

Reg. No. :

**Question Paper Code : 52856**

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Second Semester

Computer Science and Engineering

CS 6202 — PROGRAMMING AND DATA STRUCTURES – I

(Common to Information Technology)

(Regulation 2013)

(Common to PTCS 6202 – Programming and Data Structures – I for  
B.E. (Part-Time) – First Semester – Computer Science and Engineering –  
Regulation 2014)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate between call by value and call by reference.
2. What are preprocessor directives? Give examples.
3. Write a C program to read a single character from a file.
4. Differentiate between random access and sequential access file.
5. Define abstract data type.
6. What are the advantages and disadvantages of linked lists over arrays?
7. Write the syntax of `Calloc ( )` and `Realloc ( )` and mention its application in linked list.
8. Given the prefix for an expression, write its postfix :  
 $-*+abc/ef-g/h i$
9. What is Rehashing?
10. Compare linear search and binary search.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Write a C program using functions to add two matrices and return the resultant matrix to the calling function. (8)  
(ii) Write a C program to implement any four string handling functions using functions and pointers. (8)

Or

- (b) (i) Write a program to convert all the upper-case letters to lower-case and vice versa in a given string. (8)  
(ii) Explain about how to declare pointer to a function with an example. (8)

12. (a) (i) Create a structure complex (data members-real and imag). Write a function to add two complex numbers, which will take 2 complex numbers as arguments and return the complex number. (8)  
(ii) Create a structure employee (data members-Name and Salary). Write a function, using array of objects get 5 employees details and display them. (8)

Or

- (b) (i) Write a program to read a file and count the number of characters and lines in it. (8)  
(ii) Give the format and use of the following File Handling operations in C : fopen(), fread(), fwrite() and fseek(). (8)

13. (a) Write C code for singly linked list with insert, delete, display operations using structure pointer. (16)

Or

- (b) Illustrate the algorithms to implement the doubly linked list and perform all the operations on the created list. (16)

14. (a) Develop an algorithm to implement Stack ADT. Give relevant examples with diagrammatic representations. (16)

Or

- (b) (i) Write an algorithm to implement circular queue using arrays. (10)  
(ii) Show the simulation using stack for converting the expression  $p * q + (r - s / t)$  from infix to prefix. (6)



15. (a) (i) Sort the given integers and show the intermediate results using shell sort (8)  
35, 12, 14, 9, 15, 45, 32, 95, 40, 5

- (ii) Write C code to sort an integer array using shell sort. (8)

Or

- (b) (i) Write a C Code to perform binary search. (10)

- (ii) Explain the rehashing techniques. (6)