

⚠ This quiz has been regraded; your new score reflects 3 questions that were affected.

# Midterm Exam

**Due** Oct 21, 2020 at 10:25am      **Points** 100

**Questions** 24      **Available** until Oct 21, 2020 at 10:25am

**Time Limit** 85 Minutes

## Instructions

Please read the instructions carefully and complete all steps just as you did when taking the practice quiz.

Please note that you may have **three blank sheets of scratch paper** for your work. **You must show both sides of each paper to prove they are blank at the start of the exam.** This is a **closed notes, closed book, and no calculator** exam. Failure to follow these rules may lead to point deductions or being flagged for cheating on the system.

**Technical Support:** For assistance with RPNow, please contact the ASU Help Desk 24/7 support by phone at 1.855.278.5080 or by starting a Live Chat via your Service Center tab in MyASU.

This quiz was locked Oct 21, 2020 at 10:25am.

## Attempt History

	Attempt	Time	Score	Regraded
LATEST	<a href="#">Attempt 1</a>	44 minutes	87 out of 100	100 out of 100

⚠ Correct answers are no longer available.

Score for this quiz: **100** out of 100

Submitted Oct 21, 2020 at 9:46am

This attempt took 44 minutes.

Question 1

3 / 3 pts

Which of the following best describes the difference between verification and validation?



Validation primarily addresses code coverage while verification primarily addresses requirements coverage.



Verification is normally performed during system test while validation is normally performed during unit test.



Verification answers the question: are we building the product right.

Validation answers the question: are we building the right product?



Validation answers the question: are we building the product right.

Verification answers the question: are we building the right product?

## Question 2

5 / 5 pts

Consider the following specification for a program:

*An application is being developed to process admission of students to a new graduate program. The program has 3 inputs. The first input is the application tracking number which consists of 10 digits. The second input is the student's gpa on a 4 point scale. The third input is the type of delivery the student is choosing (either ONLINE or In-Person). To be admitted into the graduate program a student must have a gpa of at least 3.25. The program will send the student a letter indicating whether or not they have been admitted to the program along with the delivery mode. Students with a gpa of 3.75 or higher are sent a letter indicating that they have been admitted as "scholars" in the program.*

Which of the following best describes the set of equivalence partitions for gpa.

- 
- gpa < 0 (I)
  - gpa > 4 (I)
  - 0 <= gpa < 3.25 (V)
  - 3.25 <= gpa < 3.75 (V)
  - 3.75 <= gpa <= 4.0 (V)
- 

- gpa < 0 (I)
  - gpa > 4 (I)
  - 0 <= gpa <= 4 (V)
  -
- 

- gpa < 0 (I)
- gpa > 4 (I)
- 3.25 <= gpa <= 4.00 (V)
- 

### Question 3

3 / 3 pts

Which of the following is considered to be a data flow anomaly?

- 
- - Referencing a defined variable
  - 
  - Defining a variable, using it, and then redefining it
  - Defining a variable, but never using it
  - 
  - Referencing a redefined variable
-

**Question 4****5 / 5 pts**

Consider the following code segment:

if A < C

then

    exchange A and C

else

    exchange A and C;

endif;

if B < C then

    exchange A and C;

endif:

Which of the following is the final symbolic values for A, B, C on the TT path?

---

Final Value of A =  $C_0$

Final Value of B =  $B_0$

Final Value of C =  $A_0$

---

Final Value of A =  $B_0$

Final Value of B =  $C_0$

Final Value of C =  $A_0$

---

Final Value of A =  $A_0$

Final Value of B =  $B_0$

Final Value of C =  $C_0$

Final Value of A =  $C_0$

Final Value of B =  $A_0$

Final Value of C =  $B_0$

### Question 5

5 / 5 pts

Given 3 inputs: P1 with values V1 and V2; P2 with values V3, V4, and V5 and P3 with values V6 and V7, what are the correct tests for a pairwise combination design of experiments?

V3	V1	V6
V4	V1	V6
V5	V1	V6

V3	V1	V6
V3	V2	V7
V4	V1	V7
V4	V2	V6
V5	V1	V6
V5	V2	V7

This table tests every combination of pairs of values.

