Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

II SEMESTER M.TECH (SOFTWARE ENGINEERING)

END SEMESTER EXAMINATIONS, APRIL 2019

SUBJECT: SOFTWARE QUALITY ENGINEERING

[ICT 5221]

REVISED CREDIT SYSTEM
(24/04/2019)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates

- Answer **ALL** questions.
- Missing data if any may be suitable assumed.

1A. How FMEA is used in 8D analysis? Illustrate with a diagram the steps to calculate the risk priority number in FMEA. **5**

1B. Identify the code which violates MISRA C rule for the following code snippets : **3**

(i)
```
if (( x=y) !=0)
 {
 foo();
 }
```

(ii)
```
flag=1;
 for (i=0; (i<5) && flag==1) ; i++)
 {
 flag=0;
 i=i+3;
 }
```

1C. What are the similarities and differences of Design FMEA versus Process FMEA. **2**

2A. Explain with a block diagram the four major elements of Software Configuration Management and the SCM process. **5**

2B. What are fundamental matrices and derived matrices of earned value analysis? **3**

2C. Calculate the error density for a requirements model that contains 15 UML diagrams as part of 85 overall pages of descriptive materials and if review uncovers 15 minor errors and 5 major errors. **2**

3A. Explain the role of different types of performance testing. **5**

3B.	Explain how early defect detection, requirements coverage and test case slip test metrics are computed?	3
3C.	Calculate the defect injection rate of an academic software application having 9KLOC for which 25 defects are reported during coding phase and 10 defects are reported during testing phase.	2
4A.	Explain the test plan reference structure provided by IEEE 829.	5
4B.	What is cloud testing? Explain the four main categories of cloud testing. Also, write the limitations and advantages of cloud testing.	3
4C.	What is defect removal effectiveness?	2
5A.	Explain the principles of user interface design.	5
5B.	What are the six principles on which security testing is based? Discuss.	3
5C.	What are two general approaches to test automation?	2