Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/M.TECH(MSS)/SEM-2/MMS-208/2012

2012
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.

Attempt any *five* questions.   5 × 14 = 70

1. Find the probability of the following project to be completed between 18 to 26 days using PERT analysis. (Z table will be supplied)   14

Activity Preceding Activity		Completion Times (days)		
		Optimistic	Most Likely	Pessimistic
a	...	5	6	7
b	...	4	5	18
c	a	4	15	20
d	b, c	3	4	5
e	a	16	17	18

2. Define different MOOD suite metrics and calculate the values of inheritance and polymorphism factor of the following code.

6 + 4 + 4

| class A {
int j;
protected int k;
method f1() { }
method f2 () { }
} | class B extends A {
protected int i;
method f1() { }
method f3() { }
} | class C extends A {
int i;
private method f4() { }
methd f5 () { }
} |

3. What are the steps in model based testing ? What are the benefits of MBT ? Prepare State Transition Matrix and state Transition Diagram ad show what can be the test cases for the following system.

The phone can make from input of dialed numbers. It may wait for a time if the receiver is busy. It can reject or accept call on input from accept and reject button. It can put an active call on hold to receive another call with input from hold button. It can end a call with input from reject button.

3 + 3 + 8

4. Write VDM-SL to explain with example. 3 + 4 + 3 + 4

a) What are the differences between Set and Sequence

b) How to create and operate composite objects

c) Significance of invariant

d) How data model can be achieved using Map.

5. What are the factors that determine the cost of software ? Explain COCOMO model. 6 + 8
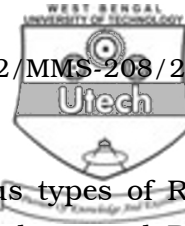
6. What is software risk ? What are the various types of Risk Management schemes ? Discus on Risk Analysis and Risk Identification techniques. 2 + 4 + 4 + 4

7. 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 the message and removes them from the same buffer. If the buffer is full, the producer must wait until the 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

8. 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

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