



ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE - 2009
SOFTWARE ENGINEERING & TQM
SEMESTER - 4

Time : 3 Hours]

[Full Marks ; 70

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10
- i) Resource metric measures
- a) resources the development is going to consume
 - b) resources the development is going to create
 - c) resources available for the development
 - d) effectiveness of available resources.
- ii) Which of the following is able to measure the size of the software without its source code ?
- a) FPA
 - b) IFM
 - c) Cyclomatic complexity
 - d) none of these.
- iii) Minimum cyclomatic complexity of any compilable code can be
- a) - 1
 - b) 0
 - c) 1
 - d) none of these.
- iv) The capability maturity model is defined by
- a) Software Engineering Institute
 - b) IEEE
 - c) ISO
 - d) none of these.



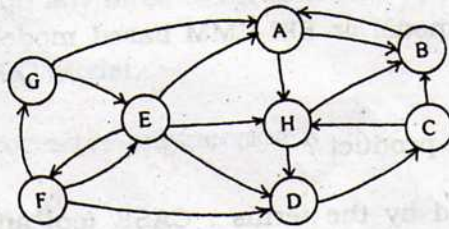
- v) Stress testing is
- a) done for boundary values
 - b) done for measuring performance
 - c) done to determine the load under which it fails
 - d) none of these.
- vi) State-chart diagram is used to realize the
- a) structural view
 - b) behavioural view
 - c) implementation view
 - d) environmental view.
- vii) Recommended development process model for developing a compiler is
- a) prototype
 - b) spiral
 - c) classical waterfall model
 - d) evolutionary model.
- viii) Which is desirable ?
- a) High coupling, low cohesion
 - b) High coupling, high cohesion
 - c) Low coupling, low cohesion
 - d) Low coupling, high cohesion.
- ix) Acceptance testing is
- a) running the system with live data by the actual user
 - b) making sure that the new programs do in fact process certain transactions according to specifications
 - c) checking the logic of one or more programs in the candidate system
 - d) treating changes made in an existing or a new system.
- x) COCOMO II has how many stages ?
- a) 2
 - b) 3
 - c) 4
 - d) 5.

**GROUP - B****(Short Answer Type Questions)**

Answer any *three* of the following questions.

3 × 5 = 15

2. Explain the different types of cohesion that exist within a module. 5
3. What is Henry and Kafura's information flow metric ? Compute information flow metric for all the nodes of the following diagram (considering internal complexity of each module is equal to one) : 2 + 3



4. Explain the Boehm's method for the estimation of software maintenance cost. 5
5. What is stress testing ? Why is stress testing applicable to only certain types of system ?
6. What, according to you, is a quality software product ? State the types of failure with respect to a software product.

GROUP - C**(Long Answer Type Questions)**

Answer any *three* of the following questions.

3 × 15 = 45

7. a) Identify the criterion for finding actors and use cases. 2 + 2
- b) Explain the following use case relationships with examples : 3
- i) Generalization
 - ii) Includes
 - iii) Extends.
- c) Draw a sequence diagram and the corresponding collaboration diagram for 'Issue Item' in a library management system. 4 + 4



8. a) What do you mean by Object Oriented Analysis and Design process and what are the different activities involved in that process ? Explain with diagram. 5
- b) What are the differences between Object Oriented and Function Oriented designs ? 3
- c) Draw a use case diagram for hospital management system. 7
9. a) State the McCall's quality factors. 3
- b) Suppose as the president of a company, you have the choice to either go for ISO 9001 base quality model or SEI-CMM based model. Which one would you prefer and why ? 5
- c) What is a legacy software product ? 1
- d) What do you understand by the terms : CASE tool and CASE environment ?
What are the main advantages of using a CASE tool ? 3 + 3
10. a) Draw the CFG for the function named find-maximum. From the CFG determine its cyclomatic complexity : 2 + 2
- ```

{
int max;
 if(i>j) then
 if(i>k) then max=i;
 else max=k;
 else if(j>k) max=j;
 else max=k;
 return(max);
}

```
- b) Do you agree with the following statement :  
"System testing can be considered as a pure black box test."  
Justify your answer. 3
- c) What do you understand by the term 'regression testing' ? When is regression testing done ? 2 + 2
- d) What is meant by code walk-through ? List the important types of errors checked during code walk-through. 2 + 2



11. a) A program reads the lengths of the sides of a triangle. The program prints a message that states whether the triangle is scalene, isosceles or equilateral. Develop a set of test cases that will adequately test this program. 5
- b) Use the COCOMO II model to estimate the effort required to build software for a simple ATM that produces 12 screens, 10 reports and will require 80 software components. Assume average complexity and average developer/environment maturity. Use the application composition model with object points. 10
12. Write short notes on any *three* of the following : 3 x 5
- a) V-shape SDLC model
  - b) Business process re-engineering
  - c) Version control
  - d) Alpha testing and beta testing
  - e) SQA plan
  - f) Putnam's resource allocation model.

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END