Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(ECE)/SEM-8/EC-803A/2013

2013
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 × 1 = 10

   i) An example of single variable heuristic cost estimation model is

      a) Halstead's software science

      b) basic COCOMO model

      c) intermediate COCOMO model

      d) complete COCOMO model.

   ii) The chain of activities that determines the duration of the project is

      a) Duration path

      b) Critical path

      c) Linearly independent path

      d) None of these.

iii) Data processing programs are considered as
   a) utility programs b) system programs
   c) application programs d) none of these.

iv) To achieve good design which quality a module should have ?
   a) High cohesion, low coupling
   b) Low cohesion, low coupling
   c) High cohesion, high coupling
   d) Low cohesion, high coupling.

v) Compilers and linkers are
   a) Organic software
   b) Embedded software
   c) Semi-detached software
   d) none of these.

vi) An integration testing approach, where all the modules making up a system are integrated in a single step is known as
   a) top-down integration testing
   b) bottom-up integration testing
   c) big-bang integration testing
   d) mixed integration testing.

vii) Activity network is used to
   a) decompose a given task set
   b) project monitoring and control
   c) to show different activities; duration and interdependencies
   d) allocate resources to activities.

viii) If the project size is same then development time is maximum for
   a) Organic
   b) Embedded
   c) Semi-detached
   d) Impossible to determine.

ix) Data processing programs are considered as

a) utility programs b) system programs

c) application programs d) none of these.

x) Which of the following estimations is carried out first by a project manager during project planning ?

a) estimation of cost

b) estimation of the duration of the project

c) project size estimation

d) estimation of development effort.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Define product and process. What are the different process models ? Why are models needed ?
3. Mention different team structures and their usage in a software company.
4. What do you mean by UML ? Describe dynamic and static modelling in UML.
5. Explain DFD with an example.
6. What is SRS ? What are the characteristics for good SRS ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) What is risk ? Briefly describe the categories of risk.

   b) What do you mean by software quality ? State and explain the McCall's quality factors.

   c) Describe sequence diagram with example. 5 + 5 + 5

8. a) What is unit testing? What are the errors found during unit testing ?

   b) What are code walk-through and code inspection ?

   c) What is software reliability ?

   d) Explain Black-box testing and White-box testing.

   e) What is integration testing ?

   (2 +1) + (2 + 2) + 2 + (2 + 2) + 2

9. a) What is cyclomatic complexity ? How can it be calculated ?

   b) Consider the code and calculate cyclomatic complexity.

```
Public void howcomplex() { int i=20;
    While (i<10{
       System.out.printf("i is %d", i);
       If (i%2==0) {
          System.out.println("even");
       }else{
          System.out.println("odd");
       }
    }
 }
```

   c) What is boundary value analysis ?

   d) Compare top-down and bottom-up integration testing strategy.

   e) What is acceptance testing ? 3 + 5 + 2 + 3 + 2

10. a) Explain the phases of spiral model with advantages and disadvantages.

   b) Why is prototyping model used ?

   c) State the advantages and disadvantages of Waterfall model. 8 + 3 + 4

11. a) Explain the COCOMO model.

   b) Write notes on the following :

   (i) Cohesion and Coupling

   (ii) Petri-net model

   (iii) Stub and Driver. 6 + (3 × 3)