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 attached to the question paper, following instructions therein.**
   (1x10)

1.1 Integration testing mainly targets to detect which one of the following types of errors ?
   (A) Design errors
   (B) Algorithm errors
   (C) Requirements errors
   (D) Interfacing errors

1.2 Data flow testing is a control structure testing technique where the criteria used to design test cases is that they :
   (A) rely on basis path testing
   (B) exercise the logical conditions in a program module
   (C) select test paths based on the locations and uses of variables
   (D) focus on testing the validity of loop constructs

1.3 During unit testing of a software, it is important to test the boundary values because :
   (A) It reduces test costs as boundary values are easily computed by hand.
   (B) Debugging is easier when testing boundary values.
   (C) The correct execution of a function on all boundary values proves that the function is correct.
   (D) Programming the boundary conditions is usually error-prone in practice.

1.4 Which one of the following attributes of a program can be inferred from its Cyclomatic complexity ?
   (A) Computational complexity
   (B) Lines of code (LoC)
   (C) Executable code size
   (D) Understandability

1.5 Which one of the following is true of a pure top-down integration testing approach ?
   (A) Requires only stubs to be developed for testing
   (B) Requires only drivers to be developed for testing
   (C) Requires both stubs and drivers to be developed for testing
   (D) Requires neither stubs nor drivers to be developed for testing

1.6 Which one of the following types of program models is normally used to design an integration test plan ?
   (A) CFG (Control Flow Graph)
   (B) DFD (Data Flow Graph)
   (C) Structure chart
   (D) State chart

1.7 Which one of the following is the basic focus of modern quality paradigms ?
   (A) Process assurance
   (B) Product assurance
   (C) Thorough testing
   (D) Thorough testing and rejection of bad products

1.8 Which one of the following would be true for a development organization assessed at the SEI CMM *repeatable* level of software development ?

(A) The software developed by the organization is guaranteed to be of high quality.

(B) Success in the development of a software can be repeated by the organization in similar software development projects.

(C) Success in development of a software can be repeated by the organization in all s o f t w a r e development projects that the organization might undertake.

(D) When the same development team is chosen to develop another software, they can repeat their success.

1.9 Which one of the following is not a software verification technique ?

(A) Review

(B) Simulation

(C) Unit testing

(D) Stress testing

1.10 In which one of the following SDLC models, testing activities are spread over the entire development life cycle ?

(A) Iterative waterfall model

(B) V model

(C) Prototyping model

(D) Classical waterfall model

2. **Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the "OMR" sheet attached to the question paper, following instructions therein.**

(1x10)

2.1 Regression testing is a functional testing technique.

2.2 Prepare a test plan activity that needs the stockholder's approval before beginning test effort estimation.

2.3 Statement coverage is also known as Basis path coverage.

2.4 Stubs are used in testing of Modules.

2.5 SQL Server is the System Software.

2.6 Acceptance testing will be done by user.

2.7 Char s: ="Anna" is the pseudo code syntax to store character data.

2.8 Testing and debugging are factors of the program life cycle.

2.9 Verification is checking whether the system is built right.

2.10 Static tests involve executing software under test.

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

	X		Y
3.1	A blueprint for a software object is called	A.	Branch Coverages
3.2	One of the test case design strategies in black box testing	B.	Alpha Testing
3.3	Testing activity which is performed to expose defects in the interfaces and in the interaction between integrated components	C.	Exhaustive Testing
3.4	Reviewing the test basis is a part of which phase	D.	Software Configuration Management
3.5	Error cant be detected by compiler	E.	Integration level testing
3.6	Pre-release testing by end user representatives at developer's site	F.	Boundary Value Analysis
3.7	Methodical process of finding and reducing the number of defects	G.	Test Case
3.8	The task of tracking and controlling changes in the software	H.	Test Analysis and Design
3.9	Set of conditions or variables under which a tester will determine whether an application or software system is working correctly or not	I.	Debugging
3.10	It describes the degree to which the source code of a program has been tested	J.	Class
		K.	Test case preparation
		L.	Run time error
		M.	MCDC

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)

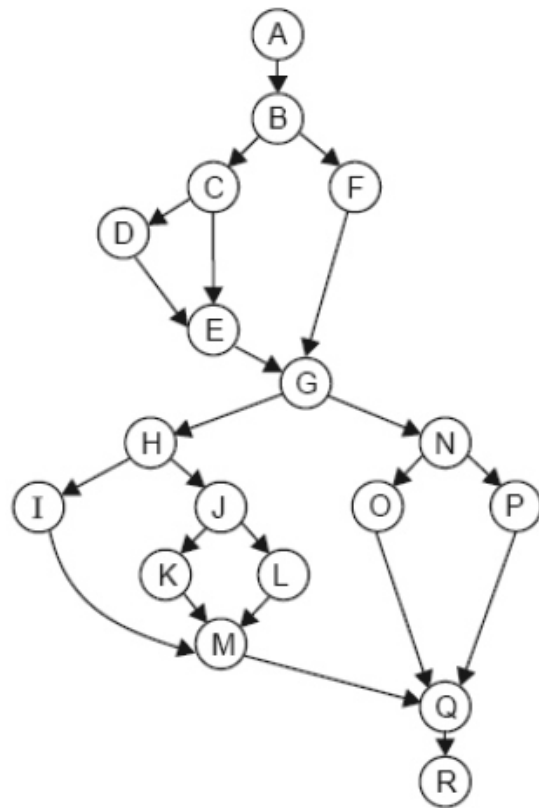|						
A.	Regression	**B.**	Load testing	**C.**	Verification
D.	independent path	**E.**	Beta	**F.**	Validation
G.	Testing tools	**H.**	Integration testing	**I.**	Top down
J.	alpha	**K.**	Unit testing	**L.**	Performance
M.	Equivalence partitioning				

4.1 _____ is the test process which begins after two or more programs components have been successfully unit tested.

4.2 A(n) _____ is any path through the program that introduces at least one new set of processing statements or a new condition.

4.3 _____ is famously known as endurance testing and volume testing.

4.4 _____ is a vehicle for performing a test process.

4.5 _____ is a black-box testing method that divides the input domain of a program into classes of data from which test cases can be derived.

4.6 _____ refers to the set of activities that ensure that software correctly implements a specific function.

4.7 _____ testing may be conducted manually, by re-executing a subset of all tests cases.

4.8 _____ refers to a different set of activities that ensure that the software that has been built is traceable to customer requirements.

4.9 The _____ test is conducted at the developer's site by a customer.

4.10 The _____ test is conducted at one or more customer sites by the end-user of the software.

PART TWO

(Answer any four questions)

5. (a) Briefly explain the five maturity levels in the CMM model.

   (b) Explain the concept of an ideal test. What is a selection criterion in test design ? **(8+7)**

6. (a) Briefly explain the ISO 9001:2000 (Requirements) document for quality assurance.

   (b) Explain the concepts of *unit, integration, functional and acceptance testing*. **(8+7)**

7. Write short notes on the following :

   (a) Beta testing

   (b) V-Model

   (c) Software Reliability Testing **(5x3)**

8. (a) What is the difference between design walk through and critical design review ?

   (b) What is Data Flow Testing ? Explain the benefits of adopting Data flow based technique. **(8+7)**

9. (a) Explain Robustness Test Case Design and Worst Case Design using an example.

   (b) Find and list the number of independent paths in the flow graph given below :

(8+7)

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SPACE FOR ROUGH WORK

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