



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

Course Title: **Software Testing**  
Time: **1 Hour 30 Minutes.**

Course Code: **PMSCS-670**  
Full Marks: **30**

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

1. a) Define graph. Write down the set representation of the graph mentioned in Figure-1. 2
- b) Draw the control flow graph for each of the following code snippet. 3

```
x = 0;
while (x < y)
{
    y = f(x, y);
    if (y == 0)
    {
        break;
    } else if (y < 0)
    {
        y = y*2;
        continue;
    }
    x = x + 1;
}
```

(i)

```
/**
 * Return index of node n at the
 * first position it appears,
 * -1 if it is not present
 */
public int indexOf (Node n)
{
    if (n != null)
    {
        for (int i=0; i < path.size(); i++)
            if (path.get(i).equals(n))
                return i;
    }
    return -1;
}
```

(ii)

```
read ( c );
switch ( c )
{
    case 'N':
        z = 25;
    case 'Z':
        z += 20;
    case 'Y':
        x = 50;
        break;
    default:
        x = 0;
        break;
}
```

(iii)

- c) Define detour and def-clear path with appropriate example. 2
- d) Define *def* and *use*. How can we determine the *defs* of a particular variable from the source code? 3
2. a) Define each of the followings: 3
- |                       |                        |
|-----------------------|------------------------|
| i. Error              | ii. Failure            |
| iii. Mutation Testing | iv. Happy Path Testing |
| v. Stress Testing     | vi. Regression Testing |
- b) Give a comparison between functional testing and non-functional testing. 3
- c) With necessary diagram briefly describe the software testing V-Model. 4
3. a) Define input domain. Write down the properties of domain partitioning. 1.5
- b) Define Coverage Criteria. Write down the advantages of Input Space Partitioning. 1.5

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**

- Give test cases to satisfy the Each Choice criterion.
- Give test cases to satisfy the Base Choice criterion. Assume base choices are Value 1 = > 0, Value 2 = > 0, and Operation = +.
- How many tests are needed to satisfy the Pair-wise Coverage criterion?

d) Briefly describe the five steps of input domain modeling.

4

4. a) Define Logic Coverage. Write down the sources of logic expressions and predicates.

2.5

b) Define determination in logic coverage. For the logic expression,  $p = (x \wedge y) \vee (x \wedge \neg y)$  show that only *clause*  $x$  determines the predicate.

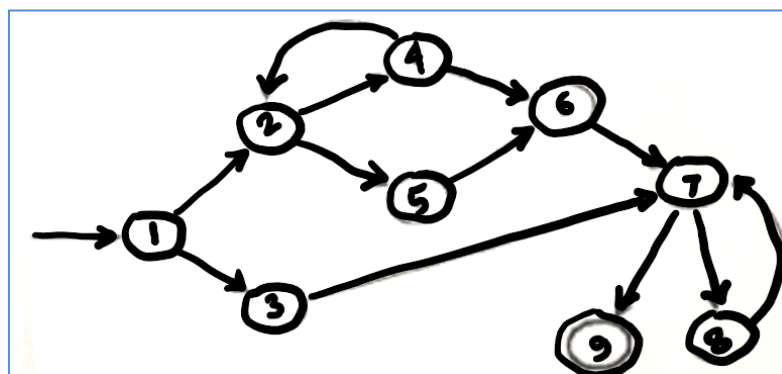
2.5

c) Give a comparison between CACC and RACC.

2

d) Consider the following graph:

3



**Figure-1**

Now write down the test requirements and test paths for each of the following criteria:

- Edge Coverage
- Node Coverage
- Edge-pair Coverage

--0--