



PMSCS Program
Department of Computer Science and Engineering
Jahangirnagar University
Final Examination: Fall-2020

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) Draw the block diagram of RIPR model. 1.5
 - b) Write down the principles of software testing. 1.5
 - c) Define each of the followings: 3
 - i) Beta Testing
 - ii) Negative Testing
 - iii) Load Testing
 - d) List down the activities of MDTT and draw the block diagram of MDTT steps. 4
2.
 - a) Define def-clear path and simple path. 1

```
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. 3
- c) Write down the edge pair coverage 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 subsume clause coverage? Explain with an example. 2
- b) Write down the characteristics of a Good Coverage Criterion. 2
- c) For the expression, $E = a \wedge (b \vee c)$ determine the CACC and RACC 3
- d) Consider the following graph: 3

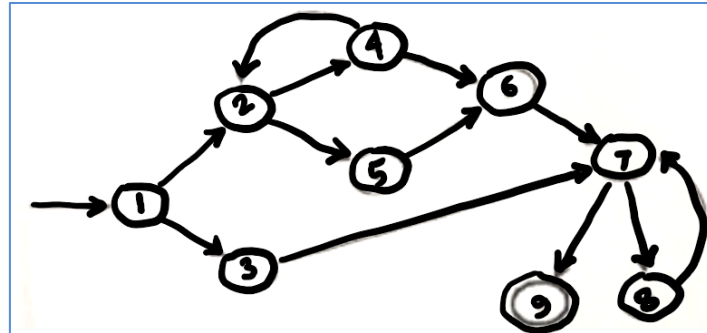


Figure-1

Now answer each of the followings:

- i) Set Representation of **Figure-I** graph.
 - ii) Prime Path Coverage Criteria of **Figure-I** graph.
4. a) Define Input Domain. Write down the conditions for partitioning domains. 2
 - b) Write down the advantages of input domain partitioning. 2
 - c) Consider the following function. 3

```
public boolean findElement (List list, Object element)
// Effects: if list or element is null throw NullPointerException
//      else return true if element is in the list, false otherwise
```

Now, give an example of partitioning scheme that will satisfy the following characteristic constraints for the above code snippet and highlight the criteria:

- i) A block from one characteristic cannot be combined with a specific block from another.
 - ii) A block from one characteristic can ONLY BE combined with a specific block form another characteristic.
- d) 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?

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