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BE-257

100155

III Semester B.Tech. (CSE/ISE)Examination,
December - 2019/January - 2020
(CBCS Scheme)

18CIPC303 : Data Structures and Applications

Time : 3 Hours Max. Marks : 100

Instructions : *(i)* ***Q1** is **compulsory**.*
(ii) *Answer **Q2** or **Q3**, **Q4** or **Q5**, **Q6** or **Q7**.*
(iii) ***Q8** and **Q9** are **Compulsory**.*

1. Answer the following : **15x1=15**

(a) _____ and _____ are types of storage class.
(b) What are Self referential structures ?
(c) How is data accessed in a stack ?
(d) Write the Syntax of realloc() function.
(e) Postfix equivalent of $(a+b/c*d)-e\wedge f$
(f) What are the various traversal techniques of a tree ?
(g) Represent the following polynomial using linked list.
$3x^4+2x^3+4x+6$
(h) What is leaf node ?
(i) Represent the following sparse matrix using linked list,

1	0	0	0
0	0	2	0
3	0	−4	0
0	2	0	−8

(j) _____ is the process of mapping keys to appropriate locations in a hash table.
(k) When there is no free location in the hash table then _____ occurs.
(l) _____ is an example of hash resolution technique.
(m) What is File Organization ?
(n) A _____ is a collection of related records.
(o) _____ and _____ are types of file organization.

2. (a) Explain Self referential structures with an example. **5**
(b) Illustrate the usage of command line arguments with a C program. **5**
(c) With a C program to differentiate structures with unions. **7**

OR

3. (a) With examples explain different storage classes. **5**
(b) What are Bit Fields ? Explain with an example. **5**
(c) With a sample program explain pointers as function arguments and pointer to array. **7**

P.T.O.

4. (a) Convert a+b^(c-d/e)*f into prefix expression using stacks. 5
(b) Write a recursive C functions for Binary Search. 5
(c) Write a C program to implement queues using arrays. 7

OR

5. (a) Write a note on Priority Queues and De-queues. 5
(b) With a recursive function explain Tower of Hanoi Problem. 5
(c) Convert a+(b-c/d)^e*f to postfix and evaluate using stacks, given a=5, b=c=4, d=2, e=f=3. 7

6. (a) Write a C function to insert an item into a specified position in a singly Linked list. 5
(b) Write a C function to insert an item at the rear end of a Doubly linked list. 5
(c) Explain with example representation of polynomial using Linked list. 7

OR

7. (a) Write a C function to insert at a specified position in a double linked list. 5
(b) Write a C function to insert an item as a first node in a circular linked list. 5
(c) Write a C program to implement Stacks using Singly linked list. 7

8. (a) Define the following with example. 5
Height, Binary Search Tree, Strictly Binary Tree, Thread, Max Heap
(b) Construct an expression tree for the expression (a+b*c)/d^(e-f+g) 5
(c) Write a C program to construct a Binary Search tree and traverse in inorder. 7

9. (a) Sort the given array using Address Calculation sort. 5
25, 53, 75, 78, 23, 31, 89, 44
(b) Define the following :
Static Hashing, Text Files, Dynamic Hashing, Binary Files, File Organization. 5
(c) Write a C program to illustrate Hash collision resolution technique. 7

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