[55] SARDAR PATEL UNIVERSITY No. of Printed Pages: 2

MSc IT (Integrated) 2nd Semester

Tuesday, Date: 28th April, 2015

Session: Evening Time : 02:30 P.M. to 5:30 P.M.

Course Code: PS02CIIT03

Course Title : Advanced C Programming and Introduction to Data Structures

Total Marks: 70

Q1. Multiple Choice Questions **[10]**

1. Given a pointer ptr to a structure stu containing a field called stud_id which of the following statements correctly refer name?
   A. ptr->stud_id C. ptr-> stud_id
   B. ptr. stud_id D. ptr-> stud_id

2. Given the definitions shown below, which answer is not valid?
   int i; float f; int *pd; float *pf;
   A. pd = pf; C. i = 5;
   B. pd = &i; D. f=12.5;

3. Which operator is used with a pointer to access the value of the variable whose address is contained in the pointer?
   A. Address (&) C. Indirection (*)
   B. Assignment (=) D. Selection (->)

4. Which of the following allows a portion of memory to be shared by different types of data?
   A. Array C. File
   B. Structure D. Union

5. f = fopen(filename, "w");
   Referring to the code above, what is the proper definition for the variable f?
   A. FILE f; C. struct FILE f;
   B. FILE *f; D. int f;

6. Which of the following data structure store the homogeneous data elements?
   A. File C. Array
   B. Structure D. Union

7. A stack is ____ type of data structure
   A. Linear C. Both (A) and (B)
   B. Non-Linear D. Primitive

8. A linked list in which last node pointing to the first node is known as _____.
   A. Singly linked list C. Doubly linked list
   B. Circular linked list D. None of the above

9. A data structure in which insertion and deletion of an elements occurs at both the end is known as _____.
   A. Singly linked list C. Queue
   B. Stack D. Deque

10. Which of the following statement is FALSE for the Queue data structure?
    A. Its nature is LIFO C. It is a non- primitive data structure
    B. Its nature is FIFO D. It is a Linear data structure

Q2. Answer the following short questions (Attempt any TEN) **[20]**

1. List functions related to dynamic memory allocation.
2. List different pointer declaration style. Which one is preferable?
3. Define: structure, member operator
4. Explain the fclose() function with example.
5. List file modes available to manage the file in C.
6. Define a union called student consisting of an integer called scode, character string called sname and integer value age. Declare union variable called stud along with definition.
7. State various Applications of Stack.
8. Give the Examples of Non-Primitive Data Structure.
9. Give representation of a Stack data structure.
10. State various types of queue.
11. What is a Linked List? How is it represented?
12. What is a Circular Linked list?

Q3. a. Define: Pointer and Explain how arithmetic operations can be performed on the pointer variable by taking example. **[06]**

b. Write note on: structure within structure **[04]**

OR

Q3. a. What is structure? Explain its definition, declaration and assigning values to members of structure. **[06]**

b. Write note on: pointer to pointer **[04]**

Q4.a. Explain fprintf and fscanf function with example. **[05]**

b. Explain the getw and putw function with example. **[05]**

OR

Q4.a. What is union? Explain its definition, declaration and assigning values to members of union. **[05]**

b. Describe the usage and limitation of function getc and putc. **[05]**

Q5.a. Write a short note on linear data structure. **[04]**

b. Write an algorithm to insert an element into a Stack and delete an element from a stack. **[06]**

OR

Q5.a. Write a short note on non-linear data structure. **[04]**

b. Write an algorithm for peep and change operations on stack. **[06]**

Q6. Write an algorithm to insert an element at the end of a Singly linked list. **[10]**

OR

Q6. What is Queue ? Write an algorithm to insert an element into queue and delete an element from the queue. **[10]**

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