Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech(MMS)/SEM-2/MMS-208/2013

2013

SOFTWARE REUSE AND REQUIREMENT ENGINEERING

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* of the following. 5 × 14 = 70

1. What is software risk ? What are the types of Risk Management schemes ? Discuss on Risk Analysis and Risk Identification techniques. 2 + 4 + 4 + 4

2. a) What is a finite state machine (FSM) ? Explain in brief its features and uses.

   b) A producer process produces messages and puts them into a two-slot buffer. A consumer process reads message and removes them from the same buffer. If the buffer is full, the producer must wait until consumer process has emptied a slot. Similarly, if the buffer is empty, the consumer process must wait until the producer has inserted a message.

   c) Describe using FSM, the two processes and buffer separately and also in a single system that can describe the whole. 2 + 4 + 8

3. a) Define Petri net (PN) and explain its operations.

   b) Draw and explain suitable Petri net to describe conflict, starvation and deadlock. 3 + 5 + 6

4. What is Rational United Process (RUP) ? Brief the phases of RUP. How RUP is advantageous than conventional Software Engineering practice like Waterfall Model ? What is the importance of Computer Aided Software Engineering (CASE) ? What is the role of CASE repository ? 2 + 4 + 4 + 2 + 2

5. What is "Lack of Cohesion of Method" in object oriented software metrics ? What is method inheritance factor (MIF) and the attribute inheritance factor (AIF) in MOOD suite of metrics. Calculate The method hiding factor (MHF) and the attribute hiding factor (AHF) for the following piece of JAVA code : 2 + 4 + 8

```
class A {
int a;
protected void x () { }
public void y() { }
}
class B {
private int b;
char c;
public void w () { }
}
Class C extends A {
Int d;
Public void z ()
}
```

6. What is the significance of "Formal Requirement Specification" ? Explain the 'map' and 'sequence' data types and their operations in VDM-s1. Create and VDM-s1 specification of the following system : 2 + 4 + 8

```
        Stack
Stack : Element [ * ]
Push ( Element )
Pop () : Element
is Empty () : Boolean
```

7. What makes web-engineering a distinct discipline in software engineering ? Describe the WebE process framework. Describe the testing hierarchy in webE. 4 + 5 + 5

8. Write short notes on of the following :

   a) Quality Management

   b) Change Management.