

UNIVERSITY OF PUNE
[4364]-793
B. E. (IT) Examination 2013
Software Testing and Quality Assurance
(2008 course)

[Total No. of Questions:12]

[Total No. of Printed pages :3]

[Time : 3 Hours]

[Max. Marks : 100]

Instructions :

- (1) Answer question number 1 or 2, 3 or 4, 5 or 6 from section I.
- (2) Answer question number 7 or 8, 9 or 10, 11 from section II.
- (3) Answers to the two sections should be written in separate answer books.
- (4) Neat diagrams must be drawn wherever necessary.
- (5) Figures to right indicate full marks.
- (6) Assume suitable data, if necessary.

SECTION I

Q1) a) Differentiate any two in detail:

[10]

i) Verification and validation.

ii) Load and stress testing.

iii) Test plan and Test strategy.

iv) Defect severity and defect priority.

b) Define Test Adequacy criteria Is complete testing possible? When to stop testing? Explain the difference between random testing and testing using error guessing. [8]

OR

Q2) a) Explain in short five methods of System Level Testing.

[10]

b) Define any four of the following terms:

[8]

i) Failure

ii) Test Oracle

iii) Test Bed

iv) Defects

v) Errors

vi) Software Quality

Q3) a) Draw and explain the various stages of Software Testing Life Cycle.[8]

b) What is control flow graph? How is it used in white box testing? [8]

How is the cyclomatic complexity value useful to the tester?

OR

Q4) a) Develop black box test cases for an ATM system which reads the [8]
amount to be withdrawn from the users account. The amount has to be a multiple
of Rs. 100 and be less than Rs. 10,000. List any assumptions you make and label
equivalence classes and boundary values that you use.

b) Based on the following procedure, identify two test conditions for each [8]
of the following:

i)Statement coverage.

ii)Decision coverage.

iii)Condition coverage.

iv)Multiple condition coverage.

Procedure liability (age, gender, married, premium)

begin premium:=500; if ((age<25) and (gender= male) and (not married)) then

premium:=premium +1500; else if ((married or (gender= female)) then

premium:=premium -200; if ((age<45) and (age<65)) then

premium :=preminum-100;) end;

Q5) a) Define measurement scale and explain the Nominal, Ordinal, Interval[8]
and Ratio scales of measurement.

b) Explain in short the following metrics used in software testing: [8]

i) Test coverage

ii) Test Execution status

iii) Defect density

iv) Defect leakage.

OR

Q6) a) Write short notes on: [8]

i)Product quality metrics.

ii)In-process quality metrics.

b) Explain GQM technique in detail. Draw a GQM tree for identifying[8]
software measures.

Section-II

Q7) a)What are the outcomes of SQA? List all different quality concepts?[8]

b) Illustrate with example the use of following techniques in improving quality[8]

- i) Code inspection
- ii) Project planning

OR

- Q8) a) Explain Ishikawa's Seven basic tools. [8]
- b) List and explain software reliability attributes. [8]
- Q9) a) What is CMM? Explain all the levels. [10]
- b) Explain Software Project tracking & oversight (SPTO) KPA of CMM level II in detail. [6]

OR

- Q10) a) List all the requirements of ISO 9000 and ISO 9001. [8]
- b) What is Six Sigma? Explain terms DMAIC & DMADV with reference to Six Sigma. [8]
- Q11) Write short notes on any three [18]
- a) Software Configuration Management (SCM)
- b) Software Product Engineering (SPE)
- c) Quantitative Process management (QPM)
- d) Process Change Management (PCM)