

Code No: 126ER

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech III Year II Semester Examinations, October/November - 2016**

**SOFTWARE TESTING METHODOLOGIES**

(Common to CSE, IT)

**Time: 3 hours**

**Max. Marks: 75**

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART - A**

**(25 Marks)**

- 1.a) What is the difference between control flow graph and flow chart? [2]
- b) What is the use of link markers in path instrumentation? [3]
- c) What is a dead variable? [2]
- d) Differentiate 'biosis' and 'mitosis' in a transaction flow. [3]
- e) What do you mean by domain and range of a function? [2]
- f) What is range/domain closure compatibility? [3]
- g) Write the Demorgan's theorem or law in Boolean algebra. [2]
- h) Simplify the following boolean expression using KV charts  
 $A'B'+AB'+AB$  [3]
- i) What is an unreachable state in a state graph? [2]
- j) Write a short note on 'partial ordering relation'. [3]

**PART - B**

**(50 Marks)**

- 2.a) Discuss the merits and demerits of choosing an independent tester over designer for testing the software.
- b) How will you decide the importance of bug while prioritizing bugs to fix? Discuss the consequences of bugs in detail. [5+5]

**OR**

- 3.a) Draw the control flow graph for the following C function and list the linearly independent paths for testing.

```
int lsearch(int a[],int n,int k)
{
    int i;
    for(i=0;i<n;i++)
    {
        if(a[i]==k)
        {
            return i;
        }
    }
    if(i==n)
    {
        return -1;
    }
}
```

- b) What is meant by coincidental correctness? Explain with example. [6+4]

- 4.a) Discuss the path selection criteria for system testing based on transaction flows.  
 b) Why is not static analysis enough for finding data flow anomalies? Why is testing required? [5+5]

**OR**

- 5.a) Explain all-du-paths (ADUP) data-flow testing strategy in detail.  
 b) Write a short note on slices and dices. [6+4]

- 6.a) What are the characteristics of nice domains? Explain with examples.  
 b) What are the possible domain bugs in a one-dimensional closed domain boundary? How will you test one-dimensional domain with closed boundaries? [5+5]

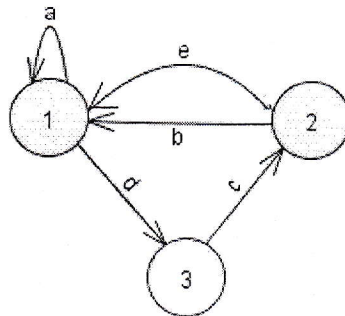
**OR**

- 7.a) What is domain testing? Draw the schematic representation of domain testing and explain.  
 b) Discuss domain ambiguities and contradictions in detail. [6+4]

- 8.a) Explain how the consistency and completeness of specifications can be analyzed using Boolean algebra.  
 b) What are the problems associated with the immaterial cases in the decision table? How they are handled while designing the test cases? [5+5]

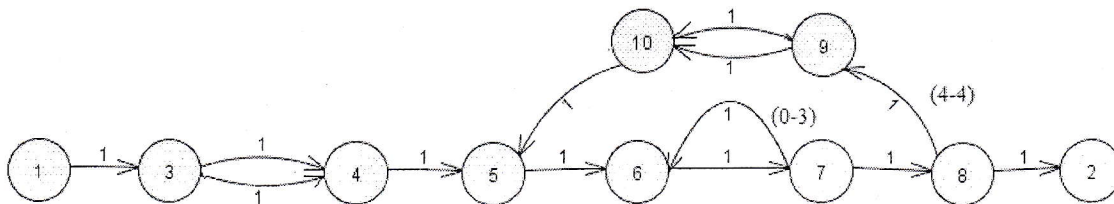
**OR**

- 9.a) Write the path expression for the following flow graph 1.



Graph 1

- b) Find the maximum path count for the following flow graph 2. Each link represents a single link with weight "1". The outer loop will be taken exactly four times and the inner loop can be taken zero to three times. [4+6]



Graph 2

10.a) What are principles of state testing? Mention some situations in which state testing may prove useful.

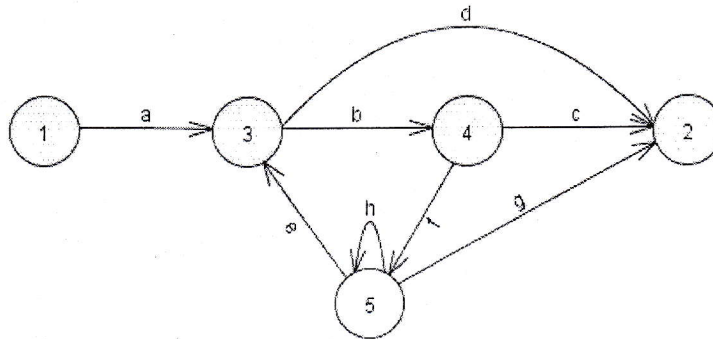
b) Discuss about switches, flags and unachievable paths in a state graph with examples.

[5+5]

OR

11.a) Write a short note on node reduction algorithm.

b) Represent the following flow graph 3 using a graph matrix and apply the node reduction algorithm for finding path expression between node1 and node2. [4+6]



Graph 3

---ooOoo---