M. SC. (COMPUTER SCIENCE) SEM – I (CHOICE BASED CREDIT & GRADE SYSTEM) : SUMMER - 2018
SUBJECT : ADVANCED DATA STRUCTURES

Day : **Monday** Time : **03.00 PM TO 06.00 PM**
Date : **16/04/2018** **S-2018-0918** Max. Marks : 60

N. B. :

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labelled diagram **WHEREVER** necessary.

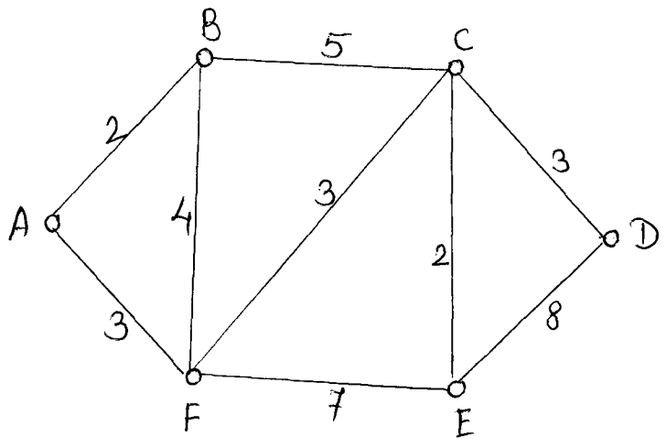
Q. 1 Describe graph as an ADT(Abstract DataType). Elaborate various graph traversal methods. **(15)**

OR

Explain different types of Binary tree and also describe tree traversal methods using suitable example.

Q. 2 A) Attempt **ANY ONE** of the following: **(08)**

i) Describe Krushkal's algorithm for finding a minimum weight spanning tree for an edge weighted graph. Also find the minimum cost spanning tree for the weighted graph given below:



ii) Elaborate the steps used to convert infix to prefix and infix to postfix notations. Convert the following expressions to prefix and postfix notations:

a) [L + P – (*Q* * *R*)] / Z

b) [(S * *T*) – (A + B)]

B) Attempt **ANY ONE** of the following: **(07)**

i) Describe various types of queue.

ii) Elaborate the concept of threaded binary tree.

P. T. O.

Q. 3 Attempt **ANY THREE** of the following: **(15)**

a) Write a C code to sort 'n' integer values using bubble sort technique

b) Differentiate between array and stack.

c) What is list? What are types of list? State applications of list.

d) Describe Array as an ADT.

e) Explain hashing in detail.

Q. 4 Write short notes on **ANY THREE** of the following: **(15)**

a) Vectors

b) Binary search tree

c) Indexed sequential search.

d) Dynamic arrays

e) Expression tree

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