



Reg. No. :

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**Question Paper Code : X 20390**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

Second Semester

Computer Science and Engineering

CS 6202 – PROGRAMMING AND DATA STRUCTURES – I

(Common to Information Technology)

(Regulations 2013)

(Common to PTCS 6202 – Programming and Data Structures – I for B.E.

(Part-Time) – Computer Science and Engineering – First Semester (Regulations 2014))

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Give two examples of C preprocessors with syntax.
2. What are function pointers in C ?
3. Write a simple program to read the Numbers from the file and display numbers.
4. Compare structure and union.
5. What is an ADT ?
6. What is data structure ?
7. Given the infix for an expression, write its prefix  $a*b/c+d$ .
8. How do you define double ended Queue ?
9. Sort the following numbers using insertion sort :  
3, 1, 4, 1, 5, 9, 2, 6, 5.
10. Give the significance of extendible hashing.



11. a) Explain functions with variable number of arguments in detail. Write a C program to find the sum of n numbers using functions with variable number of arguments. (16)

(OR)

- b) Explain the following :
- i) Function pointer in C. (8)
  - ii) Control statements in C. (8)

12. a) i) Write a C program that uses functions to perform the following operations using structure :
- 1) Reading a complex number
  - 2) Writing a complex number
  - 3) Addition of two complex numbers
  - 4) Multiplication of two complex numbers. (12)
- ii) State the advantages and disadvantages of structures and unions in C programming. (4)

(OR)

- b) i) Perform the following to manipulate file handling using C :
- 1) Define an input file handle called *input\_file*, which is a pointer to a type FILE.
  - 2) Using *input\_file*, open the file *results.dat* for read mode.
  - 3) Write C statements which tests to see if *input\_file* has opened the data file successfully. If not, print an error message and exit the program.
  - 4) Write C code which will read a line of characters (terminated by a \n) from *input\_file* into a character array called buffer. NULL terminate the buffer upon reading a \n.
  - 5) Close the file associated with *input\_file*. (12)
- ii) Using C programming, display the contents of a file on screen. (4)

13. a) Develop a C program to split a linked list into two sub lists containing odd and even ordered elements in them respectively. (16)

(OR)

- b) Write a C program to add two polynomials using linked list. (16)



- 14. a) i) Develop an algorithm to implement Queue ADT. Give relevant examples and diagrammatic representations. **(12)**
- ii) Differentiate between double ended queue and circular queue. **(4)**

(OR)

- b) i) Write an algorithm to convert the infix expression to postfix expression. **(10)**
- ii) Show the simulation using stack for the following expression to convert infix to postfix :  $p * q + (r - s / t)$ . **(6)**

- 15. a) i) Sort the following sequence using Quick sort algorithm. Choose the pivot as median. **(8)**  
38 81 22 48 13 69 93 14 45 58 79 72
- ii) Write a routine for Merge Sort. **(8)**

(OR)

- b) Explain the following collision resolution strategies with example :
    - i) Separate chaining. **(5)**
    - ii) Linear probing. **(5)**
    - iii) Quadratic probing. **(6)**
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