# KIET Group of Institutions

**(Roll Number: )**

**(Department of IT)**
**IT/ B.tech, 6th Semester**
**Pre-University Examination, (2021-22) ODD Semester**
**Software Engineering (KCS-601)**

**Duration: 3 hrs** **Max. Marks: 100**

**Note: - Attempt all the Questions.**

| Section-A | | | (10X2=20) | | |
|---|---|---|---|---|---|
| **Q. No.** | | **Question** | **Marks** | **CO** | **BL/ KC*** |
| **1.** | **a** | Describe the limitation of RAD Model. | 2 | 1 | 1/C |
| | **b** | Define software process. | 2 | 1 | 1/F |
| | **c** | Discuss software scope. | 2 | 2 | 2/C |
| | **d** | List some techniques of information modelling. | 2 | 2 | 1/C |
| | **e** | Discuss about how to find the size of a software product. | 2 | 3 | 2/C |
| | **f** | Write down steps in object-oriented design. | 2 | 3 | 1/C |
| | **g** | Discuss Alpha and Beta testing. | 2 | 4 | 2/C |
| | **h** | Explain the objective of regression testing. | 2 | 4 | 2/C |
| | **i** | Define software re-engineering. | 2 | 5 | 1/F |
| | **j** | Discuss what is risk and how it is managed. | 2 | 5 | 2/C |

| Section-B | |
|---|---|
| **Q. No.** | **Question** |
| 2 | Discuss which is more important-the product or process. |
| | OR |
| | Discuss the characteristics of a software process. |
| 3 | Explain what a requirement is? Explain different types of requirements with examples. |
| | OR |
| | Explain a typical SRS structure and its parts. Narrate the importance of software specification of requirements. |
| 4 | Explain what are structure Charts. Explain rules for drawing good Structure Charts diagrams with the help of a suitable example. |
| | OR |
| | Explain what does it mean by a good design? How it is feasible to arrive at a good design? How evaluation of a design can be done? |
| 5 | Differentiate between black box and white box testing and explain how they can be used together in detecting defects during testing |
| | OR |
| | Explain types of integration testing with suitable examples. Why is testing done at different levels? What integration testing does? |
| 6 | Explain what do you mean by risk management. Explain one technique to manage risk. |
| | OR |
| | Explain how COCOMO model is used in estimation of cost, effort, and schedule? |

| Section-C | |
|---|---|
| **Q. No.** | **Question** |
| 7 | Explain the feasibility studies. What are the outcomes? Does it have either implicit or explicit effects on software requirement collection? |
| | OR |
| | Explain how both waterfall model and prototyping model can be accommodated in the spiral process model. List several software pr |
| 8 | Describe how software requirements are documented? State the importance of documentation. |
| | OR |
| | Describe use case diagram along with its elements in detail with some example. |
| 9 | An application has the following:<br>10 low external inputs, 12 high external outputs, 20 low internal logical files, 15 high external inquiries, and a value of complexity adjustment factor of 1.10.<br>Evaluate the unadjusted and adjusted function point counts. |

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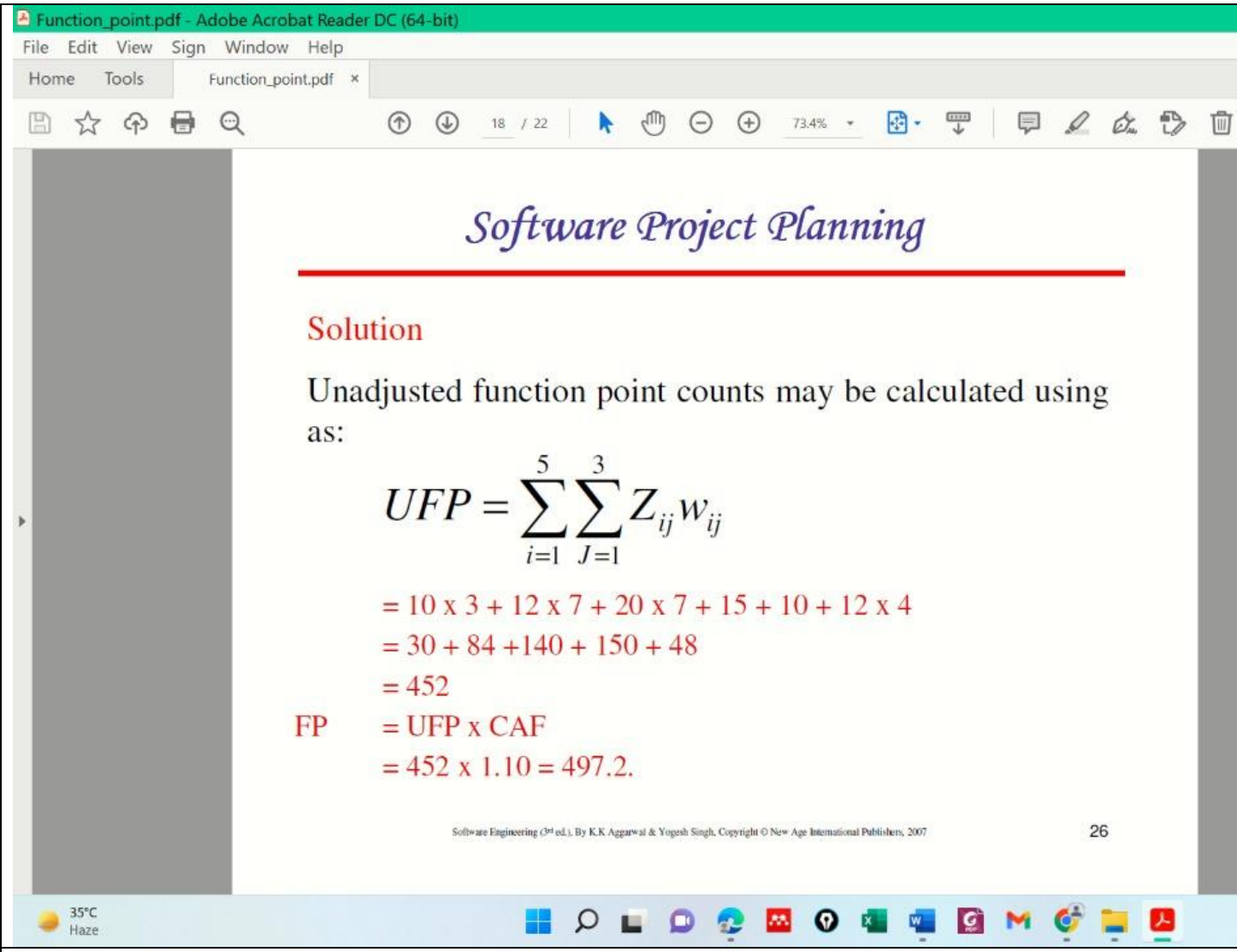
- **Bloom's Level (BL) - Bloom's taxonomy framework is planning and designing of assessment of student's learning.**
- *Knowledge Categories (KCs): **F**-Factual, **C**-Conceptual, **P**-Procedural, **M**-Metacognitive