V3	V1	V6
V3	V2	V7
V4	V1	V7
V4	V2	V6

V3	V1	V6
V3	V2	V7
V4	V1	V6
V4	V2	V7
V5	V1	V6
V5	V2	V7

**Question 6****5 / 5 pts**

Which of the following is the cyclomatic complexity of the code given below?

if A < B then

exchange A and B;

endif

if B < C then

exchange B and C;

endif

if A > D then

exchange A and B;

endif

4 6 3 5**Question 7**

3 / 3 pts

Given the code below, how many test cases are needed to achieve 100% multiple condition coverage?

If  $a > 15$  or  $b < 2$  or  $Z=0$

then  $Y = 25$

else  $Y = 30;$

If  $w > 5$  or  $z < 10$

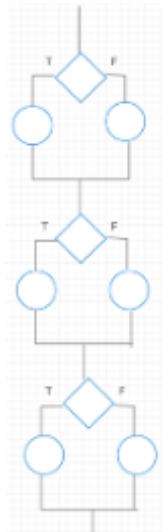
then  $X = 14$

else  $X = 0;$

 8 32 5 4**Question 8**

5 / 5 pts

Which of the following is a possible set of basis paths for the given control flow diagram.



- TTT / TTF / TFT / TFF / FTT / FTF / FFT / FFF
- TTT / FTT / FFT / FFF
- TTT / TFT / TTF
- TTT / FTT / TFT / TTF

### Question 9

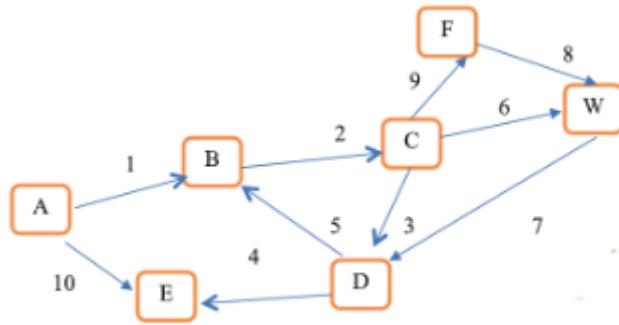
5 / 5 pts

A new program for developing parking rates has been developed. Rates are based upon the classification of the vehicle owner (faculty, staff, student), the location of the parking (garage or open lot) and the size of vehicle (large or small). The rate for faculty parking in a parking garage or open lot regardless of vehicle type is \$100.00. Students with a small vehicle pay \$250.00 in a lot and \$350.00 in a garage. Students with a large vehicle are not allowed to park in a garage but may park in a lot for \$400.00. Staff may park any vehicle anywhere for \$50.00. If one were to develop a decision table for testing this program, how many test cases / columns would be required.

12 7 5 11**Question 10****5 / 5 pts**

Given the state testing diagram below, how many test sequences would one find in the state testing tree?

You may assume "A" is the start state and "E" is the terminal state.

 3 8 5 6**Question 11****3 / 3 pts**

Which of the following is not considered a classic testing mistake?

- Believing the primary objective of system testing is to find bugs
- Focusing on usability issues
- Lack of communication with developers
- Incorrectly documenting and reviewing test designs

### Question 12

5 / 5 pts

Given the code and test cases below, what is the highest level of test coverage achieved by executing all of the tests?

```
read (w, x, y, z)  
if x > 20 and y > 4  
    then s1  
    else s2  
endif;  
if z < 50 and w > 10  
    then s3  
    else s4  
endif;
```

Test #1	Test#2	Test#3	Test#4
x=25	x=15	x=30	x=5
y=3	y=2	y=6	y=10
z=55	z=75	z=25	z=3
w=15	w=5	w=25	w=2

- decision / condition coverage
- statement coverage
- decision coverage
- multiple condition coverage
- No level of control flow coverage achieved

**Question 13****3 / 3 pts**

When are test cases created in test driven development?

- After the code is developed
- While code is developed
- Before code is developed

**Question 14****3 / 3 pts**

What is an advantage of model based test development?

