Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH (CSE)/SEM-6/CS-602/2011

2011
SOFTWARE 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.

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

i) Who proposed the Spiral Model ?

a) Boehm b) Winston Royce

c) Rumbaugh d) Booch.

ii) Cardinality in an ER Diagram refers to

a) number of attributes in an entity

b) the order of co-related entities

c) the number of sub-entities

d) degree of a relationship.

iii) If data from one module is used to direct the order of execution in another, then the coupling is known as

a) Stamp Coupling b) Data Coupling

c) Control Coupling d) Content Coupling.

iv) To achieve a good design, modules should hav

a) Weak cohesion Low coupling

b) Weak cohesion High coupling

c) Strong cohesion Low coupling

d) Strong cohesion High coupling.

v) Alpha-testing is done by

a) the development team

b) a friendly set of customers

c) the customer himself

d) none of these.

vi) Equivalence class partitioning is followed in the

a) white-box testing b) black-box testing

c) verification d) none of these.

vii) Functionality of software is tested by

a) white-box testing

b) glass-box testing

c) black-box testing

d) none of these.

viii) Which model is generally used for developing GUI of a system ?

a) Spiral

b) Prototyping

c) Iterative waterfall

d) Evolutionary.

ix) Normalization is used for reducing

a) atomicity b) redundancy

c) both (a) & (b) d) none of these.

x) Data hiding can be achieved by

a) Data Encapsulation

b) Data Overloading

c) Data Abstraction

d) Polymorphism.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. a) What are 'baselines' with respect to software configuration management ? 3

   b) What is the necessity of software c nfiguration management in developing a software ? 2

3. a) What are stress testing and volume testing ? 3

   b) Why is testing important ? 2

4. What are CASE tools ? How re they helpful in software development life cycle ? 3 + 2

5. Distinguish between software verification and software validation. When during the software life cycle verification and valid tion performed ? 3 + 2

6. Which life cycle model would you follow for developing software for each of the following applications ? Justify your selection of model with the help of an appropriate reason.

   a) A Game

   b) A Text editor $2\frac{1}{2} + 2\frac{1}{2}$

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Design a : White Box' Test suite for the following code :

```
int gcd (int x, int y)
{ while ( x ! = y )
{ if ( x > y )
        x = x – y ;
else
    Y = y – x ;
retwen x
}
```

The suite should include control flow graph, independent paths, cyclomatic complexity (using two different techniques). Define cyclomatic complexity. 8

b) What do you understand by software reliability ? 1

c) Define the following terms : MTTF, MTTBR, ROCOF. 6

8. a) Explain when and why you will use PERT charts and when and why will you use Gantt charts while you are project manager. 4

b) Consider a software project with 5 activities T1 to T5. Duration of 5 activities in weeks are 3, 2, 3, 5, 2 respectively. T2 and T4 can start when T1 is complete. T3 can start when T2 is complete. T5 can start when both T3 and T4 are complete.

Draw activity network for the project. When is the latest start date of the activity T3 ? What is the float of the activity T4 ? Which activities are on the critical path ?

Draw the Gantt chart also 3 + 1 + 1 + 3 + 3

9. a) It is estimated that there will be 70 errors in a software. During testing 25 errors have been xperienced. Calculate failure intensity with a given value of $\phi = 0{\cdot}03$ using Jelinski-Moranda model. What will be the failure intensity after experiencing 50 errors ? What are cosmetic and transient errors ? 3 + 2 + 3

b) Why is risk analysis imp rtant ?

What is the d fference between a 'Known' risk and 'Predictable risk ? 2 + 5

10. a) Distinguish between a Data Flow Diagram and a flow cha t. 4

b) What is SRS ? Briefly explain the characteristics of a good SRS. 2 + 3

c) What is meant by stub ? What is a driver ? In which testing are they required ? Explain briefly. 6

11. Write short notes on any *three* of the following : 3 × 5

a) Feasibility study

b) Waterfall Model

c) Quality Assurance

d) Decision tree and Decision table

e) Black Box testing.