PMSCS Program

Department of Computer Science and Engineering

Jahangirnagar University

Final Examination: Spring-2021

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. Figures in the right margin indicate marks.]

1. Consider the following information about a graph and answer each of the followings

$N = \{1, 2, 3, 4, 5, 6, 7, 8\}$
$N_o = \{1\}$
$N_f = \{7\}$
$E = \{(1,5), (5,3), (3,4), (3,2), (4,3), (2,6), (6,8), (6,7)(8,6)\}$
$\text{def}(1) = \{x, y, z\}$; $\text{def}(4) = \{z\}$
$use(1) = use(4) = use(2) = use(8) = \{x\}$
$use(2) = use(7) = \{y\}$
$use(4) = use(2) = \{z\}$

   a) Draw the graph. 2

   b) List down the prime paths of the graph. 3

   c) List all the du-paths with respect to variable *x*, *y* and *z*. 3

   d) List down the minimal set of test paths for all-du-paths coverage with respect to variable *x*, *y* and *z*. 2

2. a) List down the advantages of ISP. 2

   b) A tester defined three characteristics based on the input parameter car: **Where Made**, **Energy Source**, and **Size**. The following partitionings for these characteristics have at least two mistakes. Identify them. 2

Where Made		
North America	Europe	Asia
Energy Source		
Gas	Electric	Hybrid
Size		
2-Door	4-Door	Hatch-back

   c) Assume that, while doing ISP we found three characteristics $\{A, B, C, D\}$ and each of the characteristics are partitioned into following blocks: $\{(A1, A2, A3, A4), (B1, B2, B3), (C1, C2, C3, C4), (D1, D2)\}$. Now, answer each of the following questions: 2

      i) How many test cases we will get for all combination coverage?
      ii) How many test cases we will get for each choice coverage?
      iii) How many test cases we will get for base choice coverage?
      iv) How many test cases we will get for 3-wise coverage?

   d) Define each of the followings with an appropriate example: 4

      i) Simple Path ii) Test Path iii) Detour iv) Def-clear Path

3. a) Differentiate between white box testing and black box testing. 3

   b) Draw the block diagram of software testing V-model. 2

   c) Differentiate between functional testing and non-function testing 2

   d) Define each of the followings: 3

      i) Recovery Testing ii) Load Testing iii) Back-end Testing

4. a) Suppose you have a predicate, $\boldsymbol{P} = (\boldsymbol{x} \vee \boldsymbol{y}) \wedge (\boldsymbol{p} \vee \boldsymbol{q})$. Now answer each of the followings: 4

      i) What are the RACC pairs of clause *x*

      ii) What are the RACC pairs of clause *q*

      iii) What are the GACC pairs of clause *y*

      iv) What are the GACC pairs of clause *p*

   b) Define predicate. List down the source of predicate 2

   c) Does predicate coverage subsumes clause coverage? Explain with an example. 2

   d) Consider the logic expression, $\boldsymbol{P} = ((\boldsymbol{f} <= \boldsymbol{g}) \wedge (\boldsymbol{X} > \boldsymbol{0})) \vee (\boldsymbol{M} \wedge (\boldsymbol{e} < \boldsymbol{d} + \boldsymbol{c}))$ and answer the followings: 2

      i) List down the clauses

      ii) Write down any test case for clause coverage.

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