

Reg. No. :

Question Paper Code : 80116

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

Third/Fourth Semester

Electronics and Communication Engineering

EC 8393 — FUNDAMENTALS OF DATA STRUCTURES IN C

(Common to Medical Electronics/Biomedical Engineering/Electronics and
Telecommunication Engineering)

(Regulation 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the basic structure of C programs.
2. What is a static variable? Give an example.
3. Define a pointer and initialize it.
4. What are preprocessor directives? List any two pre-processor directives.
5. How an n-dimensional array is represented?
6. Define: Stack. List its operations.
7. What is a tree and sub trees?
8. What is a graph and vertices?
9. How binary search works?
10. What is an overflow condition in hash table?

PART B — (5 × 13 = 65 marks)

11. (a) (i) Examine the various data types in C with an example. (6)
(ii) List all the operators in C with an example for each. (7)

Or

- (b) (i) How two-dimensional arrays are created in C? Write a C program to generate a population survey having citizen's records stored as a collection of year-wise population. (7)
(ii) List the various string handling functions and write C code of your own to perform any two operations in it. (6)

12. (a) Illustrate pass by value and pass by reference in functions with an example. (13)

Or

- (b) Illustrate the representation of structures and unions for an employee record having empid, emp-name, DOB, basicpay, allowances, deductions, grosspay and netpay. Examine their memory allocation. (13)
13. (a) What is a linked list? Examine the various types of linked list creations with their operations in C. (13)

Or

- (b) How expression evaluation is done using stacks? Illustrate it with an example. (13)
14. (a) What is a binary tree? Examine all the binary tree traversals with an example. (13)

Or

- (b) Examine any one of the graph traversal algorithms with an example. (13)
15. (a) Apply bubble sort and selection sort algorithms to sort a given set of numbers. (13)

Or

- (b) How 2-way merge sort helps in sorting a given set of numbers in an efficient manner? Evaluate it for the following list :
30, 10, 49, 34, 69, 12, 96, 53, 2, 43, 80 (13)

PART C — (1 × 15 = 15 marks)

16. (a) Analyze the functionality of hash tables and hashing functions in storing and retrieving data efficiently. (15)

Or

- (b) Write a program that takes an array of pointers to store a two dimensional array and perform matrix multiplication using it. (15)