Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS / B.TECH (IT) / SEM-6 / IT-601 / 2011

2011

SOFTWARE ENGINEERING AND PROJECT MANAGEMENT

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
(Objective Type Questions)

1. Answer the following questions :

   A. Write true / false : $5 \times 1 = 5$

      i) Quality Assurance is applicable in product.

      ii) MTTF is related with non-repairable system.

      iii) Step Function model is unrealistic in nature.

      iv) Code walk through is done by development team.

      v) Testing objective have no link with SRS.

   B. Choose the correct alternatives for the following : $5 \times 1 = 5$

      vi) MTBF is measured in terms of

      a) day b) year

      c) hours d) minutes.

      vii) DMAIC is related with

      a) ISO b) CMM

      c) ISO-9001 d) Six-Sigma.

viii) Performance testing is a type of
  a) unit testing
  b) integration testing
  c) runtime operation testing
  d) system testing.

ix) If the project size is same then the development time is maximum in case
  a) embedded
  b) semidetached
  c) organic

x) Project planning does not include
  a) Risk identification b) Design
  c) Cost estimation d) Configuration.

GROUP – B
(Short Answer Type Questions)

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

2. What is performance testing ? Is it a black box testing technique ? Explain. 2 + 3

3. Consider the following program segment :

```
if ( A > B )
    {
    if ( A > C )
    printf ( "%f \n", A );
    else
    printf ( "%f \n", C );
    else
        {
        if ( C > B )
        printf ( "%f \n", C ) ;
        else
        printf ( "%f \n", B ) ;
        }
}
```

Design the test cases using boundary value.

4. What is formal technical review ? List the objectives of FTR. 2 + 3

5. Differentiate :

   i) Walkthrough from inspection ,

   ii) Verification from validation. 2½ + 2½

6. Explain the use of prototyping in product development.

GROUP – C

(Long Answer Type Questions)

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

7. a) What are the advantages of function points over the size metric of LOC ? 3

   b) Distinguish between static and dynamic testing. 4

   c) What is symbolic execution ? Consider the following function :

```
function max ( x, y, z : integer) : integer;
begin
    if x ≤ y then
        max = y
    else
        max = x ;
    if max < z then
        max = z;
    end;
```

   5

   Draw a symbolic execution tree for the above function

   d) What is the goal of mutation testing ? 3

8. a) List the steps for deriving the path coverage based test cases of a program. 4

   b) Compare top-down and bottom-up Integration testing. 4

   c) What is Acceptance testing ? 3

   d) Distinguish between Alpha testing and Beta testing. 4

9. a) Define Software 'Reliability' and 'Availability'. 3 + 3

   b) Discuss the metrics used for specifying software reliability and availability. 5

   c) What is the difference between the basic and logarithmic model of reliability proposed by Musa ? 4

10. a) Discuss the different types of modules in a system. 5

    b) What is a structure chart's role in physical information system design ? 4

    c) Define Usability. How can it be measured ? 3 + 3

11. a) What is algorithmic cost estimation ? 2

    b) Consider a project to develop a full screen editor. The sizes for the major modules are estimated to be 4 KLOC, 2 KLOC, 1 KLOC, 2 KLOC and 3 KLOC. Use COCOMO to determine cost and schedule estimates for different phases. Assume that the significant cost drivers adjustment factors to be 1·216. 6

    c) Discuss briefly the standard ways in which the software organization and teams can be structured. 7

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