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**First/Second Semester B.E. Degree Examination, June/July 2016**  
**Programming in C and Data Structures**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. What is pseudo-code? Compare it with an algorithm. (05 Marks)
  - b. Convert the following into 'C' expressions :
    - i)  $x^{y^z}$     ii)  $e^{\sqrt{x}}$     iii)  $\frac{a \cdot b}{\sqrt{c \cdot d}}$     iv)  $\sqrt{s(s-a)(s-b)(s-c)}$ . (04 Marks)
  - c. Write a C program to find largest among three integers using ternary operators. (06 Marks)
  - d. Explain formatted input and output statements with examples. (05 Marks)
- 2 a. Write structure of C program. List primitive data types with size and range. (10 Marks)
  - b. Define type casting. Explain with an example. (04 Marks)
  - c. Evaluate following (where  $i = 2, j = 3, k = 4$  and  $a = 5$ ) :
    - i)  $a = i * (j / k / i)$     ii)  $a >> i \% j$     iii)  $i * = a / i \% i$ . (06 Marks)

**PART – B**

- 3 a. Write a C program to grade students result based on following conditions :
    - i) Marks < 35 grade "Fail"
    - ii)  $35 \geq$  Marks < 60 grade "Second class"
    - iii)  $60 \geq$  marks < 70 grade "First class"
    - iv)  $70 \geq$  marks  $\leq$  100 grade "First class with distinction". (08 Marks)
  - b. Explain switch statement with an example. (07 Marks)
  - c. Write a note on goto statement. (05 Marks)
- 4 a. Explain cascade if-else and nested if-else statements. (06 Marks)
  - b. Write a C program to implement simple calculator using operators +, -, \*, and /. Also handle divide by zero error. Use switch statement. (10 Marks)
  - c. What is dangling else problem? Explain how to handle this in C programming. (04 Marks)

**PART – C**

- 5 a. Define array? How two dimension arrays are declared and initialized? (06 Marks)
  - b. Write a C program to generate Fibonacci numbers using arrays. (06 Marks)
  - c. Explain following string functions : i) strlen ii) strcpy iii) strcmp iv) strcat. (08 Marks)
- 6 a. Explain various ways of passing parameters to the functions. (06 Marks)
  - b. Write a C program to find factorial of an integer using recursive function. (08 Marks)
  - c. Write a C program to find length of a string without using strlen( ) function. (06 Marks)

**PART – D**

- 7 a. Compare arrays with structures. (06 Marks)  
 b. Define structure. Explain it with an example. (05 Marks)  
 c. Explain the following :  
 i) typedef to define structure  
 ii) Accessing structure members  
 iii) Initialization of a structure. (09 Marks)
- 8 a. Explain following file handling functions :  
 i) fopen() ii) fclose() iii) fscanf() iv) fprintf() v) fseek(). (10 Marks)  
 b. Write a C program to create a integer data file and then segregate odd and even integers into two different files. (10 Marks)

**PART – E**

- 9 a. What is pointer? Explain with program. (06 Marks)  
 b. Explain the following :  
 i) #define ii) #include iii) nesting of macro iv) argumented macro. (10 Marks)  
 c. Explain malloc and calloc functions. (04 Marks)
- 10 a. What is stack? Explain. Write its applications. (08 Marks)  
 b. Explain queue and write its applications. (08 Marks)  
 c. Write a note on trees. (04 Marks)

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