

25/10/13

Roll No.

--	--	--	--	--	--	--	--	--	--

B.E / B.Tech (Full Time) DEGREE ARREAR EXAMINATIONS, NOV / DEC 2013

INFORMATION TECHNOLOGY

II Semester

IT8202 PROGRAMMING AND DATA STRUCTURES - I

(Regulation 2012)

Time : 3 Hours

Answer ALL Questions

Max. Marks 100

PART- A (10 x 2 = 20 Marks)

1. How many types of Storage classes does the C language support?
2. Write the output of the following code:

```
#define int char
main()
{
    int num = 65;
    printf ("%d", sizeof(num));
}
```

3. Why do we need fflush() in files?
4. What is the output of the following code?

```
# include <stdio.h>
main()
{
    int val = 3; int *pval = &val;
    printf("%d%d", val, ++*ptr);
}
```

5. Write a C routine to deallocate a singly linked list.
6. How Dequeue differs from a Queue?
7. List some applications of tree.
8. Illustrate an example for Extensible Hashing.
9. Sort the elements given below using Shell sort:
63 19 7 90 81 36 54 45 72 22 27
10. What do you mean by Indexed Search?

Part – B (5x16=80 marks)

11. i) Write a C program to insert a number in an array that is already sorted in ascending order. (6)
- ii) Discuss the significance of Function Macros. (6)
- iii) Write a C program to compute $F(n,r)$ where $F(n,r)$ can be recursively defined as:
$$F(n,r) = F(n-1,r) + F(n-1, r-1)$$
 (4)
12. a) i) Write a C program to define a structure called Height which is defined in terms of Feet and inches. Write suitable functions to read, display, add and subtract two heights from it. (10)
- ii) Write a C program to copy one file into another. Try to Copy only one character at a time. (6)

(OR)

- b) i) Write a C program to copy the last n characters of a character array into another character array using pointers. Also convert the lowercase letters into upper case letters while copying. (10)
- ii) Write a C program to find whether the array of integers contain duplicate numbers or not using pointers. If so, list its frequency. (6)
13. a) i) Write ADT operations to compute the union and intersection of two sorted doubly linked lists. (8)
- ii) Implement a Circular queue with Enqueue and Dequeue operations using array implementation. (8)

(OR)

- b) i) Write suitable ADT operations to multiply two polynomials using singly linked list. (10)
- ii) Write a C program to implement the evaluation of postfix expressions using a Stack. (6)
14. a) i) Write ADT operations to perform different Tree Traversals in binary trees. (10)
- ii) Write short notes on Rehashing. (6)

(OR)

- b) i) Explain Separate chaining mechanism under hashing with suitable examples and routines. (12)

ii) Briefly write about the types of Binary trees. (4)

15. a) i) Simulate the result of inserting 10, 12, 1, 14, 6, 5, 8, 15, 3, 9, 7, 4, 13, 11 one at a time, into an initially empty binary search tree. (4)

ii) Delete the elements 12, 8, 6, 5, 1, 10 one by one from the above binary search tree. (4)

iii) Write suitable ADT's to perform insertion and deletion operations in a Binary Search Tree. (8)

(OR)

b) i) Sort the following numbers using Merge sort. Also write proper ADT operations for Merge Sort. 105 43 212 110 6666 820 171 3 12 17 524 (10)

ii) Explain Replacement Selection algorithm with a suitable example. (6)
