A10.2-R4/B2.52-R4/BE7-R4 : SOFTWARE TESTING & QUALITY MANAGEMENT

अवधि : 03 घंटे
DURATION : 03 Hours

अधिकतम अंक : 100
MAXIMUM MARKS : 100

ओएमआर शीट सं. :
OMR Sheet No. :

रोल नं. :
Roll No. :

उत्तर-पुस्तिका सं. :
Answer Sheet No. :

परीक्षार्थी का नाम :
Name of Candidate : _____

परीक्षार्थी के हस्ताक्षर :
;Signature of Candidate : _____

परीक्षार्थियों के लिए निर्देश : / Instructions for Candidate :

कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यानपूर्वक पढ़ें।	Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
प्रश्न-पुस्तिका की भाषा अंग्रेजी है। परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर दे सकता है।	Question Paper is in English language. Candidate can answer in English language only.
इस मॉड्यूल/पेपर के **दो भाग** हैं। **भाग एक** में **चार** प्रश्न और **भाग दो** में **पाँच** प्रश्न हैं।	There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
भाग एक ''वैकल्पिक'' प्रकार का है जिसके कुल अंक 40 है तथा **भाग दो** ''व्यक्तिपरक'' प्रकार का है और इसके कुल अंक 60 है।	**PART ONE** is Objective type and carries 40 Marks. **PART TWO** is Subjective type and carries 60 Marks.
भाग एक के उत्तर, **ओएमआर उत्तर-पुस्तिका** पर ही दिये जाने हैं। **भाग दो** की उत्तर-पुस्तिका में **भाग एक** के उत्तर **नहीं** दिये जाने चाहिए।	**PART ONE** is to be answered in the **OMR ANSWER SHEET** only. **PART ONE** is **NOT** to be answered in the answer book for **PART TWO**.
भाग एक के लिए अधिकतम समय सीमा **एक घण्टा** निर्धारित की गई है। **भाग दो** की उत्तर-पुस्तिका, **भाग एक** की उत्तर-पुस्तिका जमा कराने के पश्चात् दी जाएगी। तथापि, निर्धारित एक घंटे से पहले **भाग एक** पूरा करने वाले परीक्षार्थी **भाग एक** की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद, **भाग दो** की उत्तर-पुस्तिका ले सकते हैं।	Maximum time allotted for **PART ONE** is ONE HOUR. Answer book for **PART TWO** will be supplied at the table when the Answer Sheet for **PART ONE** is returned. However, Candidates who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the Answer Sheet for **PART ONE** to the Invigilator.
परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना और अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हॉल/कमरा नहीं छोड़ सकते हैं। ऐसा नहीं करने पर, परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।	**Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his/her Answer Sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात् एवं उत्तर लिखना आरम्भ करने से पहले उम्मीदवार जाँच कर यह सुनिश्चित कर लें कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।	After receiving the instruction to open the booklet and before starting to answer the questions, the candidate should ensure that the Question Booklet is complete in all respect.

जब तक आपसे कहा न जाए, तब तक प्रश्न-पुस्तिका न खोलें।
DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

PART ONE

(Answer all the questions)

1. **Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet supplied with the question paper, following instructions therein.**

(1x10)

1.1 Cost and schedule are a part of :

(A) Product Metrics

(B) Process Metrics

(C) Project Metrics

(D) All of the above

1.2 Which granularity level of testing checks the behavior of module co-operation ?

(A) Unit Testing

(B) Integration Testing

(C) Acceptance Testing

(D) Regression Testing

1.3 A set of inputs, execution preconditions and expected outcomes is known as a :

(A) Test plan

(B) Test case

(C) Test document

(D) Test Suite

1.4 The CMM emphasizes :

(A) continuous process improvement

(B) the need to record information

(C) the need to accept quality system

(D) none of the above

1.5 Select the developer-specific requirement :

(A) Portability

(B) Maintainability

(C) Availability

(D) Both Portability and Maintainability

1.6 What is Six Sigma ?

(A) It is the most widely used strategy for statistical quality assurance

(B) The "Six Sigma" refers to six standard deviations

(C) It is the most widely used strategy for statistical quality assurance AND The "Six Sigma" refers to six standard deviations

(D) A Formal Technical Review (FTR) guideline for quality walkthrough or inspection

1.7 Software Testing with real data in real environment is known as :

(A) alpha testing

(B) beta testing

(C) regression testing

(D) none of the above

1.8 Which of the following is not a part of Software Configuration Management Basics ?

(A) Identification

(B) Version

(C) Auditing and Reviewing

(D) Status Accounting

1.9 Purpose of process is to deliver software :

(A) in time

(B) with acceptable quality

(C) that is cost efficient

(D) both in time & with acceptable quality

1.10 Which of the following issues must be addressed if a successful software testing strategy is to be implemented ?

(A) Use effective formal technical reviews as a filter prior to testing

(B) Develop a testing plan that emphasizes "rapid cycle testing"

(C) State testing objectives explicitly

(D) All of the above

2. **Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein.**
(1x10)

2.1 Equivalence Testing divides the input domain into classes of data from which test cases can be derived to reduce the number of test cases that must be developed.

