Chapter 1 Questions

1. Represent a structure named student with attributes of different types and give advantages of using structure.
2. Structure within a structure is termed as _____.
3. Orphaned memory blocks are undesirable. How can they be avoided?
4. Discuss problems created by memory leak.
5. (a) How will you free the allocated memory?
   (b) Define a structure called time to group the hours, minutes and seconds. Also write a statement that declares two variables current_time and next_time which are of type struct time.
6. Write a program to store and print information (name, roll and marks) of a student using structure.
7. Write a program in C++ to input the total marks obtained by a group of students in a class and display them in descending order using pointers.
8. Compare the aspects of arrays and structures.
9. Run time allocation of memory is triggered by the operator _____.
10. Represent the names of 12 months as an array of strings.
11. A structure can contain another structure. Discuss.
12. If 'ptr' is a pointer to the variable 'num', which of the following statements is correct?
    (i) 'ptr' & 'num' may be of different data types.
    (ii) If 'ptr' points to 'num', then 'num' also points to 'ptr'.
    (iii) The statement num=&ptr; is valid.
    (iv) *ptr will give the value of the variable 'num'.
13. State any two differences between static and dynamic memory allocation.
14. Identify the correct errors in the following code fragment:
    ```
    Struct
    {
      int regno;
      char name[20];
      float mark = 100;
    };
    ```
15. What is the difference between static and dynamic memory allocation?
16. Read the following code fragment:
    ```
    int a[] = {5, 10, 15, 20, 25};
    int *p = a;
    ```
    Predict the output of the following statements:
    ```
    cout << *p;
    cout << *p + 1;
    cout << *(p + 1);
    ```
17. What is self referential structure?
18. What is the difference between the two declaration statements given below?
    ```
    int *ptr = new int (10);
    int *ptr = new int [10];
    ```

19. What is a pointer in C++? Declare a pointer and initialize with the name of your country.
20. Define a structure named 'Time' with elements hour, minute and second.
21. Read the following C++ code:
    int a[5] = {10, 15, 20, 25, 30};
    int *p = a;
    Write the output of the following statements:
    cout << *(p + 2);
    cout << *p + 3;
22. What is the different memory allocations used in C++? Explain.
23. Consider the given structure definition:
    struct complex
    {
      int real;
      int imag;
    };
    (a) Write a C++ statement to create a structure variable.
    (b) Write a C++ statement to store the value 15 to the structure member real.
24. Write the use of * and & operators used in pointer.
25. Distinguish between Array and Structure.
26. The _____ operator is used to allocate memory location during run time (execution).
27. What is a pointer variable in C++? Write the syntax or example to declare a pointer variable.
28. Write any two differences in static and dynamic memory allocation.
29. Define structure. Write any two differences between structure and array.