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 a 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 — ($1 \times 15 = 15$ 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)