OR

Consider the below program and determine Halstead measures like volume, difficulty, program level and language level.

```
int sort (int x[ ], int n)
{    int i, j, save, im1;
  /*This function sorts array x in ascending order */
  If (n< 2) return 1;
  for (i=2; i< =n; i++)
  {  im1=i-1;
     for (j=1; j< =im1; j++)
        if (x[i] < x[j])
        {
           Save = x[i];
           x[i] = x[j];
           x[j] = save;
        }
  }    return 0;
}
```

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| operators | occurrences | operands | occurrences |
|---|---|---|---|
| int | 4 | sort | 1 |
| () | 5 | x | 7 |
| , | 4 | n | 3 |
| [] | 7 | i | 8 |
| if | 2 | j | 7 |
| < | 2 | save | 3 |
| ; | 11 | im1 | 3 |
| for | 2 | 2 | 2 |
| = | 6 | 1 | 3 |
| – | 1 | 0 | 1 |
| <= | 2 | – | – |
| ++ | 2 | – | – |
| return | 2 | – | – |
| {} | 3 | – | – |
| n1=14 | N1=53 | n2=10 | N2=38 |

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| | |
|---|---|
| | Therefore,<br>N = 91<br>n = 24<br>V = 417.23 bits<br>N^ = 86.51<br>n2* = 3 (x:array holding integer to be sorted. This is used both as input and output)<br>V* = 11.6<br>L = 0.027<br>D = 37.03<br>L^ = 0.038<br>T = 610 seconds |
| 10 | Consider a simple program to classify a triangle. Its inputs is a triple of positive integers (say x, y, z) and the date type for input paran<br>greater than 0 and less than or equal to 100. The program output may be one of the following words:<br>[Scalene; Isosceles; Equilateral; Not a triangle]<br>Determine the equivalence class test cases. |

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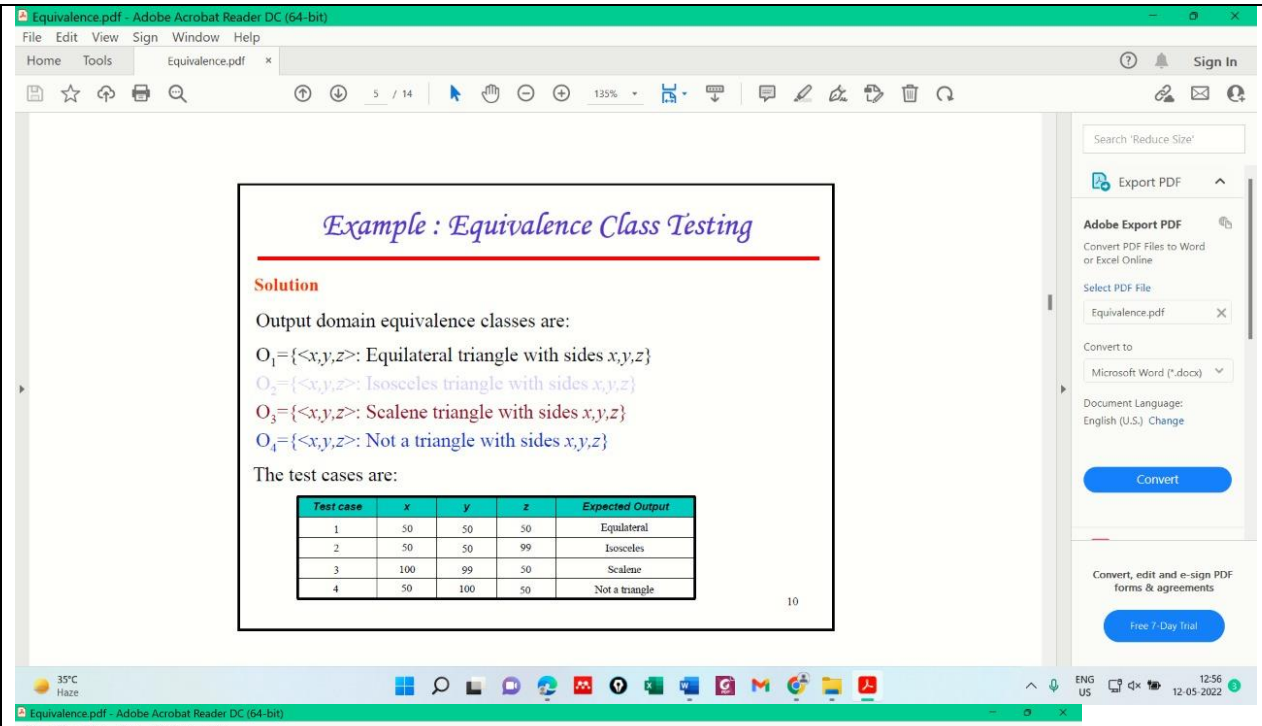


