The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Electrical and Computer Engineering

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Study Programme	: Bachelor of Science Honours in Engineering
Name of the Examination	: Final Examination
Course Code and Title	**: EEX5467 Software Testing and Quality Assurance**
Academic Year	: 2022/23
Date	: 30th January 2024
Time	: 0930-1230hrs
Duration	: **3 hours**

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Five (5)** questions in **Four (04)** pages (including this cover page).
3. Answer **all questions.**
4. Answer for each question should commence from a new page.
6. This is a Closed Book Test **(CBT).**
7. Answers should be in clear handwriting and do not use red colour pens.

Question 1 (20 marks)

a) Briefly explain "Cost-of-Quality" and describe three (3) methodologies of minimizing the Cost-of-Quality. (7 marks)

b) Anjali is the Test Lead for a new project involving migration of a legacy system. She was able to find a requirement defect while in the Testing phase.

Explain the magnitude and reasoning of how "Cost-of-Quality" is affected if Anjali found this requirement defect at the requirement gathering stage. (5 marks)

c) Describe different testing related activities performed in each stage in Software Development Life Cycle. (8 marks)

Question 2 (20 marks)

a) What is a risk in relation to a software system? (2 marks)

b) Briefly describe 2 risk identification techniques. (4 marks)

c) What are the activities associated with risk management? (4 marks)

d) You are working in a project team and supposed to deliver a web based e-channelling application. The project is at the initial stage. List 05 risks you foresee related to this project and how you can mitigate those risks. (10 marks)

Question 3 (20 marks)

a) "Verification and validation represents both static testing (verification) and dynamic testing (validation). Together they comprise the test activities" describe 2 verification techniques and 2 validation techniques briefly. (8 Marks)

b) A GUI application is used to get the user inputs to register athletes for National Athletic meet held in Colombo. The athlete who is the user has to enter the age in one of the text boxes. Following are the requirements.

- Age of the applicant should be between 18 and 35.
- The text box should allow only numeric values.

i. State 2 techniques that you can use to generate test scenarios for effectively testing this text box . (2 Marks)

ii. Why is it necessary to develop test cases for both valid and invalid input conditions? (2 Marks)

iii. Write down 4 test cases to test this text box. (test cases must be written in Test case format) (8 marks)

Question 4 (20 marks)

a) User Acceptance Testing (UAT) is of primary importance in the testing process. Answer following questions considering UAT process. (4 marks)

i. What is UAT & why is it necessary?
ii. Who should be in the team for executing the UAT Test Cases?

b) State to which type of Acceptance criteria the following falls into : (4 marks)

i. The vendor shall specify the warranty for Spare/Repair Parts and Consumables for a period of one (1) year
ii. All performance test cases should pass meeting the defined response time

c) Consider an error message that comes when trying to delete a file, which gives the options "Yes", "No" and "Cancel". In the pop-up window "X" also appear to indicate "close".

i. What is the difference between "Cancel" and "Close"?
ii. How would you test "Cancel" and "Close" functions?
iii. If "Cancel" and "Close" produce the same result to end user, can one of them be removed?
iv. If you were to design test cases for this dialogue; what would be your design considerations?
v. Write one positive and one negative test cases for the above functionality.

(12 marks)

Question 5 (20 marks)

a) What is Cyclomatic complexity? (04 marks)

b) Draw flow graph for the algorithm given below (08 marks)

```
#include<stdio.h>
int main()
{
    int a[10],i,j,temp,n;
    printf("\n Enter the max no.of Elements to Sort:
\n");
    scanf("%d",&n);
    printf("\n Enter the Elements : \n");
    for(i=0; i<n; i++)
    {
        scanf("%d",&a[i]);
    }
    for(i=0; i<n; i++)
        for(j=i+1; j<n; j++)
        {
            if(a[i]>a[j])
            {
                temp=a[i];
                a[i]=a[j];
                a[j]=temp;
            }
        }
    for(i=0; i<n; i++)
```

```
{
    printf("%d\t",a[i]);
}
return 0;  }
```

c) Calculate the Cyclomatic complexity for the flow graph drawn in (b) (06 marks)

d) Explain why this value is important to testers? (02 marks)