Reg. No.									

MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL 576104

(Constituent College of Manipal University)

SEVENTH SEMESTER B.TECH (IT) DEGREE MAKE UP EXAMINATION, JAN– 2016
SUBJECT: PROGRAM ELECTIVE – III : SOFTWARE QUALITY ENGINEEERING– ICT 443
(REVISED CREDIT SYSTEM)

TIME: 3 HOURS **03/ 01/2016** **MAX. MARKS: 50**

Instructions to candidates

- Answer any **FIVE FULL** questions.
- Missing data, if any, may be suitably assumed.

1A. What is the difference between condition coverage and path coverage? With a suitable C-program explain the significance of Control Flow Graph (CFG) in path coverage and also, write the test cases associated with it.

1B. With a relevant example explain the MISRA-C rule,"**The value of an expression shall be the same under any order of evaluation that the standard permits**"

1C. Explain wire-frame prototyping in interactive user interface design process? (5+3+2)

2A. Discuss various challenges to software platform imposed by,
   i. Operating System
   ii. Hardware
   iii. Database

2B. Explain with a neat diagram the microkernel architectural pattern.

2C. Differentiate between
   i. Software Quality control
   ii. Software Quality Assurance. (5+3+2)

3A. Explain the security tactics for resisting, detecting and recovering attacks.

3B. Explain the following:
   i. Responsive web page design
   ii. Three elements for responsive web design.

3C. Discuss in brief the Service Oriented Architecture for a web application. (5+3+2)

4A. Explain the various levels of Maturity model with emphasis on the behaviours and characteristics of processes.

4B. What do you mean by clean code? Explain the features of clean code.

4C. With a relevant example explain the MISRA-C rule **"Tri-graphs shall not be used"**. (5+3+2)

5A. Write all MISRA-C rules corresponding to declarations and definitions in C-language with appropriate sample piece of code.

5B. Explain analysis phase and design phase of the UX process.

5C. Mention the different kinds of testing which can be performed for a 3-tier client-server system. (5+3+2)

6A. Identify the lines of code which violates MISRA–C rules in the following code. Justify the identified errors.

//PROGRAM I

```
#include "misra.h"
compr ( void ) /*name of the function*/
{
SI_32 a = 3;
SI_32 b = 3;
SI_32 c = 3;
    if ( ( a == 3 ) && b++ )
   {
      c = 1;
   }
   if ( ( a == 3 ) && ( b == 3 ) )
   {
      c = 2;
   }
   else
   {
      c = 3;
   }
   return c;
}
```

//PROGRAM II

```
#include "misra.h"
rmul ( void ) /*function name*/
{
SI_16 a = 3;
SI_32 i = 3;
SI_32 j = 3;
SI_32 c = 3;
   j = ( SI_32 ) i;
   j = i * ( SI_32 ) j;
   j = ( i + j ) * ( SI_32 ) a;

   c = j;

   return c;

}
```

6B. Explain various types of performance testing.

6C. Explain in brief the component and connector structure of software architecture. (5+3+2)

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