- If there is a change in the model, tests will remain the same
- If there is a change in the model, new tests can automatically be generated
- There are a set number of test generation criteria we can use

- Model based test development executes the system

**Question 15****6 / 6 pts**

Assume we are testing a function with 3 variables:

Variable A: has values 0 and 1

Variable B: has values 0 and 1

Variable C: has values 0 and 1

What is the total 2-way variable value configuration coverage achieved by the following tests:

A=0; B=0; C=0

A=0; B=1; C=1

A=1, B=1, C=0

---

3/8

---

8/12

---

6/8

---

9/12

**Question 16****3 / 3 pts**

What is the difference between mutation based fuzz testing and generation based fuzz testing?



There is no difference between mutation and generation based fuzz testing.



Mutation based fuzz testing needs to know specifications of the test input to create random test data. Generation based fuzz does not require knowledge of inputs to create test data.



Mutation based fuzz testing does not require knowledge of inputs to create test data. Generation based fuzz testing needs to know specifications of the test input to create random test data.

### Question 17

3 / 3 pts

In defect based testing, a defect taxonomy is used...?

- To categorize test cases once test cases are developed
- To derive test cases
- When performing only system level testing
- When test cases fail

### Question 18

3 / 3 pts

What kind of technique is metamorphic testing?

- Primarily a verification technique

- Both verification and validation
- Neither a verification or validation technique
- Primarily a validation technique

**Question 19****3 / 3 pts**

Exploratory testing is the same as ad hoc testing.

- True
- False

**Question 20 Original Score: 0 / 3 pts Regraged Score: 3 / 3 pts**

! This question has been regraded.

Which of the following is not a possible tour in exploratory testing?

- Performance tour
- Scenario tour
- Variability tour
- Complexity tour

**Question 21****5 / 5 pts**

Consider testing utilizing equivalence partitioning a program with the following 2 inputs and equivalence partitions? Which of the following describes the minimum number of tests needed?

Input 1: X

1..10 (V)

11.. 50 (V)

<1 (I)

> 50 (I)

Input 2: Y

50..75 (V)

76.. 80 (V)

<50 (I)

> 80 (I)

---

2 valid tests and 2 invalid tests

---

4 valid tests and 4 invalid tests

---

2 valid tests and 4 invalid tests

---

1 valid and 2 invalid tests

## Question 22 Original Score: 0 / 5 pts Regraged Score: 5 / 5 pts

❗ This question has been regraded.

Given the following code and test cases, is the following true or false:

"all uses" data flow coverage is achieved for variable "x"?

x := 0; (notation means assign 0 to X)

y:= 0;

read (a,b,c);

if a > 10

    then x := 5

    else y:= 5;

if b > 10

    then x := x + y

    else y:= x + y

if c > 10

    then z := x + y;

Test 1. a = 19, b = 15 c = 5

Test 2. a = 5, b = 16 c = 15

Test 3 a = 20 b = 5 c = 18

Test 4 a = 6 b = 4 c = 2

---

True

---

False

**Question 23 Original Score: 0 / 5 pts Regraded Score: 5 / 5 pts**

! This question has been regraded.

Given the following code and test cases, is the following true or false:

"all uses" data flow coverage is achieved for variable "y"?

x := 0; (notation means assign 0 to X)

y:= 0;

read (a,b,c);

if a > 10

    then x := 5

    else y:= 5;

if b > 10

    then x := x + y

    else y:= x + y

if c > 10

    then z := x + y;

Test 1. a = 19, b = 15 c = 5

Test 2. a = 5, b = 16 c = 15

Test 3 a = 20 b = 5 c = 18

Test 4 a = 6 b = 4 c = 2

---

True

---

False

**Question 24**

**6 / 6 pts**

Consider the following code segment:

```
if A < C  
then  
    exchange A and C  
else  
    exchange A and B;  
endif;  
if B < C then  
    exchange B and C;  
endif;
```

What is the path expression for the TF path?

