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First Semester B.E. Degree Examination, Dec.2014/Jan.2015
Programming in 'C' and Data Structures

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast ONE questions from each part.

PART – 1

- 1 a. What is pseudocode? Explain with an example. (04 Marks)
 b. Explain the structure of C program with an example. (06 Marks)
 c. Explain any five operators used in C language. (10 Marks)
- 2 a. What is type conversion? Explain two types of type conversions with examples. (06 Marks)
 b. Write a program in C to find the area and perimeter of a rectangle. (06 Marks)
 c. Define : i) Variable ii) Constant iii) Associativity iv) Precedence. (08 Marks)

PART – 2

- 3 a. What is two way selection statement? Explain if, if-else, nested if-else and cascaded if-else with examples and syntax. (10 Marks)
 b. Write a program that takes three coefficients (a, b, and c) of a quadratic equation : $(ax^2 + bx + c)$ as input and compute all possible roots and print them with appropriate messages. (10 Marks)
- 4 a. Explain switch statement with an example. (06 Marks)
 b. What is a loop? Explain the different loops in C language. (10 Marks)
 c. Show how break and continue statements are used in a C program, with example. (04 Marks)

PART – 3

- 5 a. What is an array? How is a single dimension array is declared and initialized? (06 Marks)
 b. Write a C program to evaluate the polynomial $f(x) = a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0$, for a given value of x and its coefficients using Horner's method. (06 Marks)
 c. Explain string manipulation functions, with examples. (08 Marks)
- 6 a. What is a function? Write a function to find the sum of two numbers. (06 Marks)
 b. Explain the two categories of argument passing techniques, with examples. (06 Marks)
 c. Write a C function isprime(num) that accepts an integer argument and returns 1 if the argument is a prime or a 0 otherwise. Write a program that invokes this function to generate prime numbers between the given ranges. (08 Marks)

PART – 4

- 7 a. What is structure data type? Explain. (04 Marks)
 b. Show how a structure variable is passed as a parameter to a function, with an example (06 Marks)
 c. Explain the concept of array of structures, with a suitable C program. (10 Marks)
- 8 a. What is a file? Explain fopen(), fclose() functions. (04 Marks)
 b. Explain how the input is accepted from a file and displayed. (06 Marks)
 c. Given two text documentary files "Ramayana.in" and "Mahabharatha.in". Write a C program to create a new file "Karnataka.in" that appends the content of the file "Ramayana.in" to the file "Mahabharatha.in". Also calculate the number of words and new lines in the output file. (10 Marks)

PART – 5

- 9 a. What is a pointer? Write a program in C to find the sum and mean of all elements in an array. Use pointer technology. (08 Marks)
- b. What is preprocessor directive? Explain #define and #include preprocessor directives. (08 Marks)
- c. Explain : (04 Marks)
- i) Dynamic memory allocation
 - ii) Malloc function.
- 10 a. What are primitive and non primitive datatypes? Explain. (06 Marks)
- b. Define queue. Explain it along with its application. (08 Marks)
- c. Explain : (06 Marks)
- i) Abstract data type
 - ii) Stack
 - iii) Linked list.

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