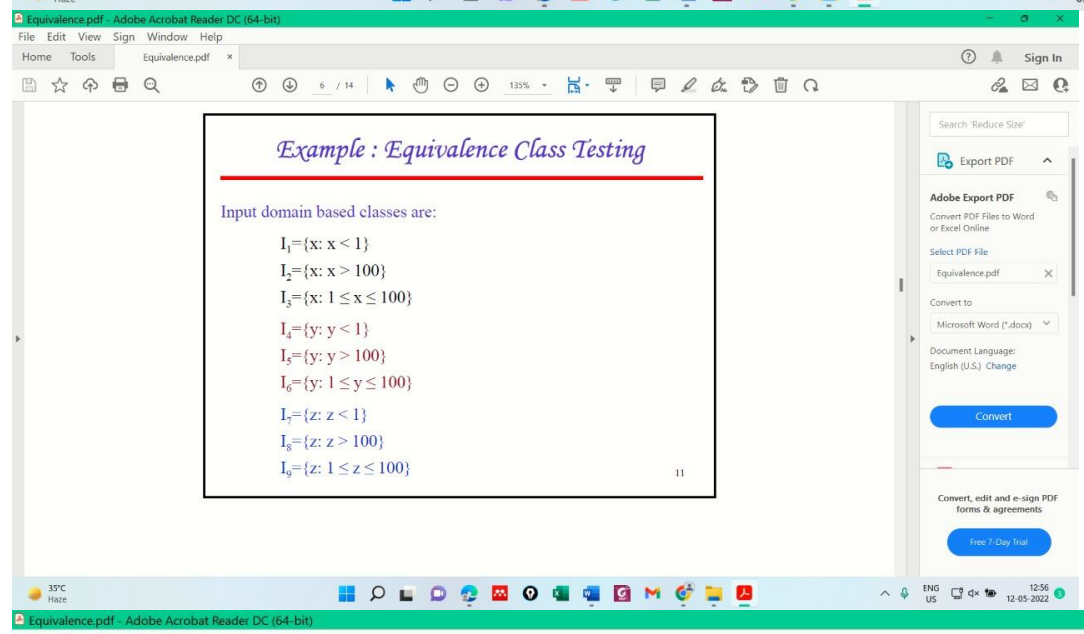


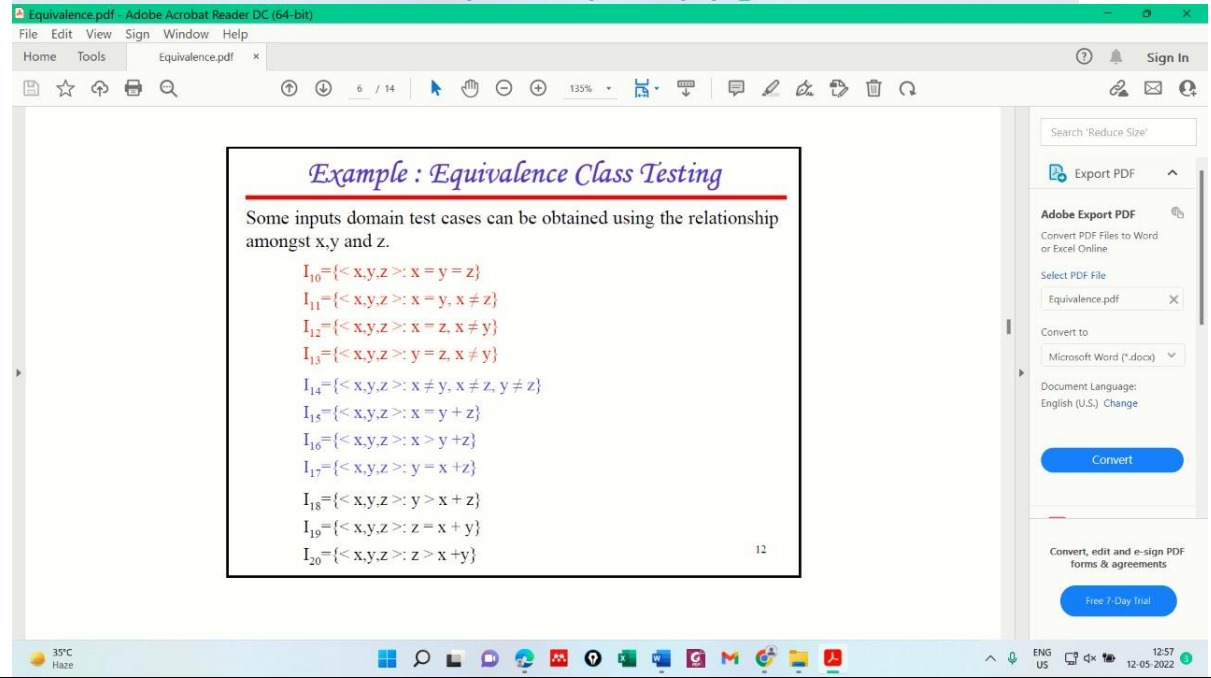


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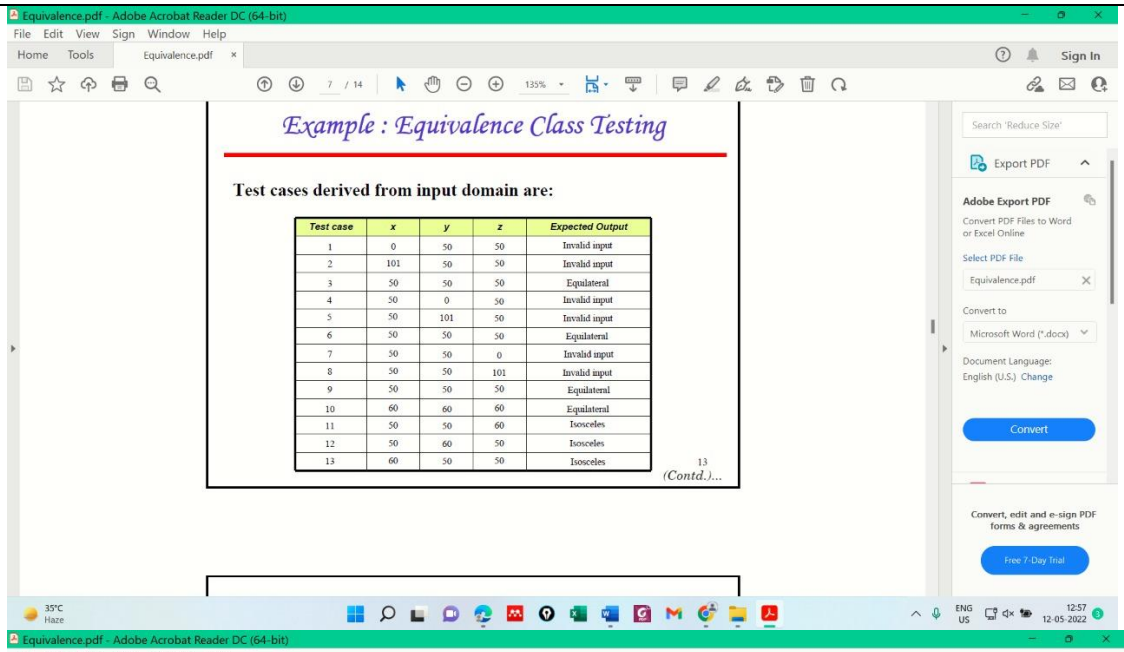

Example : Equivalence Class Testing

Test cases derived from input domain are:

| Test case | x | y | z | Expected Output |
|---|---|---|---|---|
| 1 | 0 | 50 | 50 | Invalid input |
| 2 | 101 | 50 | 50 | Invalid input |
| 3 | 50 | 50 | 50 | Equilateral |
