SURESH GYAN VIHAR UNIVERSITY Accredited by NAAC with 'A' Grade		INTERNAL ASSIGNMENT - 1
Course	**BCA**	**Discrete Mathematics**
Semester	**3**	
Total Marks:	**15**	

Q.1. Write answers for any two questions from below. (5 marks each – Word limit – 500)

A. How many solutions are there to equation X1+X2+X3=17, where X1, X2, X3.are non-negative with X1<6, X3>5.

B. Show that set of N Natural numbers is a semi group under the operation x*y=max {x,y},is a monoid.

C. A simple graph with n vertices and k components cannot have more than (n-k) (n-k+1) edges

(i) Prove that a tree T with n vertices has n – 1 edges.

Q.2. Write short notes on all of the following topics (1 mark each - Word limit - 100)

A. Maximum Matching in Bipartite Graphs: The Hungarian Algorithm

B. Labeled Graphs and Isomorphism

C. Matrices over GF(2) and Vector Spaces of Graphs

D. The Lightest Path: Dijkstra's Algorithm

E. Depth-First and Breadth-First Searches

SURESH GYAN VIHAR UNIVERSITY Accredited by NAAC with 'A' Grade		INTERNAL ASSIGNMENT - 2
Course	**BCA**	**Discrete Mathematics**
Semester	**3**	
Total Marks:	**15**	

Q.1. Write answers for any two questions from below. (5 marks each – Word limit – 500)

A. Find the truth table of the following propositions---
(i) –(pvq) v (-p^-q) (ii) (p ^ q) v (-p ^ q) v (p ^-q) v (-p ^ -q)(iii) p ^ (q v r) (iv) –p v q => -q

B. (a) Explain the derived connectors with truth tables.
(b) Consider the function and defined by f(x)=x2+3x+1, g(x)=2x-3
Find the composition function (i) fof (ii)fog (iii) gof

C. Find the Probability that in a group of 100 letters i) No letter is put into the correct envelope ii) Exactly 98 letters are put into the correct envelope

Q.2. Write short notes on all of the following topics (1 mark each - Word limit - 100)

A. Computational Complexity of Algorithms

B. Rules of Inference: Argument in propositional Logic

C. Linear Recurrence Relations with constant coefficients.

D. Homogeneous Solutions.

E. Advanced topics in Set Theory and Relations