AR – 521

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

2 S COMPUTER SCIENCE / COMPUTER APPLICATION / INFORMATION TECHNOLOGY

Data Structure and Advance C

P. Pages : 7

Time : Three Hours] [Max. Marks : 80

Note : (1) All questions are compulsory.

(2) Question **1** carries **8** marks and all other questions carry **12** marks.

(3) Assume suitable data wherever necessary.

1. (a) Fill in the blanks :—

(i) The logical or mathematical model of a particular organization of data is called _____.

(ii) Combining the records in two different sorted files into a single sorted file is called _____.

(iii) A _____ is an array of characters.

(iv) By default the function returns _____ value. 2

(b) Choose correct alternative :—

(i) Adding an element into stack is called _____.

(a) POP (b) PUSH

(c) START (d) ADD

(ii) Tree is a _____ data structure.

(a) Linear (b) Nonlinear

(c) Arbitrary (d) None of the above

(iii) _____ variables are those which are declared within the particular function.

(a) Global (b) Automatic

(c) Local (d) Static

(iv) EOF means _____.

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

(c) End of fact (d) None of the above 2

(c) Answer in **one** sentence :—

(i) What is Pointer ?

(b) Explain file operation modes in C. 6

OR

13. (a) Explain the difference between structure and union with example. 6

(b) Explain the following with example :

(i) fscanf ( ) (ii) fprintf ( ) 6

OR

9. (a) Explain function recursion with example. 6

(b) Write a program in C to find the largest number and its position among 'n' given numbers in an one dimension array. 6

10. (a) What is String ? Explain the declaration and initialization of string variable with example. 6

(b) Write a program in C to calculate sum and average of n array elements using pointer. 6

OR

11. (a) Explain following with example :

(i) strcat ( ) (ii) strcmp ( ) 6

(b) Explain the declaration and initialization of pointers with example. 6

12. (a) What is structure ? Explain declaration of structure with example. 6

(ii) What is meant by searching ?

(iii) What is Sorting ?

(iv) What do you mean by user defined function ? 4

2. (a) Explain different operations performed on Data Structure. 6

(b) What is Queue ? Write an algorithm to insert an element into a queue. 6

OR

3. (a) Consider the following STACK of characters, where STACK is allocated N=8 memory cells

STACK : A, C, D, F, K, __, __, __.

Describe the stack as the following operations takes place :

(a) POP (STACK, ITEM).

(b) POP (STACK, ITEM).

(c) PUSH (STACK, L).

(d) PUSH (STACK, P).

(e) POP (STACK, ITEM).

(f) PUSH (STACK, R). 6

(b) What is linear array ? Write an algorithm for traversing a linear array. 6

4. (a) What is linked list ? Explain the representation of linked list in memory. 6

(b) What is meant by traversing a linked list ? Write an algorithm for traversing a linked list. 6

OR

5. (a) Write an algorithm to insert ITEM as the first node in the list. 6

(b) The following list of names assigned in order to linear array INFO :

Sanjay, Ajay, Rahul, Kapil, Vipul, Samir, Dipak

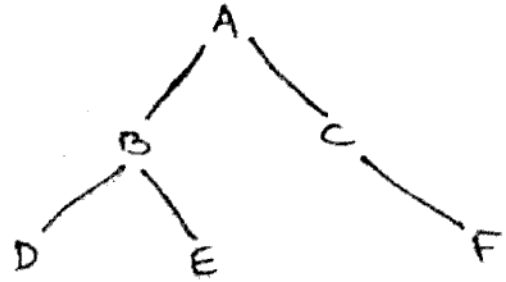
That is INFO[1]=Sanjay, INFO[2]=Ajay, ... INFO [7] = Dipak. Assign values to an array LINK and a variable START so that INFO, LINK and START form an alphabetical listing of the names. 6

6. (a) What is binary tree ? Explain the representation of binary tree in memory. 6

(b) What is sorting ? Explain the bubble sort techniques with example. 6

OR

7. (a) What is meant by traversing a binary tree ? Write Preorder, Inorder and Postorder traversing of following binary tree.



6

(b) What is Searching ? Explain the linear search technique with suitable example. 6

8. (a) What is function ? Explain the structure of function with suitable example. 6

(b) What is array ? Explain the declaration and initialization of one dimensional array with suitable example. 6