| 4 | 50 | 0 | 50 | Invalid input |
| 5 | 50 | 101 | 50 | Invalid input |
| 6 | 50 | 50 | 50 | Equilateral |
| 7 | 50 | 50 | 0 | Invalid input |
| 8 | 50 | 50 | 101 | Invalid input |
| 9 | 50 | 50 | 50 | Equilateral |
| 10 | 60 | 60 | 60 | Equilateral |
| 11 | 50 | 50 | 60 | Isosceles |
| 12 | 50 | 60 | 50 | Isosceles |
| 13 | 60 | 50 | 50 | Isosceles |

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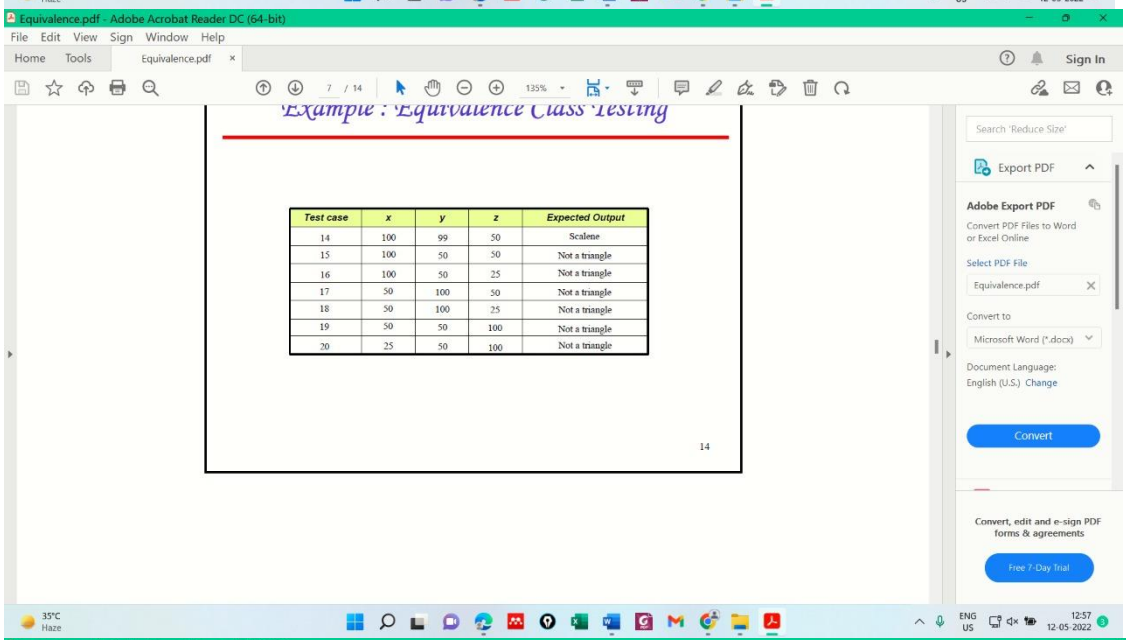
(Contd.)...



