(c) Write a program in C for the followings :
    (i)   To sort an array in descending order.
    (ii)   To find the inverse of a given matrix.

5   Attempt any **two** parts of the following :   10 × 2=20
  (a) Write a short note on Dynamic memory allocation. Write a program in C to swap the contents of two variables using pointers.
  (b) Write a program in C for the followings :
    (i)   Write a program in 'C' to create a file called emp.txt and store information about a person in terms of his name, age and salary and display the recorded information.
    (ii)   Write a program in 'C' to enter a string and check whether it is palindrome or not.
  (c) Write a program in C for the following :
    (i)   To find the factorial of any number using recursion
    (ii)   To convert a decimal number into its binary equivalent.

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Note :   (i)   Attempt **all** questions.
        (ii)   All Questions carry equal marks.
        (iii) In case of numerical problems assume data wherever not provided.
        (iv) Be precise in your answer.

1   Attempt any four parts of the following :   5 × 4=20
  (a) Convert the following number as stated :
    (i) $(10001.1010)_2 = (?)_{10}$
    (ii) $(2765)_8 = (?)_9$
    (iii) $(AC3.001)_{16} = (?)_8$
    (iv) $(99102.22)_{10} = (?)_{16}$
    (v) $(241)_6 = (?)_4$
  (b) "Operating system is called as the resource manager of your computer system." Justify the statement.
  (c) Differentiate between the primary memory and secondary memory. Why RAM is called as volatile memory?

1305]   1   [Contd...

(d) Write short note on any   the followings :
    (i) Arithmetic and Logical Unit
    (ii) Program Counter
    (iii) Stack Pointer
    (iv) Accumulator
    (v) Preprocessor.
(e) Give the brief classification of computers.
(f) What is IDE? Discuss the role of Compiler, Interpreter, Linker, Loader and Preprocessor in program execution.

2. Attempt any four parts of the following :   5×4=20
(a) Differentiate between the Top-Down and Bottom-Up design strategies. Also discuss stepwise refinement.
(b) Draw the flow chart for the followings :
    (i) To find out the root of a quadratic equation
    (ii) To check whether the given number is prime or not.
(c) Give the brief introduction of different generation of computer languages. What are the major issues for the development of natural languages?
(d) Write the pseudo code to search all the occurrence of an item in the array.
(e) Discuss different types of maintenance required for software. Why maintenance is necessary in the life of software.
(f) "C is a structured programming language." Do you agree with this statement? Justify your answer.

3. Attempt any. four parts of the following :   5×4=20
(a) Differentiate between while, do-while and for loop. Also discuss some limitations of switch. (Note: - write a program in C for the followings. Also draw the flow chart for each)
(b) To calculate the factorial of any given number.
(c) To find the second largest number among three given numbers.
(d) To check whether the given number is palindrome or not.
(e) To calculate the greatest common divisor of two numbers, while the number can be read in any order.
(f) To check whether the given number is Armstrong or not.

Attempt any two parts of the following :   10×2=20
(a) What is enumerated data type? Differentiate between union and structure. Write a program in C which read the personal information (which include student-id, student-name, student-date of birth, student-department, student-address, and student-marks) of all the students of an institution and print the student-id and student-name of those students who scored more than 75% marks.
(b) What is modular programming? How function supports the concept of modular programming in C? Write your own C function and specify the following terms by using it in main function :
    (i) Actual and Formal arguments
    (ii) Local and Global variables
    (iii) Call by value and Call by reference
    (iv) Declaration, Definition and Calling of function