

B.E. I.T. 2008 Course (414442)
Software Testing and Quality Assurance

Time: 3 Hours

Max. Marks : 100

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate answer books.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Use of Calculator is allowed.
- 5) Assume Suitable data if necessary

SECTION I

- Q1) a) Define the following :1) Faults 2) Test bud 3) Defects 4) Errors [8]
- b) Explain any two testing techniques with respect to its objectives, examples and use. [8]
- 1) Requirement testing
 - 2) Security testing
 - 3) Integration testing
 - 4) Recovery testing
- OR
- Q2) a) What is Alfa and Beta testing? How does it affect Acceptance criteria? [8]
- b) Explain unit test planning in detail [8]
- Q3) a) Explain in detail different functions (responsibilities) to be handled in a testing life cycle or process. [8]
- b) Describe the software defect life cycle. [8]
- OR
- Q4) a) Write short note on any two [8]
1. Equivalence class partitioning
 2. Boundary value analysis
 3. Loop Testing
- b) Explain the different stages of defect prevention process (DPP) [8]
- Q5) a) Compare and contrast any two measurement types with respect to relevant example. [10]
- 1) Nominal Scale
 - 2) Ordinal Scale
 - 3) Interval Scale.
- b) Give a Goal Question Metrics (GQM) for "Improve effectiveness of the test and quality [8]

of testing done".

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]

Item	Weighting Factor		
	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 it is average and 5 means it is essential to the system being built.

Based on the above perform the following:

- Draw pictorial representation of the system for FP analysis.
- Identify internal logical files, external I/P, O/P, Inquiries and Files.
- Calculate Function Count (FC)
- Calculate Technical Complexity Factor(TCF)
- Calculate Function Point (FP)
- Explain the importance of FP in software testing.

SECTION II

Q7)	a)	Explain the use of Pareto chart. Understand the given data showing the reasons of the return of a software product. Draw a Pareto chart and analyze / comment on reasons for customer dissatisfaction. [10]			
		Product Returned	Reason	Product Returned	Reason
		A	Customer did not need it	B	Not user friendly
		A	Too complex to install	A	Customer did not need it
		B	Not user friendly	D	High on memory requirement
		C	High on memory requirement	A	Too complex to install
		A	Not user friendly	A	Not user friendly

		A	Too complex to install	D	Not user friendly	
		D	High on memory requirement	A	High on memory requirement	
	b)	What does SQA ensure? What are the goals of SQA activity?				[8]
		OR				
Q8)	a)	Illustrate with example the use of following techniques in improving quality				[8]
		<ol style="list-style-type: none"> 1. Code inspection 2. Project planning 				
	b)	Define Software Reliability. Explain the following Software Quality Attributes with example:				[10]
		<ol style="list-style-type: none"> 1. Correctness 2. Usability 3. Portability 				
Q9)	a)	Explain the PDCA cycle in detail with reference to ISO 9000:9001.				[8]
	b)	List all the requirements of ISO 9000 and ISO 9001.				[8]
		OR				
Q10)	a)	What is Six Sigma? Explain terms DMAIC & DMADV with reference to Six Sigma.				[8]
	b)	How does ISO 9000 / 9001 ensure production of good quality software?				[8]
Q11)	a)	Explain in detail the Software Project Tracking and Oversight KPA of CMM level 2.				[8]
	b)	Write notes on:				[8]
		<ol style="list-style-type: none"> 1. Peer reviews 2. Defect prevention 				
		OR				
Q12)	a)	Explain in detail the Quantitative Process Management KPA.				[8]
	b)	Explain the role of effective software Configuration Management in software quality.				[8]