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# B.M.S. College of Engineering, Bengaluru-560019

**Autonomous Institute Affiliated to VTU**

## September / October 2023 Supplementary Examinations

**Programme: B.E** **Semester: VI**
**Branch: Information Science and Engineering** **Duration: 3 hrs.**
**Course Code: 20IS6PCSTG** **Max Marks: 100**
**Course: Software Testing** **Date: 15.09.2023**

**Instructions**: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

**UNIT - I**

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|---|---|---|---|
| 1 | a) | Differentiate the following<br>• Verification and Validation.<br>• Failure, Error and Fault | **05** |
| | b) | Illustrate the levels of testing in the development of V-model. Justify the mapping between development and testing phases. | **05** |
| | c) | Describe a testcase. Write the functional and non-functional test cases for placing an order through Dominos app using standard test case template. | **10** |

**OR**

| | | | |
|---|---|---|---|
| 2 | a) | Illustrate specification-based testing and code-based testing with suitable examples. | **05** |
| | b) | Compare Black-box, White-Box and Gray-Box Testing. | **05** |
| | c) | Identify the functional and non-functional test cases to stream a movie through Netflix using standard test case template. | **10** |

**UNIT - II**

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|---|---|---|---|
| 3 | a) | Distinguish between Dynamic and Static Unit testing. Illustrate the steps involved in code review process. | **10** |
| | b) | Write the JUnit program for concatenation of two strings and write the positive and negative test cases for the same. | **05** |
| | c) | Describe the normal Boundary value test cases considering the triangle problem. The program accepts three sides of a triangle to identify if the triangle is equilateral, Isosceles, Scalene, or Not a Triangle. Assume the three sides to be X, Y, and Z of range [1,10]. | **05** |

**OR**

4 a) Illustrate the working of Test-first process in Extreme Programming (XP) with suitable diagram. **10**

i) Consider the below program and justify with suitable test suites how Mutation testing exposes and locate weaknesses by creating 5 mutants.

```
inta,b,c ;
if( a>b && a > c)
{
    system.out.println (" The greatest number is " +a);
}
else if ( b>c)
{
    system.out.println (" The greatest number is" +b);
}
else
{
    system.out.println(" The greatest number is " +c);
}
```

b) i) Discuss the different types of Equivalence class testing. **10**

ii) Write the equivalence class test cases for the next date problem's.

**UNIT -III**

5 a) Define Anomaly. With suitable examples, explain data flow anomalies which could be manifestations of potential programming errors. **05**

b) Design a Data flow graph for the below ReturnAverage() function. **10**

```
public static double ReturnAverage(int value[],  int AS, int MIN, int MAX)
{
      int i, ti, tv, sum;
      double av;
      i = 0; ti = 0; tv = 0; sum = 0;
      while (ti < AS && value[i] != -999) {
        ti++;
        if (value[i] >= MIN && value[i] <= MAX) {
          tv++;
          sum = sum + value[i];
        }
        i++;
      }
      if (tv > 0)
        av = (double)sum/tv;
      else
        av = (double) -999;
      return (av);
  }
```

c) Design the high level test cases for currency converter application that converts U.S. dollars to any of four currencies: Brazilian reals, Canadian dollars, European Community euros, and Japanese yen. **05**

**UNIT - IV**

6 a) Illustrate the following system integration techniques **10**

i) Top-down and Bottom-up approach

ii) Sandwich and Big-bang

b) i) Explain any four guidelines required for Equivalence class partitioning. **10**

ii) Consider a ticket generating software system that computes Total amount for each flight ticket based on the number of hours of flight according to the following rules:

i) If the number of hours of flight is between (1-3 hours), the ticket amount is 5,000/-.

ii) If the number of hours of flight is between (3- 10 hours) , the ticket amount is 15,000/-

iii) If the number of hours of flight is between (10-15 hours) , the ticket amount is 30,000/-

iv) If the number of hours of flight is more than 15 hours, then ticket amount is 50,000/-

Generate test cases to cover each Equivalence class. Consider the Boundary value analysis technique for each Equivalence class and identify the boundary values for each class.

**UNIT - V**

7 a) Discuss the ISO 9126's, six categories of quality characteristics. **05**

b) Illustrate the User acceptance testing process. **05**

c) Explain the five views of software quality and Analyze the similarities and differences between McCall's quality model and ISO 9126 model. **10**

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