

B.Tech. (Main & COP)
Second Semester Examination, 2015-16
Computer Concepts & Programming in 'C'

Time: 3 Hours

Total Marks: 100

Note: Attempt all questions. Assume missing data if any.

1. Attempt any four parts of the following: (5x4=20)

- (a) Describe the classification of digital computers.
- (b) Discuss the various generations of computers.
- (c) What are the operations performed by operating system. Explain the architecture of Android operating system.
- (d) Write an algorithm for checking whether a given number is prime or not.
- (e) Differentiate between compiler and interpreter.
- (f) Do the following conversions:

- (i) $(975.55)_{10} \rightarrow (?)_2$
- (ii) $(246)_8 \rightarrow (?)_{10}$
- (iii) $(126)_8 \rightarrow (?)_2$
- (iv) $(110011.11)_2 \rightarrow (?)_8$
- (v) $(4567)_8 \rightarrow (?)_{16}$

2. Attempt any four parts of the following: (5x4=20)

- (a) Discuss various storage classes supported in C.
- (b) Describe the four basic data types in C. How could we extend the range of values they represent?
- (c) What will be the output of the following programs? Justify your answer

```
#include <stdio.h>
int main ()
{
    static int c = 5;
    printf("c=%d", C--);
    if(c>0)
        main ();
    return 0;
}
```

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```

(d) #include <stdio.h>
int main ()
{
    int x=3, z;
    z = x++ + x++;
    printf ("x=%d z=%d\n", x, z);
    return 0;
}

```

(e) Discuss Unary operator and short hand features in c.

(f) Write a program to convert an upper case alphabet into lower case.

3. Attempt any two parts of the following: (10x2=20)

(a) (i) Distinguish between break and continue with suitable example.

(ii) Write a program in 'C' to print the table of numbers 1 to 20.

(b) Write a program in 'C' to print the sum of the following series upto 10 terms.

$$S = x - \frac{x^2}{2!} + \frac{x^3}{3!} - \frac{x^4}{4!} + \dots$$

Find the value of factorials through a function call.

(c) (i) Differentiate between while and do-while loop.

(ii) Write a program to find the highest common factor of two given integers.

4. Attempt any two parts of the following: (10x2=20)

(a) (i) Describe the difference between character array and string.

(ii) Explain recursion with proper example.

(b) Write a program in C for the conversion of an inputted decimal number into binary.

(c) Write a program that inputs two arrays and saves sum of corresponding elements of these arrays in a third array and print them.

5. Attempt any two parts of the following: (10x2=20)

(a) (i) What do you understand by 'call by value' and 'call by reference'?

(ii) Write a function to find the transpose of a matrix. Assume that main () function supplies the matrix values to the function via 'call by reference'.

(b) Write a 'C' program that reads the name of a file and displays the contents of the file on the user screen. Also discuss various file opening modes.

(c) Write short notes on following:

(i) Standard C pre-processors

(ii) Macros