Example : Equivalence Class Testing

| Test case | x | y | z | Expected Output |
|---|---|---|---|---|
| 14 | 100 | 99 | 50 | Scalene |
| 15 | 100 | 50 | 50 | Not a triangle |
| 16 | 100 | 50 | 25 | Not a triangle |
| 17 | 50 | 100 | 50 | Not a triangle |
| 18 | 50 | 100 | 25 | Not a triangle |
| 19 | 50 | 50 | 100 | Not a triangle |
| 20 | 25 | 50 | 100 | Not a triangle |

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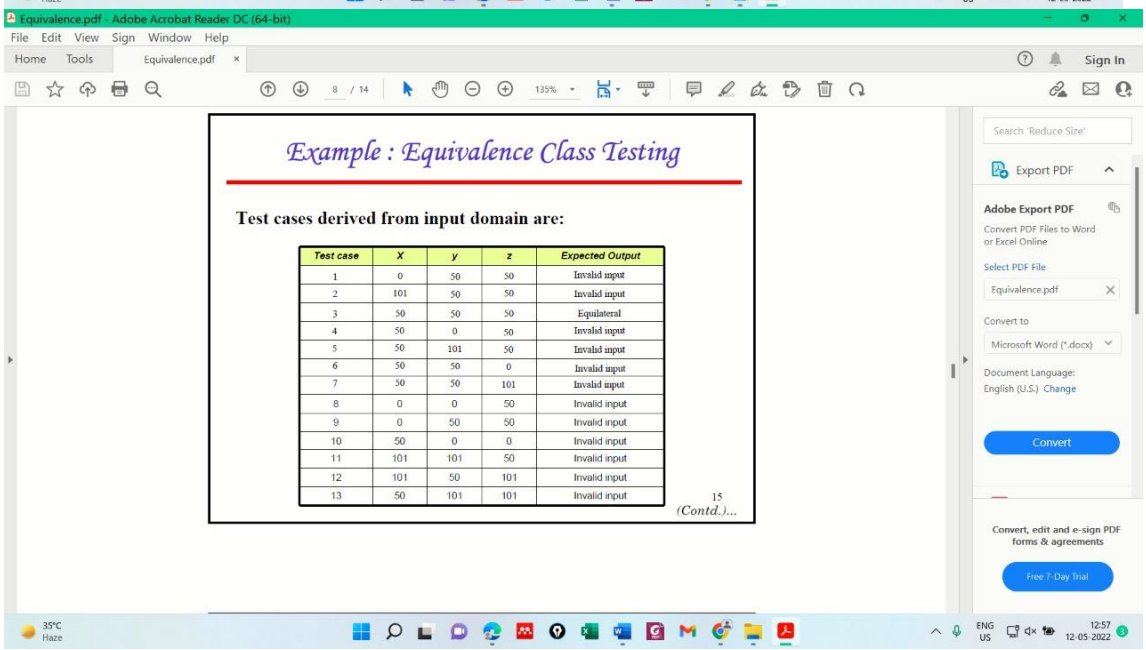

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| 4 | 50 | 0 | 50 | Invalid input |
| 5 | 50 | 101 | 50 | Invalid input |
| 6 | 50 | 50 | 0 | Invalid input |
| 7 | 50 | 50 | 101 | Invalid input |
| 8 | 0 | 0 | 50 | Invalid input |
| 9 | 0 | 50 | 50 | Invalid input |
| 10 | 50 | 0 | 0 | Invalid input |
| 11 | 101 | 101 | 50 | Invalid input |
| 12 | 101 | 50 | 101 | Invalid input |
| 13 | 50 | 101 | 101 | Invalid input |

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(Contd.)...

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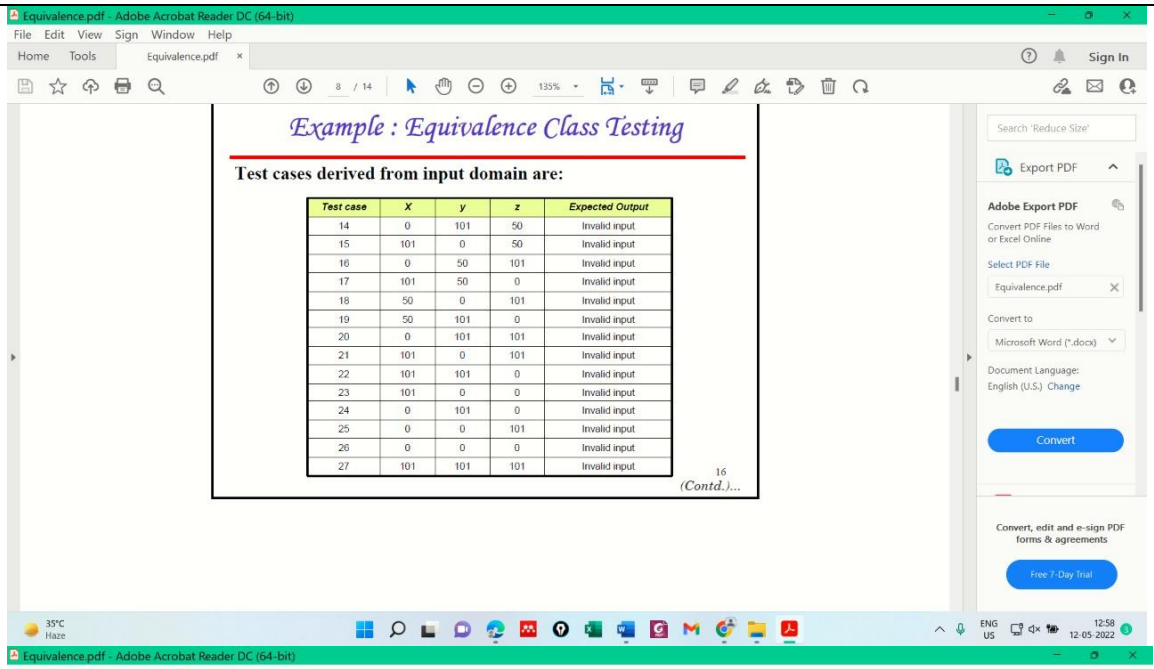


