Name : ……………………………………………………

Roll No. : …………………………………………………

Invigilator's Signature : ………………………………

CS/B.TECH(ECE-N)/SEM-8/EC-803A/2010
2010
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)

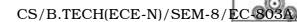1. Choose the correct alternatives for the following :

                                    $10 \times 1 = 10$

   i)   Which one is not a Risk Management Activity ?

   a)   Risk Assessment   b)   Risk Control

   c)   Risk Generation   d)   None of these.

   ii) In COCOMO model, if project size is typically 2-50 KLOC, then which mode is to be selected ?

   a)   Organic   b)   Semi-detached

   c)   Embedded   d)   None of these.

   iii) Which one is a quality attribute ?

   a)   Availability   b)   Reliability

   c)   Security   d)   All of these.

8213   [Turn over

iv) If user participation is available, which model is to be chosen ?

    a) Waterfall Model   b) Spiral Model

    c) Prototype Model   d) RAD Model.

v) Which one is not a measure of Software Science Theory ?

    a) Vocabulary   b) Volume

    c) Level   d) Logic.

vi) Acceptance Testing is done by

    a) Developers   b) Customers

    c) Testers   d) all of these.

vii) Mutation Testing is related to

    a) Fault Seeding   b) Functional Testing

    c) Fault Checking   d) none of these.

viii) Perfective Maintenance refers to enhancement

    a) making the product better

    b) making the product faster and smaller

    c) making the product with new functionalities

    d) all of these.

ix) In function Point Analysis, number of complexity adjustment factors is

    a) 10   b) 20

    c) 14   d) 12.

x) After the finalization of SRS, we may like to estimate

    a) size   b) cost

    c) development time   d) all of these.

GROUP – B

(Short Answer Type Questions)

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

2. What types of risks are usually associated with software project ? Describe them in brief.　　2 + 3

3. Why is COCOMO called Heuristic Estimation Technique ?

   Assume that the size of an organic type software product has been estimated to be 48000 lines of source codes. Assume that the average salary of software engineers is Rs. 18,000 per month. Determine the effort required to develop the software product, total cost and the nominal develop time.　　1 + 4

4. What is acceptance testing ? Compare Top-down and Bottom-up integration testings.

5. Define software 'Reliability' and 'Availability'.

   Discuss the metrices used for specifying software reliability and availability.　　2 + 3

6. What do you understand by Data Flow Diagram (DFD) ? Explain briefly.

GROUP – C

(Long Answer Type Questions)

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

7. Write short notes of any *three* of the following :　　3 × 5
   a) White Box Testing
   b) Black Box Testing
   c) Risk Identification
   d) Coupling and Cohesion
   e) Project Staffing.

8. a) What do you mean by requirement analysis ?
   b) Explain the phases of Spiral Model with advantages and disadvantages.
   c) Explain the phases of Rapid Prototype Life Cycle Model with advantages and disadvantages.
   d) What do you mean by Software Products ? 3 + 5 + 5 + 2

9. a) Draw the control flow graph for the following. Also find the number of independent paths

```
int fact ( int n )
{
    int fact = 1;
    if ( x = = 1 )
        return ( 1 );
    else
        for ( i = 1; i ≤ n; i ++ )
            fact = fact*I;
        printf ( "factorial = %d", fact );
        return ( fact );
}
```

b) By considering the following table determine the effort required to develop the software project and the nominal development time :

Project	Size (KLOC)	Cost (programmer-months)
a	30	84
b	5	14
c	100	280

5 + 2 + 8

10. a) What are risk identification, estimation and mitigation ?

b) What are the differences between code reviews and code walk through ?

c) What are the different types of team structures of a software project ? Describe the type of software projects suitable for the team structure.

d) Critically comment on a correct software is not reliable.

3 + 3 + 5 + 4

11. a) What are the differences between prototype model and evolutionary model ?

b) Describe about Trojan horses and Spyware.

c) Compare and contrast between integration testing and system testing.

d) How many types of project are present according to COCOMO ? Give example of each.

e) What are cohesion and coupling ?   2 + 4 + 3 + 3 + 3

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