanning tree?
- xiv. Define reflexive relation.
- xv. Define Existential quantifier.
- xvi. How many relations are there on a set with n elements