11. (A) Explain various string handling functions in C. 6

(B) Explain pointer with example. How pointers are declared and initialized ? 6

12. (A) Explain how files are defined and opened in C ? 6

(B) State difference between structure and union. Write program segment to define structure . 6

OR

13. (A) Explain structure within structure with example. 6

(B) Describe file opening and file closing in C with example. 6

AP–432

B.Sc. (Part–I) Semester–II Examination

2S : COMPUTER SCIENCE/COMPUTER APPLICATIONS/INFORMATION TECHNOLOGY

(Data Structure & Advanced C)

Time : Three Hours] [Maximum Marks : 80

Note :- (1) **ALL** questions are compulsory.
(2) Question No. **1** carries **8** marks and all other questions carry **12** marks.
(3) Assume suitable data wherever necessary.

1. (A) Fill in the blanks :

(i) Queues are also known as _____ structures.

(ii) _____ are always stored in consecutive memory locations.

(iii) All deletions and insertions in STACK are done from _____ of stack.

(iv) 'C' is a _____ level programming language. 2

(B) Choose the correct alternative :

(i) Singly linked list provide _____.

(a) One way traversal (b) Two way traversal

(c) No traversal (d) Both way traversal

(ii) In Tree, specially designeted data item is ____.

(a) Node (b) Root node

(c) Leaf node (d) Sibling

(iii) EOF means _____.

(a) End of function (b) End of file

(c) End of fact (d) Element of file

(iv) The function fgetc ( ) is used to _____.

(a) Read single character from file

(b) add data to file

(c) to find element

(d) remove data from file. 2

(C) Answer in **ONE** sentence :

(i) What is binary tree ?

(ii) What is Circular Queue ?

(iii) What is traversing ?

(iv) What is dot operator ? 4

2. (A) Consider the following stack of characters, where STK is allocated N=8 memory cells

STK : A, C, D, F, K, ___, ___, ___, ___

Describe the stack as following operations take place :

(a) POP (STK, DATA)

6. (A) Describe Tree traversal operations. 6

(B) Write algorithm for linear search. Explain with example. 6

OR

7. (A) Define Tree with following terms :

(1) Root

(2) Node

(3) Degree of node 6

(B) Draw the tree T which corresponds to the expression $E = (3a+b)(5x-y)^2$ use $\uparrow$ for exponentiation and * for multiplication. 6

8. (A) Explain the form of 'C' function. 6

(B) Explain memory representation of one dimensional array with example. 6

OR

9. (A) Write a program in C to find n^{th} the power of a number (a^n) using user defined function. 6

(B) What is multidimensional array ? How to initialize two-dimensional array ? 6

10. (A) Describe concept of pointer with suitable example. 6

(B) Explain address arithematic with example. 6

OR

(b) POP (STK, DATA)
(c) PUSH (STK, L)
(d) PUSH (STK, P)
(e) POP (STK, DATA)
(f) PUSH (STK, R)
(g) PUSH (STK, S)
(h) POP (STK, DATA) 6

(B) What is QUEUE ? Give algorithm to insert an element into queue. 6

OR

3. (A) Consider the following queue of characters where queue Q is a circular array which is allocated 6 memory cells.

Q : ___, L, M, N, __, __ Front = 2
Rear = 4

Describe the queue as following operations take place :

(a) Add O
(b) ADD P
(c) Delete two letters
(d) Add Q, R, S
(e) Delete one letter 6

(B) Explain :

(a) Degree of node
(b) Degree of tree
(c) Siblings 6

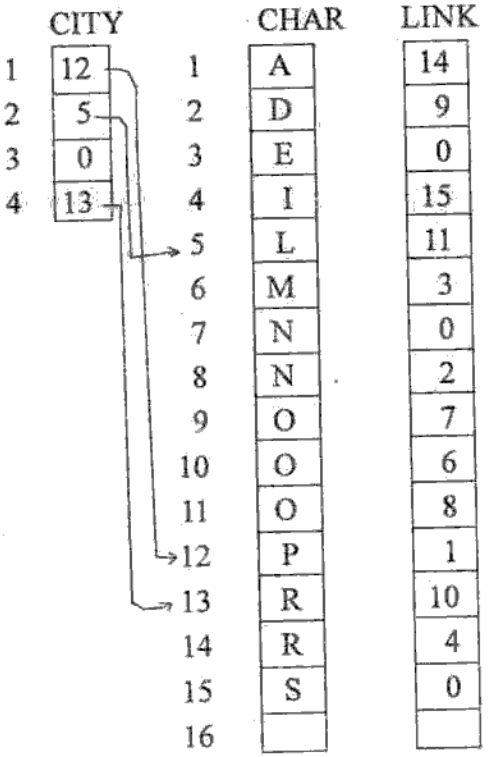
4. (A) Define singly and doubly linked list with diagram. 6

(B) Describe operations on linked list. 6

OR

5. (A) Describe circular linked list and circular doubly linked list with diagram. 6

(B) Find out the character strings stored in the four linked list in following figure :



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