---

(A<sub>0</sub> < C<sub>0</sub>) and (B<sub>0</sub> < A<sub>0</sub>)

---

(A<sub>0</sub> < C<sub>0</sub>) and (C<sub>0</sub> < A<sub>0</sub>)

---

(A<sub>0</sub> < C<sub>0</sub>) or (B<sub>0</sub> >= A<sub>0</sub>)

---

(A<sub>0</sub> < C<sub>0</sub>) and (B<sub>0</sub> < C<sub>0</sub>)

---

Quiz Score: **100** out of 100

## **Midterm Exam**

**TOTAL POINTS 100**

Instructions

1.

Question 1

\_\_\_\_\_ answers the question: "Are we building the right product?"

3 points

validation

2.

Question 2

What kind of activity is system testing?

3 points



Neither a verification or validation activity



Both a verification and validation activity



Primarily a verification activity

3.

Question 3

True or False? System testing activities should overlap with development.

3 points



True



False

4.

Question 4

Who performs beta testing?

3 points



Develop



Engineering managers



Customers



Testers

5.

Question 5

Which of the following is not a best testing practice?

3 points



Begin developing system tests only after integration tests have passed



Accommodating for changes late in development and testing



Utilizing model based testing techniques



Assessing software reliability through statistical testing

6.

Question 6

If a stakeholder is requiring code to be tested in three days, but four days are needed to fully test the code, how many days should the testing team take to test the code?

3 points



At least four days



Three days



Two days

7.

Question 7

What happens in the green phase of test driven development?

3 points



Write enough code to pass all the test cases



Write a minimal test case on the behavior needed



Improve code while letting test cases pass



Write enough code to make the failing test case pass

8.

Question 8

Which of the following is a good set of equivalence partitions for a username where the username must be between 3-10 characters?

3 points



< 3



> 10



1. 3-10; 2. < 3 characters; 3. > 10 characters



3-10;

9.

Question 9

Use cases can be used for...?

3 points



Both verification and validation testing



Neither verification or validation testing



Only validation testing



Only verification testing

10.

Question 10

A valid student ID can only contain letters between and including c and i. What boundary values should be tested?

3 points



c,d,j,j



c,d,h,i



b,c,d,h,i,j



a,c,d,h,j,k

11.

Question 11

Parking rates for a permit calculated based on the type of vehicle owner (faculty or students) and the location of the parking (garage, lot, street). Faculty may park in the lot or garage at \$200. Students pay \$100 for a garage spot and \$50 for a street spot. Any other combination is not allowed. Which decision table best captures these requirements.

5 points



	1	2	3	4	5	6
Faculty	X	X	X			

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Student</b>				<b>X</b>	<b>X</b>	<b>X</b>
<b>Street</b>	<b>X</b>			<b>X</b>		
<b>Garage</b>		<b>X</b>			<b>X</b>	
<b>Lot</b>			<b>X</b>			<b>X</b>
<b>\$200</b>		<b>X</b>	<b>X</b>			
<b>\$100</b>				<b>X</b>		
<b>\$50</b>					<b>X</b>	
<b>Not Allowed</b>	<b>X</b>					<b>X</b>

○

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Faculty</b>	<b>X</b>	<b>X</b>	<b>X</b>			
<b>Student</b>				<b>X</b>	<b>X</b>	<b>X</b>
<b>Street</b>	<b>X</b>			<b>X</b>		
<b>Garage</b>		<b>X</b>			<b>X</b>	
<b>Lot</b>			<b>X</b>			<b>X</b>

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
\$200		X	X			
\$100					X	
\$50				X		X
<b>Not Allowed</b>	X					

O

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Faculty</b>	X	X	X			
<b>Student</b>				X	X	X
<b>Street</b>	X			X		
<b>Garage</b>		X			X	
<b>Lot</b>			X			X
\$200		X	X			
\$100					X	
\$50				X		
<b>Not</b>	X					X

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Allowed</b>						

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Faculty</b>	<b>X</b>	<b>X</b>	<b>X</b>			
<b>Student</b>				<b>X</b>	<b>X</b>	<b>X</b>
<b>Street</b>	<b>X</b>			<b>X</b>		
<b>Garage</b>		<b>X</b>			<b>X</b>	
<b>Lot</b>			<b>X</b>			<b>X</b>
<b>\$200</b>		<b>X</b>	<b>X</b>			
<b>\$100</b>					<b>X</b>	
<b>\$50</b>	<b>X</b>			<b>X</b>		
<b>Not Allowed</b>						<b>X</b>

12.

