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CS/ME/M.Tech/SEM-2/PGSE-204/2011

2011

TESTING & QUALITY 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

(Multiple Choice Type Questions)

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

   i) A s/w product possesses the characteristic of ..... to the extent that it facilitates to update it to satisfy new requirements.

   a) Testability b) Efficiency

   c) Security d) Maintainability.

   ii) Reliability metric ..... is the likelihood that the system will fail when a service request in made.

   a) ROCOF b) POFOD

   c) MTTF d) MTTR.

   iii) ..... failure occurs only for certain i/p values.

   a) Permanent b) Transient

   c) Recoverable d) Cosmetic.

iv) In ..... integration tests all the modules of the system are simply put together and tested.

a) Big Bang b) Top down

c) Bottom up d) Mixed.

v) ..... assumes and computes the various characteristics of a s/w product without executing it

a) static testing tool b) static analysis tool

c) dynamic testing tool d) dynamic analysis tool.

vi) Cyclomatic complexity of a CFGis an estimate of

a) linearly independent path

b) decision structure

c) none of these

d) both (a) and (b).

vii) The main objective of ..... is to discover the algorithmic and logical errors of the code.

a) Walkthrough b) Inspection

c) Clean room testing d) Formal verification.

viii) ..... carries out a post execution analysis and produces report.

a) static analysis tool b) dynamic analysis tool

c) static testing tool d) dynamic testing tool.

ix) ..... is concerned with phase containment of errors.

a) Validation b) Verification

c) Inspection d) None of these.

x) In CMM level ..... key process areas include integrated s/w management and peer reviews.

a) 3 b) 4

c) 2 d) 5.

GROUP – B
(Short Answer Type Questions)

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

2. What are the reliability specifications ? Explain the features of reliability growth modelling. 2 + 3
3. Distinguish between static and dynamic analysis tools with suitable examples.
4. What do you mean by s/w quality ? Write down the major attributes of quality in Boehm's model. 2 + 3
5. How does pair programming ensure quality in formal technical review ?

GROUP – C
(Long Answer Type Questions)

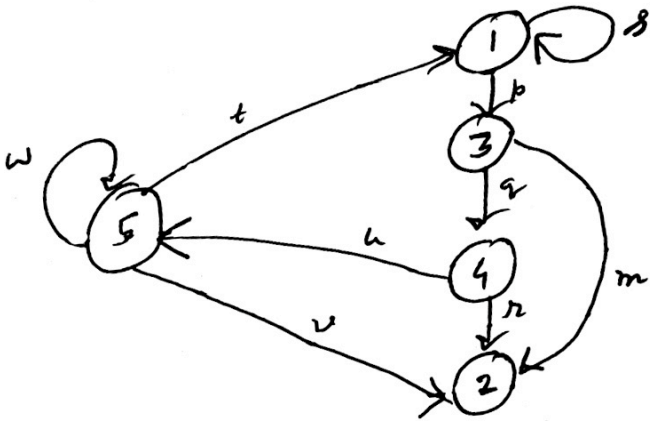
Answer any *three* of the following. 3 × 15 = 45

6. a) Write down the major feature of Integration testing.
   b) "Quality is a non-functional requirement for a s/w product which is not called by customer contract". Explain.
   c) Why are reliability metrics units of measurement of system reliability ? 5 + 5 + 5
7. What are the objectives of testing ? Draw CFG and find V (G) of the following code insertion (int a [], int p [], int n)

```
{
    int i, j, k;
    for (i = 0; i < = n; i++) p [i] = i;
    for (i = z; i < = n; i++)
    {
        k = p [i]
        j = 1;
        while (a [p [j – 1] ] > a [k] ) { p [j] = p [j – 1]; j – –; }
        p [j] = k;
}   }
```

Draw the connection matrix of the same. Distinguish between verification and validation. 5 + 6 + 4

8. Write down the major features of static testing tool. Find V (G) and graph matrix [A] graph matrix [A ∞ A], graph matrix [A ∞ A∞ A]



Prove V (G) of a disconnected graph is sum of V (G) of its components with an example. 5 + 7 + 3

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

a) ISO *vs* SIE-CMM

b) Structured walkthrough

c) Equivalence class partitioning in BBT

d) Cause effect graphing technique

e) TQM.