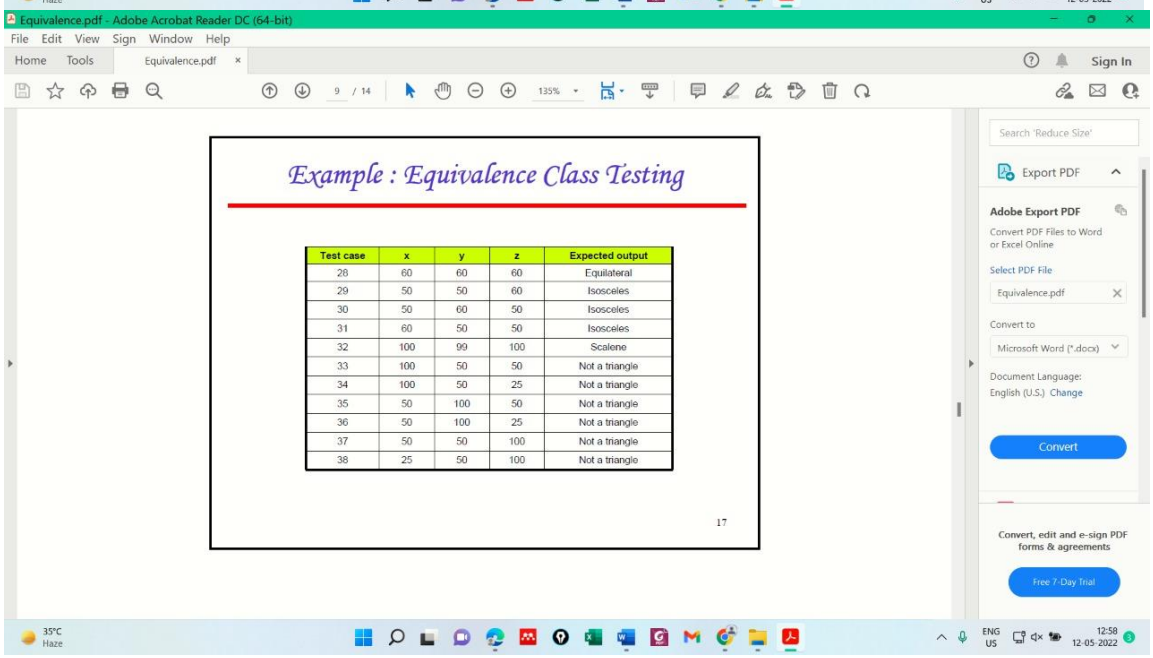


OR

Consider the following program for calculating the factorial of a number. It consists of main( ) program and the module fact( ). Calcul
for main( ) and fact( ) and then the cyclomatic complexity for the whole program. Determine test cases from independent paths b
paths.

```
main()
{ int number;
int fact();
clrscr();
printf("enter the number whose factorial is to be found out");
scanf("%d", & number);
if (number < 0)
printf("factorial cannot be defined for this number");
else
printf("factorial is %d", fact(number)); }
int fact( int number )
{ int index;
int product=1;
for ( index=1; index<=number; index++)product=product*index;
return(product); }
```

