BE7-R4: SOFTWARE TESTING AND QUALITY MANAGEMENT

NOTE:

1. There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
2. **PART ONE** is to be answered in the **OMR ANSWER SHEET** only, supplied with the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book.
3. 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**.

TOTAL TIME: 3 HOURS   **TOTAL MARKS: 100**
                                                              (PART ONE – 40; PART TWO – 60)

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 What is Data Flow Diagram (DFD)?
A) The modern version of flowchart
B) Mainly used at system specification stage
C) The primary output of the system design phase
D) All of the above

1.2 In system design, we do following
A) Hardware design after software
B) Software design after hardware
C) Parallel hardware and software design
D) No hardware design needed

1.3 In unit testing of a module, it is found that for a set of test data, at the maximum 90% of the code alone was tested with the probability of success 0.9. The reliability of module is
A) Greater than 0.9
B) Equal to 0.9
C) At most 0.81
D) At least 1/0.81

1.4 Software testing techniques are most effective if applied immediately after
A) Requirement specification
B) Design
C) Coding
D) Integration

1.5 A program P calls two subprograms P1 and P2. P1 can fail 50% times and P2 can fail 40% times. The program P can fail
A) 50%
B) 60%
C) 10%
D) 70%

1.6   In risk analysis of spiral model, which of the following risk includes?
A)   Technical
B)   Management
C)   Both A) and B)
D)   None of the above

1.7   RAD is not appropriate when?
A)   Fast finding already done
B)   Technical risks are high
C)   Testing is not needed
D)   None of the above

1.8   In the system concepts, the term integration
A)   implies structure and order
B)   refers to the manner in which each component functions with other component of the system
C)   refers to the holism of system
D)   None of the above

1.9   What types of errors are missed by black-box testing and can be uncovered by white-box testing?
A)   behavioral errors
B)   subtle logic errors
C)   performance errors
D)   input error

1.10   Which test criteria should be applied in a phase of testing?
A)   functional validity
B)   interface integrity
C)   correctness
D)   all of the above

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

2.1   Glass box testing is a method of testing software that tests internal structures.
2.2   Integration testing occurs before unit testing and after validation testing.
2.3   V-model also applicable to hardware development.
2.4   Spiral lifecycle model is a systems development method used in information technology.
2.5   Non-functional testing refers to activities that verify a specific action.
2.6   Beta testing comes before alpha testing and can be considered a form of external user acceptance testing.
2.7   A stress test is usually conducted to understand the behaviour of the system under a specific expected load.
2.8   Functional testing examines what the program accomplishes, without regard to how it works internally.
2.9   'Customers' - who interact with the software once it is released for production use.
2.10   Process metrics enable an organization to take a strategic view by providing insight into the effectiveness of a software process.

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	Delphi Method	**A.**	Determine at what point the system's response time degrades or fails
3.2	Functional Point Analysis	**B.**	describes the key elements of an effective product development and maintenance process
3.3	ISO 9000	**C.**	A malicious user could provide unexpected inputs to the application
3.4	Test Director	**D.**	selection of a limited number of tasks that produce significant overall effect
3.5	Load Testing	**E.**	Assurance framework to ensure process improvement
3.6	Pareto Analysis	**F.**	Tell which problems occur most least
3.7	CMMI	**G.**	Structured communication technique used to conduct interactive forecasting
3.8	SQL Injection	**H.**	Reports defects detected in the software
3.9	Agile	**I.**	Method aiming to measure the size of the functionality of an information system
3.10	Brute Force Attack	**J.**	A way/method to ascertain software consistency
		K.	Software attempts to guess the associated password by trying to login again and again
		L.	A software development method that defers major design decisions until it's too late to do it if any other way
		M.	Analysis done to find bugs in software

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 supplied with 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) What is the difference between QA and Testing?
b) What are the key challenges of software testing?
c) What is the difference between SDLC and STLC?

(4+5+6)

6.
a) What is the difference between Verification and Validation?
b) What is the difference between Unit Testing, Component Testing and Integration Testing?
c) What do you understand by black box testing? Explain:
   i)   Equivalence class
   ii) Equivalence partitioning

(4+6+[2.5+2.5])

7.
a) Describe design walk through and critical design review.
b) What is Cyclomatic Complexity? Explain with suitable example.

(8+7)

8.
a) Explain various types of debugging techniques used in Software testing.
b) What is Quality? How is software quality evaluated? Explain?

(8+7)

9.
a) Explain DLL in detail.
b) Explain the role of CMM Level in Testing.

(5+10)