Question 12

Timelines are an approach used to assess the impact of asynchronous events.

3 points

True

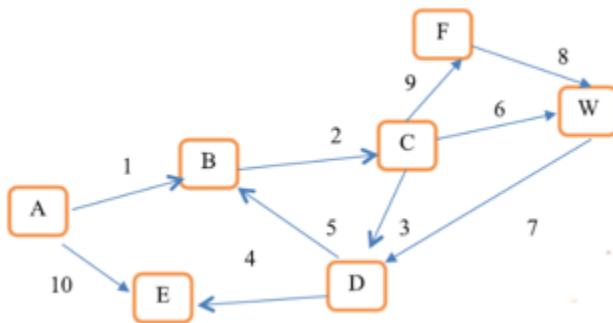
False

13.

Question 13

Given the state diagram below, which of the following is a test sequence in the state testing tree?

You may assume "A" is the start state and "E" is the terminal state.



3 points

1 2 3 4

1 2 9 8 3 4

1 2 3 5

1 2 6 7

14.

Question 14

Assume we are testing a function with 3 variables:

Variable A: has values 0 and 1

Variable B: has values 0 and 1

Variable C: has values 0 and 1

What is the total 3-way variable value configuration coverage achieved by the following:

A=0; B=0; C=0

A=0; B=1; C=1

A=1, B=1, C=0

5 points

9/12

3/8

6/12

4/8

15.

Question 15

Given 4 inputs: P1 with values A,B; P2 with value C, P3 with values F, X, and P4 with values G, H, W, what are the correct tests for a pairwise combination design of experiments?

3 points

<b>G</b>	<b>A</b>	<b>F</b>	<b>C</b>
<b>G</b>	<b>B</b>	<b>X</b>	<b>C</b>
<b>H</b>	<b>A</b>	<b>X</b>	<b>C</b>
<b>H</b>	<b>B</b>	<b>F</b>	<b>C</b>
<b>W</b>	<b>A</b>	<b>X</b>	<b>C</b>
<b>W</b>	<b>B</b>	<b>F</b>	<b>C</b>

○

<b>G</b>	<b>A</b>	<b>F</b>	<b>C</b>
<b>G</b>	<b>B</b>	<b>X</b>	<b>C</b>
<b>H</b>	<b>A</b>	<b>X</b>	<b>C</b>
<b>W</b>	<b>B</b>	<b>F</b>	<b>C</b>

○

<b>G</b>	<b>A</b>	<b>F</b>
<b>G</b>	<b>B</b>	<b>X</b>
<b>H</b>	<b>A</b>	<b>X</b>
<b>H</b>	<b>B</b>	<b>F</b>
<b>W</b>	<b>A</b>	<b>X</b>
<b>W</b>	<b>B</b>	<b>F</b>

○

<b>G</b>	<b>A</b>	<b>F</b>	<b>C</b>
<b>G</b>	<b>B</b>	<b>X</b>	<b>C</b>
<b>H</b>	<b>A</b>	<b>F</b>	<b>C</b>
<b>H</b>	<b>B</b>	<b>X</b>	<b>C</b>
<b>W</b>	<b>A</b>	<b>F</b>	<b>C</b>

<b>W</b>	<b>B</b>	<b>X</b>	<b>C</b>
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16.

Question 16

All tests are currently passing. A mutant is introduced and the tests still continue to pass. Should the test cases be improved?

3 points

It depends on the situation

No

Yes

17.

Question 17

What is fuzz testing most often used for?

3 points

To detect vulnerabilities in a system

To determine how output changes based on inputs

To create test cases based on defect taxonomies

To explore software for errors using a pair of testers

18.

Question 18

What is the difference between mutation based fuzz testing and generation based fuzz testing?

3 points

Mutation based fuzz testing does not require knowledge of inputs to create test data. Generation based fuzz testing needs to know specifications of the test input to create random test data.