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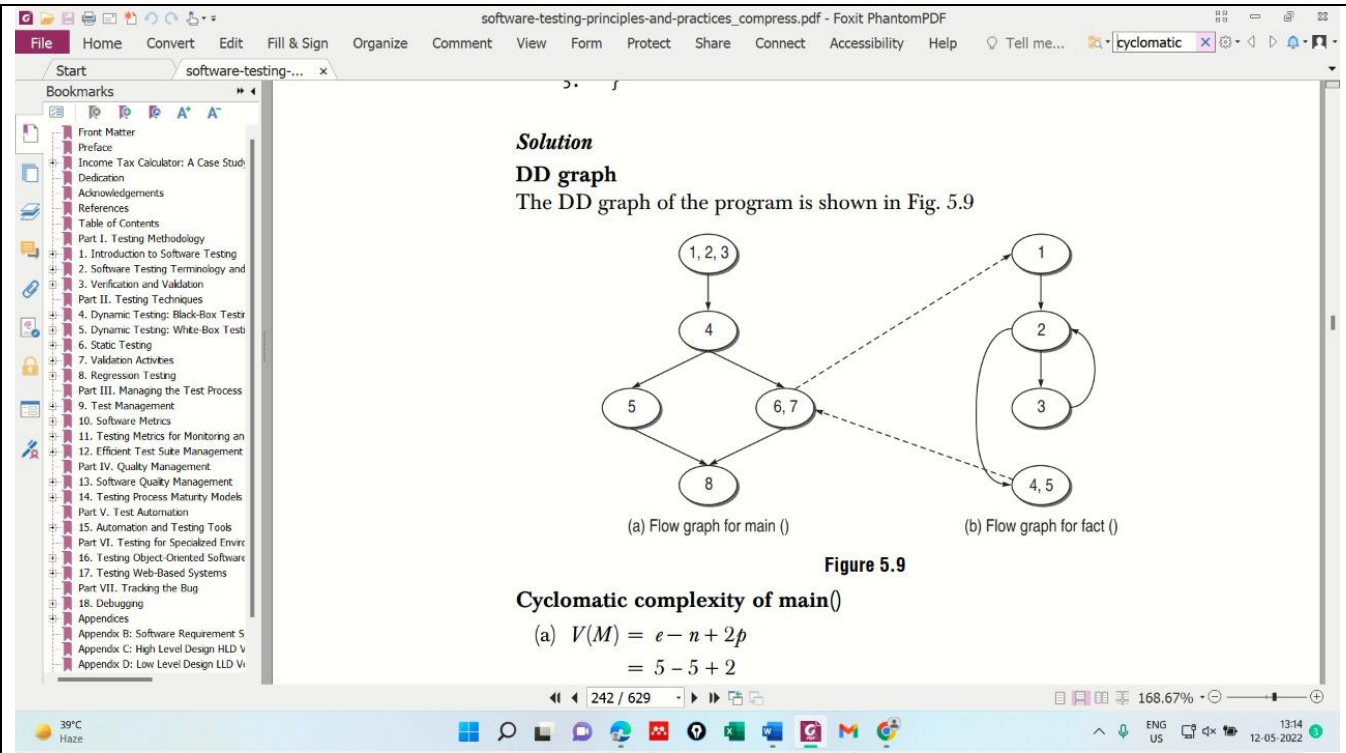


