PMSCS Program

Department of Computer Science and Engineering

Jahangirnagar University

Final Examination: Fall-2021

Course Title: ***Software Testing*** Course Code: **PMSCS-670**

Time: **1 Hour 30 Minutes**. Full Marks: **30**

[There are 4(**Four**) questions. Answer any 3(Three) questions. Each question carries equal marks. Number in the right margin indicate marks.]

1. a) Write down the principles of software testing. 1.5

   b) Mention the advantages of criteria-based test design 1.5

   c) Define beta testing. Give a comparison between functionality and non-functionality based testing. 3

   d) Draw the block diagram of MDTD steps and give a comparison among smoke, sanity and regression testing. 4

2. a) Define criteria subsumption and du-path. 2

```java
public static int FindPatternIndex(String subject, String pattern){
    final int NOTFOUND=-1;
    int iSub=0, rtnIndex=NOTFOUND;
    boolean isPat=false;
    int subjectLen=subject.length();
    int patternLen=pattern.length();
    while(isPat==false && iSub+patternLen-1<subjectLen){
        if(subject.charAt(iSub)==pattern.charAt(0)){
            rtnIndex=iSub;
            isPat=true;
            for(int iPat=1; iPat<patternLen; iPat++){
                if(subject.charAt(iSub+iPat)!=pattern.charAt(iPat)){
                    rtnIndex=NOTFOUND;
                    isPat=false;
                    break;
                }
            }
        }
        iSub++;
    }
    return rtnIndex;
}
```

Code Segment-I

   b) Draw the dataflow graph of **Code Segment-I** with proper annotations. 2

   c) Write down the test paths for EPC criteria of the derived graph of **Code Segment-I**. 2

   d) Determine the du-paths for the variables **`isPat`**, **`rtnIndex`**, **`iSub`** of **Code Segment-I** 4

3. a) Does predicate coverage subsumes clause coverage? Explain with an example. 2

b) What is Base Choice Coverage? What are the constraints of ISP characteristics? 2

c) Write a short note on def and use. 3

d) Consider the following graph: 3

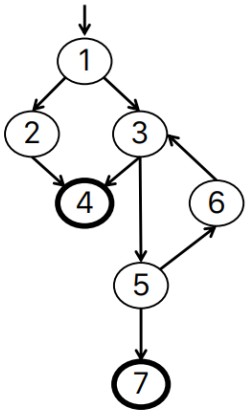

Figure-1

Now answer each of the followings:

i) Edge pair coverage of **Figure-I** graph.

ii) Prime path coverage criteria of **Figure-I** graph.

4. a) Write a short note on Input Space Partitioning steps. 3

b) Consider the predicate, $p = a \wedge (\neg b \vee c)$ and answer the followings: 3

i) Write down the complete truth table.'

ii) List out all pairs of rows from your table that satisfy (CACC) with respect to each clause.

iii) List out all pairs of rows from your table that satisfy (RACC) with respect to each clause.

c) Use the following characteristics and blocks for the questions below. 3

Characteristics	Block 1	Block 2	Block 3	Block 4
Value 1	< 0	0	> 0	
Value 2	< 0	0	> 0	
Operation	+	−	×	÷

Table-I

i) Give test cases to satisfy the Each Choice criterion.

ii) Give test cases to satisfy the Base Choice criterion. Assume base choices are `Value 1 = > 0`, `Value 2 = > 0`, and `Operation = +`.

iii) How many tests are needed to satisfy the Pair-wise Coverage criterion?

d) Write down the advantages of input domain partitioning. 1

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