Date: 18.11.2019　　　　　　Time: $(2\frac{1}{2}$ Hours)　　　　　　Total Marks: 75

N.B.　(1)　All questions are compulsory.
　　　(2)　Figures to the right indicate marks for respective sub questions.
　　　(3)　Use of **Non-programmable** calculators is **allowed.**
　　　(4)　Draw **neat labeled diagrams** wherever **necessary.**
　　　(5)　Symbols used have their usual meaning
　　　(6)　Draw the sketches and diagrams where necessary

Q.1)　　Attempt **any THREE** of the following.　　　　　　　　(15)
　　a)　What is program development life cycle? Explain its various stages
　　b)　Draw the flowchart and pseudo code of program that doubles a number.
　　c)　Name and describe four basic data types in C.
　　d)　Explain different types of programming languages.
　　e)　Define keywords and identifiers in C language? What are the rules for writing identifiers?
　　f)　Describe the structure of a C program

Q.2)　　Attempt **any THREE** of the following.　　　　　　　　(15)
　　a)　Write a program in C to swap two numbers without using third variable
　　b)　Describe the assignment operators in C.
　　c)　Explain the increment and decrement operator in C with example.
　　d)　Explain following with suitable example
　　　　: ? , + = and % =
　　e)　Write a program in C to create simple calculator.
　　f)　Explain the scanf and printf functions used in C programming language.

Q.3)　　Attempt **any THREE** of the following.　　　　　　　　(15)
　　a)　Explain if-else statement with an example.
　　b)　Describe the syntax of for statement in C. Explain with suitable example.
　　c)　Write a C program to find a sum of natural numbers using recursive function
　　d)　What is the difference between while and do-while loop in C?
　　e)　Write a C program to check whether the entered number is palindrome or not
　　f)　What is a function? Discuss difference between function prototype and function definition.

Q.4)　　Attempt **any THREE** of the following.　　　　　　　　(15)
　　a)　Write a short note on Global variable.
　　b)　What is array? How can a single dimensional array be initialized?
　　c)　What are preprocessor directives in C? Explain #include and #define in C.
　　d)　Explain the following functions in C: -
　　　　i.) strcat( )
　　　　ii.) strlen( )
　　　　iii.) strcmp( )

     e)   Write a C program to perform addition of matrix.

     f)   Write a short note on strings in C

Q.5)   Attempt **any THREE** of the following.   (15)

     a)   What are pointers in C? Write a program in C to add 2 integer numbers using pointers.

     b)   Write a short note on pointer arithmetic in C.

     c)   What is dynamic memory allocation? Explain functions used in dynamic memory allocation.

     d)   Differentiate between structure and union.

     e)   What is a structure? Explain with example.

     f)   What is a union? Discuss its advantages and disadvantages over structure

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