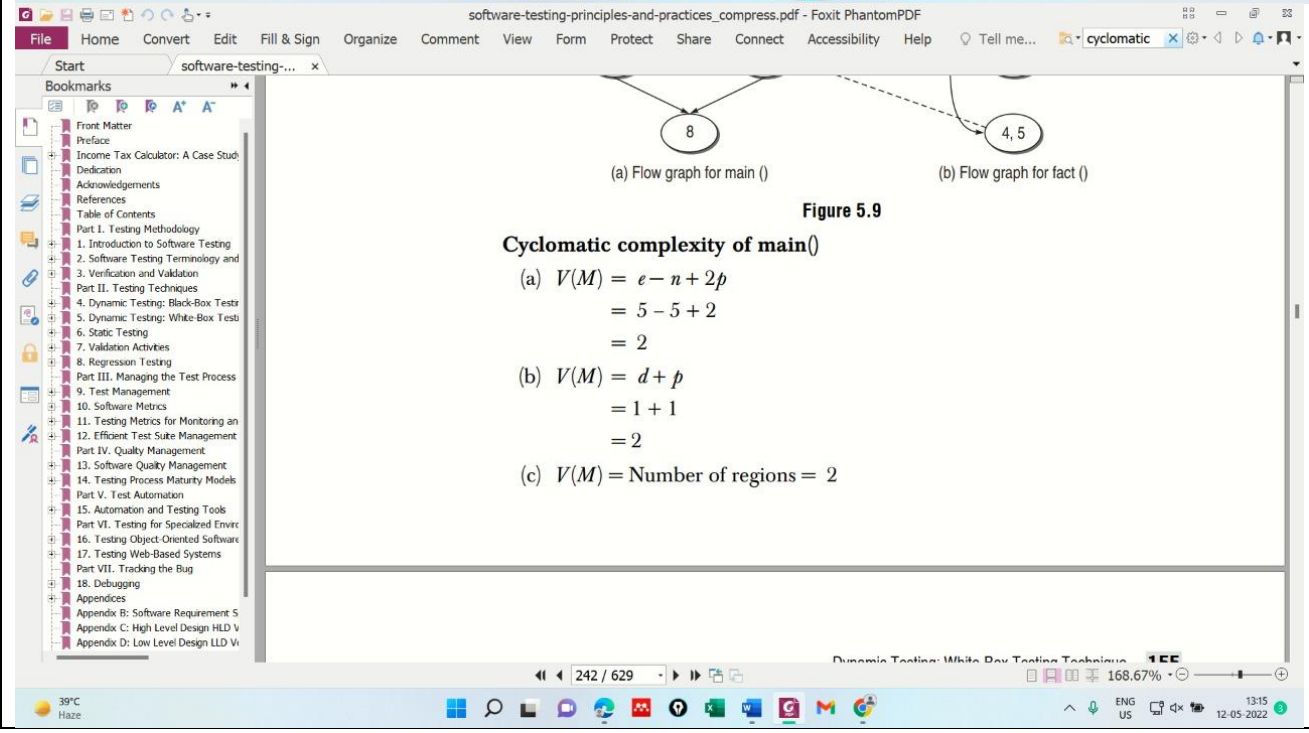


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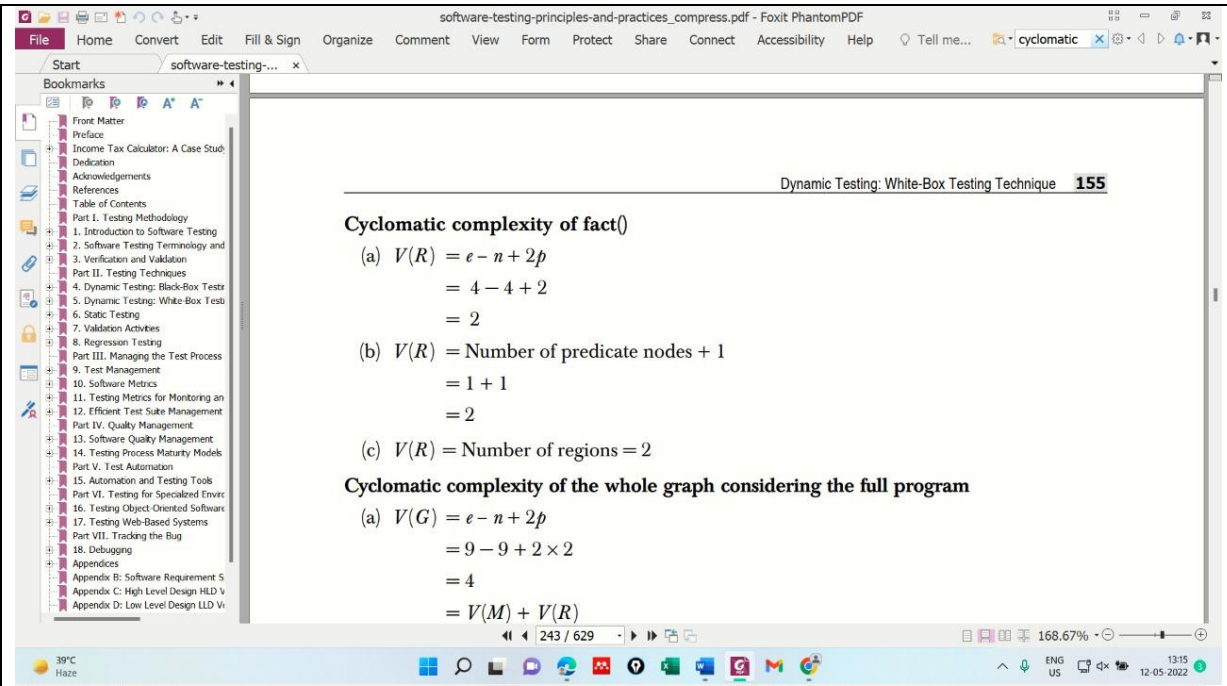


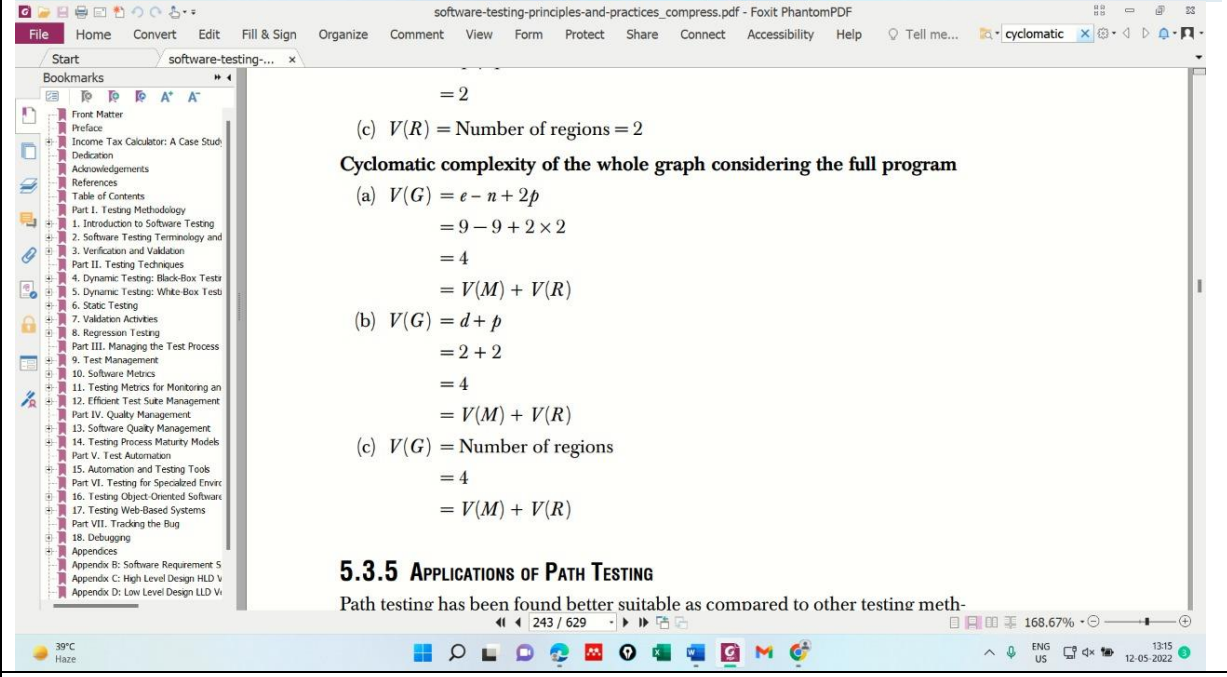


| | |
|---|---|
| 11 | Diagnose the need of software maintenance. Describe its types with examples. |
| | OR |
| | Differentiate between Software Re- Engineering and Reverse Engineering in detail. Also explain how software versions are controlled |

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