College Of Electronic Technology-Tripoli
Department of computer Engineering
CS427 : Software testing *spring 2018* *final exam* *(2 hours)*

Part 1. Please answer 4 questions only (10 marks each).

Q1. Define the following:

1- Software testing 2 – Black box testing . 3- Cyclomatic complexity

Q2. Complete the following sentences:

1- Software testing can show only the ..... of failures, but not the ..... of them.
2- The main testing golden rule says : try ..... the .....
3- One of the reasons behind software testing is that the software should not do something that ..... says it should do.
4- The concept of software observability can be simplified by the rule : what you ..... is what you ..... .
5- Software validation is ..... .
6- Testing Maturity Model (TMM) has 5 levels: initial, ... , ...

Q3. True or False (with correction of false statements):

1- Fault may hide inside a software and remain undetectable for long time.
2- The quality of software interface "GUI" may affect the software observability.
3- In flow graph the predicate node is the one which has more than two incoming flow paths.
4- Regression -test is done to make sure weather the overall proposed system meets system specification.
5- Black-box testing is a data driven testing.

Q4. Suppose we want to test the usability aspect of a mobile application titled :"my academic file" developed for helping CET students in on line student services.
Explain your plan to conduct usability testing process for this application.

Q5. Briefly explain one of the following topics:

1- **Software testing automation.**
2- **Usability testing.**

Part2: answer one question only *(25 marks each)*

Q1. Consider the following specifications:

The players in world cup will be classified into 3 groups: golden, silver, bronze and according to these rules :

1- The player will be allocated to **golden group** . if his(**total goals >= 10** with red cards=0). or (**total goals** >= 5 and long_distance >= **65** km/h with yellow cards<2 and red cards=0).
2- The player will be allocated to **silver group** . if his (**total goals** >= 3 and long_distance >= 50 but <65 km/h with yellow cards<4 and red cards=0).
3- The player will be allocated to **bronze group** . if his (**total goals** >= 2 and long_distance < 50 km/h with yellow cards<=4 and red cards<=1).

a- Apply the black-box testing techniques (class portioning , boundary value analysis) and show the result, provide test case samples in your answer.

b- Give a test case not covered by above specification.

c- Try to update the above specification to include uncovered cases.

.Q2. What type of coverage would you get if you tested the following code with the values :

x = 3, y = 4 and x = 2, y = 1.

```
void calc(int x, int y) {
 if (x < y)
  {
   if (x > 2)
    {
      y++;
    }
  }
 else
 {
   y--;
 }
} // of function
```

a. Statement coverage but not branch or path coverage

b. Statement and branch coverage but not path coverage

c. Statement, branch and path coverage

d. None of the above

Part3: answer the following question *(35 marks)*

Q1.

Check the given code, then:

- **a- Derive the flow graph .**
- **b- Find Cyclomatic complexity.**
- **c- List of independent paths.**
- **d- Write a test case for each independent path;**

```
int a,b,c,p, i=0,x=0;
while( i< 10 ) {
    cin>>a>>b>>c;
    if(a > 0 )
      x=x+2;
    else if ( a < 0)
      x=x-2;
    else
      x=x*2;
   p=c/(b+1);
   if(p > 3)
     { z= x+5 ; cout<< z; }
   i=i+1;
} // of while
```