SOFTWARE ENGINEERING & TQM (SEMESTER - 4)

CS/MCA/SEM-4/MCA-401/09

1. .....
Signature of Invigilator

2. .....
Signature of the Officer-in-Charge

Reg. No. | | | | | | | | | | | | | | |

Roll No. of the Candidate | | | | | | | | | | | | | | |

CS/MCA/SEM-4/MCA-401/09

ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009

SOFTWARE ENGINEERING & TQM (SEMESTER - 4)

Time : 3 Hours] [Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. a) In **Group – A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question.**
   b) For **Groups – B** & **C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group – B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

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FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

	Group – A										Group – B			Group – C				
Question Number																	***Total Marks***	***Examiner's Signature***
Marks Obtained																		

.....
Head-Examiner/Co-Ordinator/Scrutineer

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GROUP – A

(Multiple Choice Type Questions)

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

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 in 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 screena, 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 × 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.

END