

Reg. No. 

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**B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2023**

Sixth Semester

**IT18004 – SOFTWARE TESTING AND QUALITY ASSURANCE**

(Information Technology)

(Regulation 2018)

TIME: 3 HOURS

MAX. MARKS: 100

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Apply the knowledge of mathematics in software testing and test data generation techniques.	3
CO 2	Select appropriate procedures, Tools and test data generation techniques	3
CO 3	Choose and use suitable Software Testing Tools	3
CO 4	Examine the benefits of software quality management process	4
CO 5	Create and apply a software quality assurance plan for software projects	6

**PART- A (10 x 2 = 20 Marks)**

(Answer all Questions)

	CO	RBT LEVEL
1. Give an example, under which situation error leads to failure in real time applications.	1	3
2. Compare load testing and stress testing.	1	2
3. Consider the test engineer is performing White box testing against the following module. Div (int a, int b) { int quotient = a / b; if ( quotient > 0) print (“Positive”, quotient); else print (“Negative”, quotient); } Calculate the decision coverage in percentage for the above code with the values a= -6 and b= -3.	2	3
4. Differentiate test oracle and test driver.	2	2
5. Identify the metrics used for software testing attributes.	3	2
6. Illustrate how cyclomatic complexity is used to measure fault proneness.	3	3
7. A software organization supplier is preparing a proposal for the new project. Can you list down the pre-project components of SQA systems for the organization?	4	3

8. Differentiate verification, validation and qualification with respect to SQA activities.	4	4
9. A software firm is planning to improve the software development process. Identify some of the applicable standards for process assessment and improvement.	5	3
10. Illustrate the scope of quality management standards.	5	3

**PART- B (5 x 14 = 70 Marks)**

	Marks	CO	RBT LEVEL
11. (a) A person designed a web page to accept user age details from 21 to 30. Write the test cases using Equivalence Class Partitioning (ECP) and Boundary Value Analysis (EVA). Explain the techniques in detail. <b>(OR)</b>	(14)	1	3
(b) Organize the phases of software testing life cycle and illustrate the phases with suitable example.	(14)	1	3
12. (a) Write a java program to create a login module for an application. Write a sample test cases for the login module and write the test cases using various glass box testing techniques. <b>(OR)</b>	(14)	2	3
(b) An XYZ company developed a tax calculation application based on Annual salary (in Rupees). Consider the following criteria  (i) Tax = 0, if Annual Salary < 3 lakh (ii) Tax = 10%, if Annual salary is above 3 lakh and below 7 Lakh (iii) Tax = 20%, if Annual salary is above 7 lakh and below 12 Lakh (iv) Tax = 30%, if Annual salary is above 12 lakhs  Generate the test data for the above application with different test data generation techniques.	(14)	2	3
13. (a) Illustrate in detail about metrices used for software testing. <b>(OR)</b>	(14)	3	2
(b) Explain briefly about software testing tools with example.	(14)	3	2

14. (a) An ABC software solutions company is in the process of creating the requirement document for their new project and decided to follow McCall's model. Analyze briefly about the categorization of factors in McCall's factor model for the software project. Also mention alternative models of software quality factors.

(14) 4 4

(OR)

(b) A newly started organization wants to improve the quality by constructing a software quality assurance system. Analyze the components of software quality assurance system for the organization.

(14) 4 4

15. (a) Analyze the steps involved in accreditation process of Bootstrap methodology and ISO/IEC 15504 standard.

(14) 5 4

(OR)

(b) (i) Analyze the responsibilities of management structures in SQA system for small organizations.

(7) 5 4

(ii) Examine the phases involved in process improvement of a new projects and existing project design using six sigma.

(7) 5 4

**PART- C (1 x 10 = 10 Marks)**

(Q.No.16 is compulsory)

	Marks	CO	RBT LEVEL
16. XYZ software solutions is a startup company which provide software solutions for organizations. The company wants to setup a software quality assurance system inside the organization in order to ensure the quality of products. Recommend a software assurance organizational framework for implementing software quality assurance system and assess the role of each participant.	(10)	5	5

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