**Computer Science Practice Questions**

**Chapter: DBMS**

1. Define Database.
2. Compare data and database.
3. Describe primary key, alternate key, and candidate key with example.
4. Write advantages of DBMS.
5. Differentiate between DDL and DML.
6. Draw a figure to show example of hierarchical database model.
7. Compare between network database model and relational database model with diagram.
8. What is normalization? Write advantages of normalization. Explain different types of normalization with example
9. List advantages and disadvantages of centralized and distributed database system
10. Differentiate between database and DBMS. Explain the top down methodology of database design.
11. Explain the benefits of centralized database system.
12. Explain DDL and DML with some common commands.
13. Differentiate between centralized and decentralized database system
14. Explain different database models with merits and demerits.
15. What is database security? Why is it important? Describe different methods to protect database of an organization.
16. What are the advantages of distributed database system over centralized database system?
17. Who is database administrator? What are the major responsibilities of database administrator?
18. What do you understand by the term data integrity? Why is it important thing to be considered while designing a database?

**Chapter: C Programming**

**Group A: Function**

1. What is a function? List out the advantages of function.
2. Show the difference between library function and user defined function.
3. What are the different component of functions? Explain.
4. Explain different types of user-defined functions with an example.
5. What is a recursive function? What are its requirements? Explain with an example.
6. Write short note on “Function prototype”.
7. Compare between loop and recursive function.
8. WAP to display sum of 3 numbers.
9. WAP to display simple interest and amount.
10. WAP to display area and perimeter of rectangle.
11. WAP to display largest number among 3 numbers.
12. WAP to enter any number and print positive or negative.
13. WAP to display 2 4 6 8 up to nth terms.
14. WAP to display factorial of any number entered by user.
15. WAP to display 1 1 2 3 5 up to nth terms.
16. WAP to check entered number is prime or composite.
17. WAP to calculate power function p=xy .
18. WAP to display Fibonacci series using function.
19. WAP to swap 2 numbers using function.
20. WAP to find sum of elements of an array using function.
21. WAP to find sum of 2 matrix using function of order 3\*3.
22. WAP to sort array elements in ascending order using function.
23. WAP to enter multidigit number and display reverse using function.
24. WAP to find factorial of number using recursion.
25. WAP to display sum of number up to n using recursion.
26. WAP to display Fibonacci series using recursion .

**Group B: Structure Union and Pointer**

1. What is a structure?
2. How do you access any member from structure?
3. Explain structure and union with respective examples.
4. Differentiate between structure and union.
5. Differentiate between array and structure.
6. What is the difference between normal variable declaration and structure variable declaration?
7. Explain about nested structure with example.
8. Is there a difference between array and structure? Explain with examples
9. Define a union with an example.
10. “Structure is called a user defined data type”. Justify your answer with example.

**Programs:**

1. WAP to display name and roll number using structure.
2. WAP to enter name, price and pages of a book and display them in proper format.
3. WAP to print student name, roll and date of birth by nested structure
4. WAP to display employee name, address city, pin and phone number using nested structure
5. WAP to input employee id, name and salary and display using union.

Question:

1. What is a pointer?
2. List operator used in pointer.
3. Define the term pointer and its uses.
4. Differentiate between array and pointer.
5. Write down the similarities and differences of array with pointer.
6. Define the term call by value and call by reference in pointer.
7. Differentiate between structure and pointer with examples.
8. Define the term pointer. What are the main reasons of using pointer?
9. Differentiate between references and dereference operators.
10. What is pointer initialization? Why is it required? Illustrate with an example.
11. How can we write pointer expression? Explain with an example.
12. State the main difference between \*p and p in expression int \*p.
13. What is the role of pointers when passing array to functions?

Programs:

1. WAP to declare two normal variable and two pointer variables, which point to the normal variable
2. WAP to calculate the sum of two numbers using pointer
3. WAP to calculate the factorial of a given number using pointer
4. WAP to find the larger of two numbers using the concept of function and pointer
5. WAP to swap the value of a variable a and b using call by value (pointer)
6. WAP to swap the value of a variable a and b using call by reference
7. WAP to take three variables (a,b,c) and rotate the values stored such that values of a goes to b , b to c and c to a. Use pointer for rotation.
8. What is pointer? Explain different operator use to implement pointer with example.
9. Why we use pointer? Explain with example.
10. What is dynamic memory allocation? Explain different function to perform dynamic memory allocation.
11. What is structure? How do you declare and initiate structure variables and how can you access member of struct variables?
12. There is a structure called employee that holds information like employee code, name and date of joining. Write a program to create an array of structures and enter some data into it and display them in ascending order.
13. WAP to show the use of structure and pointer.
14. WAP to show the use of structure and function.
15. What is union? What are the differences between structure and union.
16. What is file handling in c? Explain file operation.
17. Explain different file opening mode.
18. WAP to reading and writing to a text file.
19. WAP to reading and writing to a binary file.
20. Create a structure called library to hold accession number, title of the book, author name, price of the book, and flag indicating whether book is issued or not. Write a menu-driven program that implements the working of a library. The menu options should be:

1. Add book information

2. Display book information

3. List all books of given author

4. List the title of specified book

5. List the count of books in the library

6. List the books in the order of accession number

7. Exit

(Use file handling to store and retrieve data)

**Chapter: Recent Trend and Technologies**

1. Explain AI with its learning stages and types.
2. Explain cloud computing with its type and deployment method.
3. Write short a note on :
   1. Big Data
   2. Virtual reality
   3. E-commerce
   4. E-governance
   5. E-medicine
   6. Mobile computing and
   7. Internet of Things (IOT)
   8. Iaas,Saas,Paas
4. Research work(any one):
   1. Visit the site <https://www.itu.int/> and prepare PowerPoint presentation to explain different working area of ITU.
   2. Visit the site <https://www.bostondynamics.com/> and prepare PowerPoint presentation to explain different robots made by Boston Dynamics.
   3. Visit different site of Nepal government and prepare PowerPoint presentation showing different e-services provided by the Nepal government.