2.2 The goal of software tester is to find bugs, find them as early as possible and make sure it gets fixed.

2.3 Beta Testing is performed at developing organization's site whereas Alpha testing is performed by the people at their own locations.

2.4 Boundary value analysis can only be used during white-box testing.

2.5 The test case log is used to keep track of the status of each test case.

2.6 SDLC stands for Software Design Life Cycle.

2.7 Software safety is equivalent to software reliability.

2.8 Misinterpretation of customer communication is a sample of possible cause defects.

2.9 In static test techniques, behavioral and performance properties of the program are observed.

2.10 Load Runner is a software coding tool.

3. **Match words and phrases in column X with the closest related meaning/ word(s)/phrase(s) in column Y. Enter your selection in the "OMR" answer sheet supplied with the question paper, following instructions therein.** (1x10)

	X		Y
3.1	V&V	A.	Testing the end to end functionality of the system as a whole
3.2	Review leader	B.	Facilitated Application Specification Technique
3.3	Functional system testing	C.	Capability Maturity Model
3.4	Configuration management	D.	white box testing
3.5	FAST	E.	Verification and Validation
3.6	Users of the software	F.	Product Metrics
3.7	Cyclomatic Complexity method	G.	software quality assurance (SQA)
3.8	CMM	H.	leads the review process
3.9	Quality Management	I.	detailed recording and updating of information for hardware and software components
3.10	Size and Complexity	J.	most important stakeholder
		K.	Henry Gantt
		L.	Data object
		M.	Project Planning

4. **Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Enter your choice in the "OMR" answer sheet attached to the question paper, following instructions therein.** (1x10)

A.	Algorithm	**B.**	Software Product Engineering	**C.**	eliminated and identified
D.	Black Box Testing	**E.**	quality function deployment	**F.**	Structural testing
G.	Software Requirements Specification (SRS)	**H.**	software quality assurance (SQA)	**I.**	Programming
J.	Software Process Improvement and Capability determination	**K.**	classes	**L.**	Quantity Function Deployment
M.	Test Cases				

4.1 QFD stands for _____.

4.2 The user system requirements are the parts of _____ document.

4.3 _____ is the process of translating a task into a series of commands that a computer will use to perform that task.

4.4 A step by step instruction used to solve a problem is known as an _____.

4.5 According to ISO 9001, the causes of non-conforming product should be _____.

4.6 In CMM, the life cycle activities of requirements analysis, design, code, and test are described in _____.

4.7 Quality Management in Software Engineering is also known as _____.

4.8 White Box techniques are also classified as _____.

4.9 Boundary value analysis belong to _____.

4.10 SPICE stands for _____.

PART TWO

(Answer any four questions)

5. (a) What is meant by the term software reliability ?

   (b) Describe the top-down and the bottom-up approach software testing approach. Also enlist the advantages and disadvantages of the same.

   (c) What is Black-box testing ? Explain Equivalence Partitioning testing with example. **(5+5+5)**

6. (a) Differentiate between Verification and Validation.

   (b) What is STLC (Software Testing Life Cycle) ? Explain different phases of STLC.

   (c) What is the difference between priority and severity ? **(5+5+5)**

7. (a) What is Capability Maturity Model ? Describe its different levels.

   (b) Explain Integrated Development Environment (IDE). **(8+7)**

8. (a) Define Test Cases, Test Scripts and Test Suites.

   (b) Read P

   Read Q

   IF P+Q > 100 THEN

   Print "Large"

   ENDIF

   If P > 50 THEN

   Print "P Large"

   ENDIF

   Calculate statement coverage, branch coverage and path coverage. **(7+8)**

9. (a) What is the difference between code inspection and code walkthrough ? Give an example of at least two types of errors detected during code inspection and at least two types of errors detected during code walkthrough.

   (b) What is difference between Quality Assurance (QA) and Quality Control (QC) ?

   (10+5)

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SPACE FOR ROUGH WORK