Total No. of Questions : 12]

SEAT No. :

P1782

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[4859]-183

B.E. (Information Technology)

SOFTWARE TESTING AND QUALITY ASSURANCE

(2008 Course) (Semester-I) (414442)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

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 or 12 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 the right indicate full marks.***
6) ***Assume suitable data, if necessary.***

SECTION-I

Q1) a) Define the following terms: **[8]**

i) Failures.

ii) Test bed.

iii) Errors.

iv) Software Quality.

b) What are different levels of testing? Which software components are most suitable for unit testing and why? **[8]**

OR

Q2) a) Explain unit test planning in detail. **[8]**

b) Explain difference between following: **[8]**

i) Integration testing and incremental integration testing.

ii) Load and stress testing.

Q3) a) Explain in detail different functions/responsibilities to be handled in a testing life cycle or process. **[8]**

b) Draw and explain software defect life cycle. **[8]**

OR

P.T.O.

Q4) a) Explain Test case design strategies. Assume you purchased new music system with two speakers. How would you test it? Develop black box test cases for the android mobile phone with pass/fail criteria. **[8]**

b) Why mutation testing called fault is based test approach? Explain with an example. **[8]**

Q5) a) Explain GQM technique in detail. Draw a GQM tree for identifying software measures. **[8]**

b) Explain the importance of the metric-percentage delinquent fixes in context with software maintenance. Calculate percentage delinquent fixes-if number of fixes delivered in a specific time are 40 and the number of fixes the exceeded the response time criteria by severity level are 80. **[10]**

OR

Q6) Spell Check Specs: The checker accepts as input a document file and an optional personal dictionary file. The checker lists all words not contained in either of these files. The user can query the number of words processed and the number of spelling errors found at any stage during processing. **[18]**

	Weighting Factor		
Item	Simple	Average	Complex
External Inputs	3	4	6
External Outputs	4	5	7
External Inquiries	3	4	6
External Files	7	10	15
Logical Internal Files	5	7	10

There are 14 technical complexity factors out of that two factors has rating as 5 and six factors has rating as 3 and remaining six has rating as 0 on a scale of 0 to 5. Where 0 means irrelevant, 3 means average and 5 means that it is essential to the system being built.

Based on the above perform the following:

a) Draw pictorial representation of the system for FP analysis.

b) Identify internal logical files, external I/P, O/P, Inquiries and Files.

c) Calculate Function Count (FC).

d) Calculate Technical Complexity Factor (TCF).

e) Calculate Function Point (FP).

f) Explain the importance of FP in software testing.

SECTION-II

Q7) a) What are the goals of SQA activity? How does SQA ensure the quality of the product? **[8]**

b) List Ishikawa's Seven Basic Quality Tools. Explain their importance in Quality Management. Explain Pareto Chart and Cause and Effect diagram with example. **[10]**

OR

Q8) a) Explain the following software reliability quality attributes: **[10]**

i) Usability.

ii) Maintainability.

iii) Portability.

iv) Integrity.

v) Interoperability.

b) Explain the following terms w.r.t. software quality: **[8]**

i) Quality.

ii) Cost of Quality.

iii) Quality Assurance.

iv) Quality control.

Q9) a) What are the requirements of ISO 9000 and ISO 9001. **[8]**

b) ISO 9000 / 9001 ensures production of good quality software. Justify. **[8]**

OR

Q10)a) Draw and explain the PDCA cycle in detail with reference to ISO 9000:9001. **[8]**

b) How does the performance improve with Six Sigma? Explain the methodology DMAIC with reference to Six Sigma. **[8]**

Q11)a) Explain the goals and activities performed in the following KPA's: **[8]**

i) Organization Process Definition.

ii) Training Program.

b) How is defect prevention and process change management brought into practice? **[8]**

OR

Q12)a) Draw and describe the various levels of CMM. Explain the KPA's for the 4^{th} level. **[8]**

b) Write notes on: **[8]**

i) Requirements Management.

ii) Software Project Planning.

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