# BE7-R4 : SOFTWARE TESTING AND QUALITY MANAGEMENT

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| अवधि : 03 घंटे <br> **DURATION : 03 Hours** | अधिकतम अंक : 100 <br> **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 Candidates : |
|---|---|
| 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 अंग्रेजी भाषा में है। परीक्षार्थी उत्तर लिखने के लिए केवल अंग्रेजी भाषा का ही प्रयोग कर सकते हैं। | Question Paper is in English language. Candidate has to 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, इस प्रश्न-पत्र के साथ दी गई **ओएमआर उत्तर-पुस्तिका** पर, उसमें दिये गए अनुदेशों के अनुसार 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, supplied with the question paper, as per the instructions contained therein. **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 यह जाँच कर 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 Questions; each question carries ONE mark)

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 Which of the following is not a SQA plan for a project ?

(A) Evaluations to be performed

(B) Amount of technical work

(C) Audits and reviews to be performed

(D) Documents to be produced by the SQA group

1.2 Analysis of Boundary value belongs to :

(A) White Box Testing

(B) Black Box Testing

(C) User Acceptance Testing

(D) None of the mentioned

1.3 Which of the following is not an appraisal cost in SQA ?

(A) Inter-process inspection

(B) Maintenance

(C) Quality planning

(D) Testing

1.4 Which one is not a phase of CMM ?

(A) Initial

(B) Defined

(C) Managed

(D) Integrated

1.5 What is not included in prevention costs ?

(A) Quality planning

(B) Formal technical reviews

(C) Test equipment

(D) Equipment calibration and maintenance

1.6 The purpose of requirement phase is :

(A) To freeze requirements

(B) To understand user needs

(C) To define the scope of testing

(D) All of the above

1.7 What is the Agile ?

(A) Iterative

(B) Sequential

(C) Incremental

(D) Both Iterative & Incremental

**1.8** White Box techniques are also classified as :

(A) Design based testing

(B) Structural testing

(C) Error guessing technique

(D) None of the mentioned

**1.9** The testing in which code is checked :

(A) Black box testing

(B) White box testing

(C) Red box testing

(D) Green box testing

**1.10** Unit testing is done by :

(A) Users

(B) Developers

(C) Customers

(D) None of the mentioned

**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** Verification refers to the set of tasks that ensure that software correctly implements a specific function.

**2.2** Finding Defect is not a major goal of Acceptance Testing.

**2.3** ITG stands for Independent Test Group.

**2.4** In agile development, we create lengthy documentation.

**2.5** Validation refers to the set of tasks that ensure that software correctly implements a specific function.

**2.6** Software safety is equivalent to software reliability.

**2.7** In software testing, the statement coverage, decision coverage, data flow is part of the white-box testing technique.

**2.8** Quality of design encompasses requirements and specifications of the system.

**2.9** Software Debugging is a set of activities that can be planned in advance and conducted systematically.

**2.10** The "Six Sigma" refers to six standard deviations.

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)**

|     | Column X |     | Column Y |
| --- | --- | --- | --- |
| **3.1** | The testing in which code is checked | **A.** | Beta testing |
| **3.2** | Methodology used to develop and refine an organization's software development process. | **B.** | Performance testing |
| **3.3** | Acceptance testing is also known as | **C.** | CMM |
| **3.4** | Deming circle/cycle/wheel | **D.** | White box testing |
| **3.5** | The name of the testing which is done to make sure the existing features are not affected by new changes | **E.** | PDCA |
| **3.6** | Non-functional testing is | **F.** | Regression testing |
| **3.7** | Waterfall model has | **G.** | Optimising |
| **3.8** | The last level of CMM model | **H.** | Freezing problem |
| **3.9** | Demonstrates the relationships between each phase of the development life cycle and its associated phase of testing | **I.** | 14 |
| **3.10** | The no of principles in Dr. W. Edwards Deming's quality principles is | **J.** | V-shape Model |
|     |     | **K.** | Grey Box testing |
|     |     | **L.** | Class |
|     |     | **M.** | Debugging |

**4.** Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein.

(1x10)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **A.** | Software failure | **B.** | Acceptable quality level | **C.** | Equipment calibration and maintenance | **D.** | Spiral |
| **E.** | Waterfall | **F.** | SCM | **G.** | CMM | **H.** | RAD |
| **I.** | White box | **J.** | PDCA | **K.** | Risk Assessment | **L.** | Risk mitigation |
| **M.** | ISO | | | | | | |

**4.1** AQL stands for _____.

**4.2** _____ is not included in prevention costs.

**4.3** Non-conformance to software requirements is known as _____.

**4.4** _____ is a Software development model mainly used for risk management.

**4.5** _____ The model is a linear, sequential approach to the software development life cycle.

**4.6** _____ is an iterative design and management method used in business for the control and continuous improvement of processes and products.

**4.7** Identify hazards and risk factors that have the potential to cause harm.

**4.8** Cyclomatic Complexity method is one of the methods of _____ Testing.

**4.9** _____ uses the tools which keep that the necessary change has been implemented adequately to the appropriate component.

**4.10** The five Software levels are defined in _____.

## PART TWO

### (Answer ANY FOUR questions)

**5.** (a) What is the main goal of the UML diagrams and discuss major views of the system that UML diagram support ?

(b) How do software process metrics differ from software project metrics ?

(c) Explain CMM model with taking example for each level.

(5+5+5)

**6.** (a) Explain Dr. W. Edwards Deming's quality principles in details.

(b) Differentiate the terms validation and verification with taking an example.

(10+5)

**7.** Explain the following terms :

(a) Boundary Value Analysis

(b) Modular programming

(c) Software Quality ISO Standards

(5+5+5)

**8.** (a) Differentiate between software development life cycle versus software testing life cycle.

(b) Describe the process of change management and its importance.

(5+10)

**9.** (a) What is meant by the term Integrated development environment ?

(b) Differentiate White-Box testing versus Black-Box testing.

(c) What are the difference between top down and bottom up integration testing ?

(5+5+5)

**SPACE FOR ROUGH WORK**

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