

**MASTER OF BUSINESS ADMINISTRATION  
SUPPLY CHAIN (MBA SCMFL)**

**Term-End Examination**

**June, 2012**

**MCQ-013 : QUANTITATIVE TECHNIQUES IN  
SCM**

*Time : 2 hours*

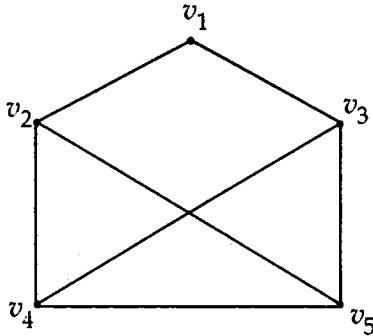
*Maximum Marks : 50*

*Note : Answer any five questions. Statistical tables are permitted.*

1. (a) Explain the terms : Mutually exclusive events, conditional probability, Bayes theorem. 5
- (b) It is known that a two defective copies of a commercial software program were erroneously sent to a shipping lot that has now a total of 75 copies of the program. A sample of copies will be selected from a lot without replacement. 5
- (i) If three copies of the software are inspected, determine the probability that exactly one of the defective copies will be found.
- (ii) If three copies of the software are inspected, determine the probability that both defective copies will be found.

2. (a) Define pmf and cdf of binomial and poisson distributions. 4
- (b) An installation technician for a specialised communication system is dispatched to a city only when three or more orders have been placed. Suppose orders follow a Poisson distribution with a mean of 0.25 per week for a city with a population of 1,00,000 and suppose your city contains a population of 8,00,000. 6
- (i) What is the probability that a technician is required after a one week period ?
- (ii) If you are the first one in the city to place an order, what is the probability that you have to wait for more than two weeks from the time you place your order until a technician is dispatched ?
3. (a) Define : Bipartite Graph, walks, paths, circuits. 4
- (b) Explain Euler's theory and Hamiltonian circuits with suitable examples. 6

4. (a) Find the adjacency matrix of the graph : 4



- (b) Convert the following postfix form of a binary tree into prefix form and parenthesised infix form and usual infix form :  $ab+c-$ . 6
5. (a) List and explain the various types of differential equations used in practice. 5
- (b) Solve :  $3e^x \tan y \, dx + (1 - e^x) \sec^2 y \, dy = 0$  5
6. (a) Solve :  $x \frac{dy}{dx} = y (\log y - \log x + 1)$  5
- (b) Solve :  $dy/dx - \left(\frac{2}{x}\right) y = x + x^2$  5
7. Write short notes on *any two* of following : 10
- (a) Travelling salesman problem
- (b) Applications of Normal Distribution
- (c) Applications of partial Diff. Equations