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CS-62

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Pre-Revised)

Term-End Examination

01296

June, 2016

CS-62 : 'C' PROGRAMMING AND DATA STRUCTURES

Time : 2 hours *Maximum Marks : 60*

Note : *Question number 1 is* ***compulsory*** *and carries 30 marks. Answer any* ***three*** *questions from the rest. All algorithms should be written nearer to* ***'C' language.***

1. (a) Find the order of complexity of the following program : *2*

```
fun(n)
{ if(n < = 2) return (1); else
return ((fun(n – 1) * fun (n – 2));}
```

(b) What are the ways in which memory can be allocated in 'C' ? Explain with examples. *4*

(c) What is a doubly linked list ? Write an algorithm which inserts and deletes elements from a doubly linked list. 7

(d) Differentiate between internal and external sorting. Explain with the help of an example. 7

(e) What are the various traversal techniques of a Binary tree ? Explain them. 7

(f) Write a short note on Sequential and Indexed file organisation. 3

2. (a) Describe the differences between local variable, static variable and global variable. 3

(b) What is an ordered list ? Explain. 2

(c) Draw a binary search tree for the following data : 3

50, 33, 44, 77, 35, 60, 40, 80

(d) Consider the following circular queue :

Q = ____, A, D, ____, ____, ____

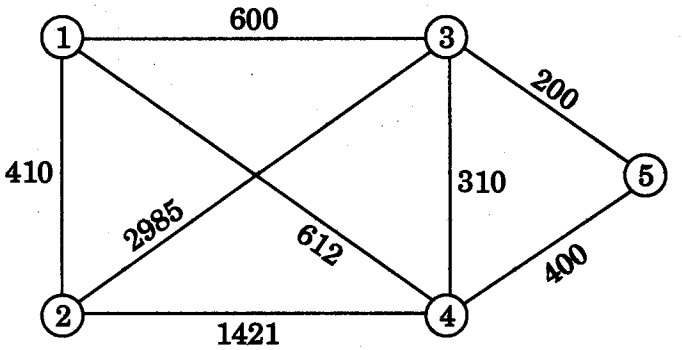
Front = 2, Rear = 3. Perform the following operations and show the contents of the queue after each operation : 2

(i) Add S, M, I

(ii) Delete one item

3. (a) Write an algorithm for conversion of a Tree to a Binary Tree. 5

(b) What is a Minimum Cost Spanning Tree ? Convert the given graph a with weighted edges to a Minimum Cost Spanning Tree. 5



4. (a) Write an algorithm for two-way merge sort. What is its time complexity ? 5

(b) Convert the following infix expression to postfix expression : 5

A + (B * C – (D / E ^ F) * G) * H)

5. Write short notes on the following : $4 \times 2\frac{1}{2} = 10$

(a) Garbage Collection

(b) Sparse Array

(c) Hashing

(d) Command line Argument