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Siddaganga Institute of Technology, Tumkur – 572 103

(An Autonomous Institution affiliated to Visvesvaraya Technological University, Belgaum, Approved by AICTE, New Delhi, Accredited by NBA, New Delhi, An ISO9001:2008 Certified)

Second Semester Bachelor of Engineering Examinations May 2015

Foundations of Computer Programming

Time: 3 Hours **Max. Marks: 100**

Note : 1. Question No. 1 is Compulsory

2. Answer any 4 full questions from question No. 2 to Question No. 6

1 a) What is pseudo code? 1

b) Why does a computer need compiler? 1

c) Define expression. 1

d) The result of evaluating the expression 7%5+10.0*10/3 is _____. 1

e) The result of evaluation of the expression ceil(-2.4) is _____. 1

f) The parameters used in a function call are called _____ parameters. 1

g) The _____ is a logical operator which evaluates to true only when both the operands are true. 1

h) The value of switch expression must be of type _____. 1

i) The minimum number of times the do-while loop will be executed is _____. 1

j) A for loop with no test condition is known as _____ loop. 1

k) What is the output of the following code segment;

```
main()
{
int a=10, b=8, *p, *q;
p=&a;
q=&b;
*p=*p + *q;
*q=*p + *q;
printf("%d\n", a);
printf("%d\n",b);
}
```

2

ℓ) Define array. 1

m) Identify and correct the errors, if any, in the following array declaration and initialization statement.

int m[2,4]={(0,1,2),(8,6,5,8)}; 1

n) The process through which data are arranged according to their values is known as _____. 1

o) The memory occupied by the array double a[6][5] is _____. 1

p) The _____ string function returns the length of the string. 1

q) Strings in C are always terminated with a _____ character. 1

r) Each elements in a structure is called a _____. 1

s) The bitwise _____ operator is used to divide a data item by a power of 2. 1

2 a) Define flowchart. Draw the flow chart to find the area of a triangle when 3 sides are given. 6

b) Explain the structure of a C program. Also write a C program to swap the contents of two variables without using temporary variable. 8

c) With an example, explain the precedence and associativity of an operator. 6

3 a) Define function. Write a C program to find the sum, product and difference of two numbers using user defined functions, which perform the following:

i) Sum of two numbers.

ii) Product of three numbers.

iii) Difference of two numbers.

The function should receive the parameter from the main() and return the result to main() function. 7

b) List and briefly, explain the logical operators. Also write a C program to check whether the given integer is either zero or positive or negative. 6

c) Explain switch statement with general syntax. Write a C program that read a single character and check whether the given character is vowel or not. 7

4 a) Differentiate between while and do-while loops, with an example program for each. 7

b) What is a recursion? Write a C program to find the GCD of two numbers using recursion. 6

c) Define pointer. Explain how a pointer is declared and initialized. Also write a C program to calculate the area and volume of the cuboid using the function. The results are then to be displayed in the main() function (Pass by reference). 7

5 a) Explain how an one-dimensional array is declared and initialized? Write a C program to find the smallest and largest element in an array using pointer. Display the result using pointer variables only. 8

b) Define two-dimensional array. Explain memory layout of a two dimensional array. 5

c) Briefly, explain the arithmetic operations on pointers. Write a C program to read an array of N elements. Using pointer reverses the content of array elements and print the array. 7

6 a) What is a string? How strings are declared and initialized? Compare the following with respect to strings:
   i) strchr() and strrchr()
   ii) strcpy() and strncpy() 8

b) Explain the concept of structure with an example. Define a structure called STUDENT with following member USN, name and marks using this structure. Write a C program to read the details for N students and print. 7

c) Explain the C-bitwise operators. Write a C program to check whether the given integer number is even or odd using bitwise operator. 5

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