

**BACHELOR IN COMPUTER
APPLICATIONS****Term-End Examination****June, 2007****CS-62 (S) : 'C' PROGRAMMING AND DATA
STRUCTURE**

Time : 2 hours

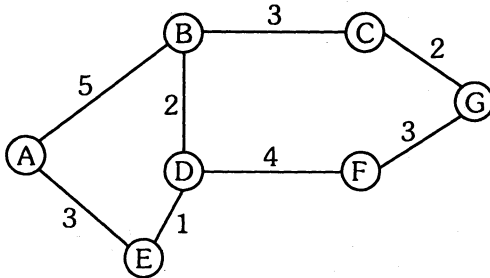
Maximum Marks : 60

Note : Question no. 1 is **compulsory**. Answer any **three** questions from the rest. All algorithms should be written nearer to 'C' language.

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1. (a) Write an algorithm to subtract two polynomials using array implementation. Assume polynomials have M and N terms. 8
- (b) What is garbage collection ? Explain Fragmentation, Compaction and Relocation w.r.t. garbage collection. 6
- (c) Write an algorithm to store the sparse array using linked list. 6
- (d) Write the functions in C language for insertion and deletion of a node in a Heap. 8
- (e) Find the number of nodes in a balanced binary tree of height "h". 2

2. (a) A two dimensional matrix is represented using a row major order. Write the formula and calculate the address of element A[10] [5]. Assume the dimensions as A[10] [10]. 3
- (b) Write an algorithm for converting an Adjacency list to an adjacency matrix in 'C' language. 7

3. (a) Consider the graph :



Construct a minimum cost spanning tree using Prim's algorithm and calculate the cost of this tree. 7

- (b) How are command line arguments passed on to 'C' programs ? Write a program to count the number of command line arguments. 3
4. (a) The following input sequence is sorted in increasing order using quicksort algorithm :
75, 72, 64, 81, 56, 92, 62
Show the sorting process step-wise. 5
- (b) Write a non-recursive program in 'C' to traverse a binary tree in preorder. 5

5. Explain the following with an example each :

10

- (a) Union in 'C'
- (b) AVL Tree
- (c) Hash function
- (d) Weakly connected graph
- (e) Indexing w.r.t. files

