STA second Assignment

1. Show with the help of example that a very high level of statement coverage doesn't mean that the program is defect free. Explain how structural is different from functional testing.

2. Consider the pseudo code for Binary Search.

```
public static void search ( int key, int [] elemArray, Result r )
{
1.    int bottom = 0 ;
2.    int top = elemArray.length - 1 ;
      int mid ;
3.    r.found = false ;
4.    r.index = -1 ;
5.    while ( bottom <= top )
      {
6.        mid = (top + bottom) / 2 ;
7.        if (elemArray [mid] == key)
          {
8.            r.index = mid ;
9.            r.found = true ;
10.           return ;
          } // if part
          else
          {
11.           if (elemArray [mid] < key)
12.               bottom = mid + 1 ;
              else
13.               top = mid - 1 ;
          }
      } //while loop
14. } // search
} //BinSearch
```

For the above given code,
   a. Draw a CFG considering each numbered statement as a separate node.
   b. What is the statement coverage achieved when "Statement #7" is evaluated to TRUE? Write the Test Suite required to achieve 100% statement coverage.

3. Explain the various types of coverage criteria with a simple example for each.
4. For the above program generate the test cases using path testing.

5. For the program given in Q2. Generate the test cases required to achieve branch coverage. And also explain the need for condition testing.