B.C.A. (Pt. -I)

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Pri. of Pro. Lan. (Through C)

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B.C.A (Part-I) EXAMINATION, 2019
(Faculty of Science)
(Three Year Scheme of 10+2+3 Pattern)
PRINCIPLES OF PROGRAMMING
LANGUAGE (THROUGH 'C') - 134

Time Allowed : Three Hours

Maximum Marks : 100

Answer all the questions (short answer as well as descriptive) are to be given in the main answer-book only. Answers of short answer type questions must be given in sequential order. Similarly, all the parts of one question of descriptive part should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.

Write your roll numbers on question paper before start writing answers of questions.

PART - I :   (Very short answer) consists of 10 questions of 2 marks each. Maximum limit for each question is up to 40 words.

PART - II :   (Short answer) consists of 5 questions of 4 marks each. Maximum limit for each question is up to 80 words.

PART - III : (Long answer) consists of 5 questions of 12 marks each with internal choice.

PART - I

1.   Attempt **all** questions. Each question carries 2 marks.   10x2=20
   (i)   What is an algorithm ?
   (ii)   Draw and list any 5 components used in a flow chart.
   (iii)   Give the skeleton/basic outline of a C program.
   (iv)   List logical and relational operators.
   (v)   Give syntax of a while loop. Describe its features.
   (vi)   Define an array. Declare an array to hold 5 real number values.
   (vii)   What is a function prototype ? What are its elements ?
   (viii) What is a pointer ? Declare a pointer and an array and store the address of the array in the pointer.
   (ix)   Describe using a diagram how the memory is allocated for each member of a structure.
   (x)   How is a file opened for reading in 'read-only' mode ?

PART - II
2.   Attempt **all** questions. Each question carries 4 marks.   5x4=20
   (i)   Write an algorithm to compute factorial of a number.
   (ii)   Write a C program to check if the year entered is a Leap year or not. Leap year is defined as every 4th year, if it is a non-century year, and every 400th year, otherwise.
   (iii)   Differentiate between for, while and do-while loops.
   (iv)   What is recursion ? Write a recursive function to calculate HCF/GCD of two numbers.
   (v)   Differentiate between structure and unions.

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PART - III

3. What is :   4x3=12

    (i)   A Compiler

    (ii)   An Interpreter

    (iii)   An Assembler

    (iv)   A Linker

OR

Write pseudo-code and draw flow-chart to compute sum of digits of a positive integer.   12

4. Discuss about different operators available in C language. What is meant by operator precedence and associativity ?   8+4=12

OR

Write a C program using switch-case to print marks range given a student's grade as per the following table :   12

Grade Letter	Min. Marks	Max. Marks
D	0	40
C	40	60
B	60	80
A	80	100

5. Write a program to find all prime numbers between 1 and N.   12

OR

Write a C program to input and sort an array of integers using linear sort.   12

6. What is function definition ? Write a custom C function and use it in a program to find all occurrences of a character in a string.   5+7

OR

Write a program to transpose a matrix using custom function. Access the matrix using pointer notation.   12

7.   (i)   What are Structures and Unions ? How are they declared ?   4

    (ii)   Write a program to declare and use a structure to hold student data - roll no, name, program, and   8
             semester. Input details of 3 students and print them sequentially.

OR

Write a program to input multiple lines one-by-one and store them in a file. The input will end when   12
the user types "STOP". Then read the file and print the output line by line again.

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