National Institute of Technology, Durgapur

B. Tech /Regular/ 2nd Semester/ Internal Assessment II / 2020-21

Introduction to Computing [CSC 01]

Marks: 25   **Time: 1:30 mins**

Question 1 is compulsory and answer any four questions from the rest. All the parts of a question should be grouped together under the question number   **[5 * 5 = 25]**

1. A number is super prime if it is prime and all the numbers obtained by slicing its one or more right most digits are also prime. Eg. 7331 is a prime, 733 is prime, 73 is prime and 7 is prime. What a function to check whether a given number is super prime or not.   (5)

2. (a) Write a C-program to find maximum among six numbers using ternary operators.   (3)

    (b) Given the following definitions, what is the value of a [1] [1]   (2)
                    int a [3] [2] = { {1 , 2}, { 3, 4}, {5} };

3. (a) An integer array of dimension 15 is declared in C program. Base address is 2000. If integer takes 2 bytes, what will be the location of 13 the element of the array?   (2)

    (b) Write the following algorithm without using 'go to' statement such that output will be the same
                                                                                                        (3)

                        1. Start
                        2. Read n
                        3. I =2
                        4. S = 0
                        5. S= S + 1/I
                        6. I = I + 2
                        7. If (I <= n) then **go to line 5**
                        8. else write S
                        9. End

4. (a) Write the following C program without using 'do…while' loop such that output will be the same.   (3)

```
#include <stdio.h>
  int main ()
 {
   int a = 15;
   do
   {
      printf ("value of a: %d \n", a);
      a = a + 1;
   } while (a < 20);
 }
```

(b) What will be the output produced by the following C code? (2)

```
#include<stdio.h>
int n= 7;
int r ( );
int main ( ) {
    for (r ( ); r ( ); r ( ))
    printf ("%d",  r ( ));
return 0; }

int r ( )
{
   return (--n);
}
```

5. Write a C-program to find the maximum, minimum and median of an array of n integers. (5)

6. (a) Identify errors, if any, in the following program segments and rewrite the incorrect code correctly. (2)

(i)   void f ( )
        {
           extern a;
           printf ("%d", a);
        }
        int a;

(ii)   getchar(ch);
        switch(ch) {
          case R || r:
              printf("Red");
          case G || g:
              printf("Green");
          case B || b:
              printf("Blue");
          case default:
               printf(" None");
                    }

(b) For the following program, determine the number of times, sum will be printed? (2)

```
#include<stdio.h>
int main ( )
{
  float sum = 0.0, j=1.0, i= 2.0;
  while (i/j > 0.0625) {
      j = j + j;
      sum = sum + i/j;
      printf ("sum is %f\n", sum); }
   }
```

(c) Consider the following declaration: (1)
        int a = 8, b = 5 , c = 3;
    Determine the value of the following expression:

$$++ a + -- b * c ++$$

2