Roll No……….. 1212082

BCA 2nd Semester Examination
June-2014
Mathematical Foundation Of Computer Science
Subject Code: CAL-104

Time Allowed: 03 hours. Maximum Marks: 100

Before answering the question paper the candidate should ensure that they have been supplied the correct question paper. Complaints in this regard, if any, shall not be entertained after the examination.

Note: Attempt five questions in total. Question No.1 is compulsory and remaining four questions from Section A and B (Two questions from each section)

Q-1 (a) Explain Big-Oh notation
(b) Write note on Multigraphs
(c) What do you mean by closure of relation
(d) Explain Theory of Inference and deduction. (5*4)

SECTION A

Q-2 (a) Explain Binary Search with the help of example? (10)
(b) What do you mean by Algorithm? Explain its types with example? (10)

Q-3 (a) Explain Adjacent and incidence matrices with example (10)
(b) Difference Between Eulerian & Hamiltonian Graph? Give an example of graph that has no Eulerian circuit but has a Hamiltonian circuit. (10)

Q-4 (a) Explain Equivalence Relations with the help of example?

Let A={k,l,m,n}  
R={(k,k),(l,l),(m,m),(k,l),(k,m),(l,m),(m,n),(n,k)}
S={(n,k),(n,l),(n,m),(m,k),(l,k),(k,k),(m,l)}
Find (i) ROR (ii) SOS (10)
(b) Explain the matrix representation of a relations with example? (10)

SECTION B

Q-5 (a) Explain Avail Tree with the help of example? (10)
(b) Explain Insertion & deletion in Binary Search Tree? (10)

Q-6(a) Explain Insertion sort. Sort the following list by Insertion sort.
5,9,1,11,2,4
(b) Explain Quick sort with the help of example. (10)

Q-7 (a) What are Tautologies and Contradictions? Verify that pV~(p&q) is a tautology? (10)
(b) What are the types of sorting? Differentiate between all types of sorting algorithms? (10)