Name : ……………………………………………………

Roll No. : …………………………………………….……….

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

CS/B.TECH.(CSE)/SEM-6/CS-602/2012

2012
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 a ternatives for the following :

                                                         $10 \times 1 = 10$

   i)   Tracking th   correspondence between   the   design
        component and the SRS is known as

        a)   Availability   b)   Traceability

        c)   Maintainability   d)   Reliability.

   ii) When the two bubbles are interconnected directly, it is
        referred as

        a)   Serial DFD   b)   Direct DFD

        c)   Synchronous   d)   Balanced DFD.

   iii) DFD balancing means

        a)   Balancing of weight of processes

        b)   Must match the total number of bubbles

        c)   Must match the data flow at the next level of DFD

        d)   none of these.

6101   [Turn over

iv) System Testing performed by a friendly set of customers is called

    a) Alpha Testing   b) Beta Testing

    c) Performance Testing   d) Usability Testing.

v) Function Point describes

    a) The SRS document

    b) The test plans

    c) The functional decomposition

    d) The size of a software product di ectly from its specification.

vi) The potential risks are best detected by

    a) Spiral Model   b) Waterfall Model

    c) Incremental Mod l   d) Prototyping Model.

vii) The most desirab e form of cohesion is

    a) sequential cohesion   b) procedural cohesion

    c) coincidental cohesion   d) functional cohesion.

viii) Software testing is the

    a) process of demonstrating that errors are not present

    b) process of establishing confidence that a program does what it is supposed to do

    c) process of executing a program to show that it is working as per specifications

    d) process of executing a program with the intent of finding errors.

CS/B.TECH.(CSE)/SEM-6/CS-602/2012

ix) The best type of coupling is

a) Coincidental

b) Logical

c) Informational

d) Functional.

x) Big Bank Integration testing is useful for projects with

a) smaller number of modules

b) large number of modules

c) average number of modules

d) None of these.

GROUP – B

(Short Answer Type Questions)

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

2. a) Explain Data-Dictionary.

b) What is integration testing ? Explain with suitable example.

c) What is layered architecture ?   2 + 2 + 1

3. a) What are the various classifications of failures ? Briefly explain it.

b) Briefly explain the basic issues of Software Reuse.

c) Define Software Quality.   2 + 2 + 1

6101   3   [Turn over

CS/B.TECH.(CSE)/SEM-6/CS-602/2012

4. Draw the CFG of the following code segment and find McCabe Cyclomatic complexity by applying all the methods.

```
test(int b,int c,int x)
{
    b : = c + 5;
        While(x ! =1) {
        x = x -1;
        if ( x = 7) x : = 8;
            else test (x, 3, x - 1) ;
                    }
}
```

2 + 3

5. What are cohesion and coupling ? Discuss different kinds of cohesion. 2 + 3

6. a) If a module has logical cohesion, what kind of coupling is this module likely o have with other modules ? Justify your answer. 3

   b) Why is SRS document known as black box specification of a system ? 2

7. a) Define with examples the different categories of software development projects according to the COCOMO estimation model. 3

   b) The size of an organic type software system to be developed by SCV Consultancy Services has been estimated to be 200 KLOC. Determine the effort required to develop the software system. 2

CS/B.TECH.(CSE)/SEM-6/CS-602/2012

GROUP – C

(Long Answer Type Questions)

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

8.   a)   Explain Meta Model.   3

     b)   A Library Membership Software (LMS) should support the following three options :

     (i)   New member

     (ii)   Renewal

     (iii) Cancel membership.

     When the new member option is selected, the software should ask for the member's name address and phone number. If proper inform tion is entered, the software should create a membership record for the new member with membership id and print a bill for the annual membership cha ge and the security deposit payable. If the renewal opt on s chosen, the LMS should ask for the membership d. If the membership id is valid, then the membership expiry date in the membership record should be updated and the annual membership charge payable by the member should be printed. If the membership id is not valid, an error message will be displayed. If the cancel membership option is selected, the system should ask for the membership id again. If the membership id is valid, then the membership cancellation process can be executed and a cheque for the balance amount due to the member is printed and membership record will be deleted.

     Draw Decision Tree and also implement Decision Table for the system.   3

6101   5   [Turn over

CS/B.TECH.(CSE)/SEM-6/CS-602/2012

c) Explain unit testing, system testing and acceptance testing. 6

d) What is coding standard ? What are the contents of coding header ? 2 + 1

9. a) Explain different types of 'performance testing'. 3

b) Explain 'equivalence class partitioning' with an example.

3

c) Differentiate between 'code walkthr ugh' and 'code inspection'. 2

d) A software product's development cost is Rs. 50,000 and total size is 125 KLOC During maintenance, to correct the errors, s me coding portions has been deleted and that size is 15 KLOC. After correction, a new perfection module will be implemented and for this module extra 55 KLOC size of code has been added. Calculat the software product's maintenance cost. 7

10. a) Who are the different categories of users of the SRS document ? What are their expectations from the SRS document ? 5

b) What are the advantages of SRS document ? What are 'test data' and 'test vector ? 3 + 2

c) What are the different types of team structure followed in software projects ? Discuss them briefly. 5

CS/B.TECH.(CSE)/SEM-6/CS-602/2012

11. a) What are the differences between fault, failure and error ? 3

 b) Write a *C* function to find the maximum of three integer numbers. Now draw the control flow graph for that *C* function. Also find its cyclomatic complexity using possible methods. 1 + 2 + 3

 c) Write down two differences between a structure chart and a flow chart. 2

 d) Distinguish between high-level and detailed designs. What documents should be produced on completion of high-level and detailed designs respectively ? 2 + 2

12. a) Draw the context diagram and Level 1 DFD for the following Mail Order Processing System. 7

 "HMV Records is a mail-o der company that distributes CDs and tapes at discount prices to record club members. When an order processing clerk receives an order form, he r she verifies that the sender is a club member by checking the member file. If the sender is not a membe , the clerk returns the order along with a membership application form. If the customer is a member he clerk verifies the order item data by checking the Item file. Then the clerk enters the order data and saves it to the Daily Order file. The clerk also prints an invoice and shipping list for each order, which are forwarded to order fulfilment".

 b) Explain when you use the PERT charts and when to use Gnatt charts, if you were to perform the duties of a project manager. 2

 c) How are the concepts of Cohesion and Coupling useful in arriving at good software design ? 6

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