Mutation based fuzz testing needs to know specifications of the test input to create random test data. Generation based fuzz does not require knowledge of inputs to create test data.



There is no difference between mutation and generation based fuzz testing.

19.

Question 19

In defect based testing, a defect taxonomy is used...?

3 points



When performing only system level testing



To categorize test cases once test cases are developed



When test cases fail



To derive test cases

20.

Question 20

Which of the following is not a possible tour in exploratory testing?

3 points



Scenario tour



Performance tour



Variability tour



Complexity tour

21.

Question 21

Given the code below, which set of test cases will achieve 100% decision coverage?

read (x, y, z)

if x > 20 and y > 4

then s1

else s2

endif;

if z < 50 and x > 10

then s3

else s4

endif;

5 points



Test Case 1: X = 25, Y=5, Z=23

Test Case 2: X=40; Y=7, Z= 25



Test Case 1: X = 15, Y=2, Z=60

Test Case 2: X=4; Y=2, Z= 55



Test Case 1: X = 25, Y=5, Z=67

Test Case 2: X=40; Y=8, Z= 56



Test Case 1: X = 25, Y=5, Z=23

Test Case 2: X=4; Y=2, Z= 55

22.

Question 22

Which of the following is the cyclomatic complexity of the code given below?

if A < B then

exchange A and B:

endif

if B < C then

exchange B and C:

endif

if A > D then

exchange A and B;

endif

3 points

4

23.

Question 23

Given the code below, pick the correct flow graph.

if A < B then

exchange A and B:

endif

if B < C then

exchange B and C:

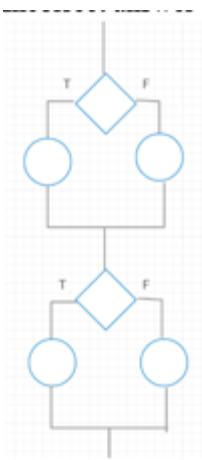
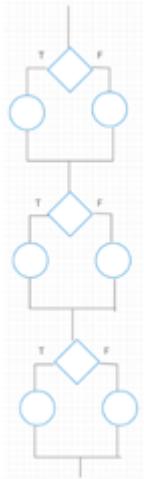
endif

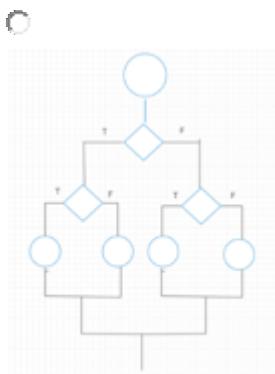
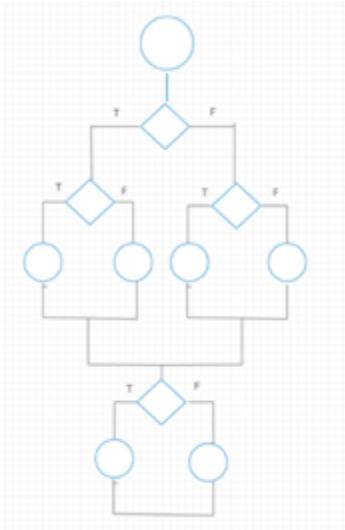
if A > D then

exchange A and B;

endif

5 points





24.

Question 24

Given the code below, what is the final symbolic value of C after executing the TT path?

if A < C then

exchange A and C:

endif

if B < C then

exchange A and C:

endif

$C = C + B$

5 points

$$\{A_0\}A_0 + \{B_0\}B_0$$

$$\{C_0\}C_0$$

$$\{C_0\}C_0 + \{B_0\}B_0$$

$$\{B_0\}B_0$$

25.

Question 25

Given the code below, what is the correct set of DU paths?

Get a, b  
 $x = 0$       }      Node 1

If  $a \geq 5$  (Predicate I)  
 Then  $c = x + 3$  (Node 2)  
 Else  $c = b + 2$  (Node 3)

If  $b < 4$  (Predicate II)  
 Then  $b = c + 4$  (Node 4)  
 Else  $x = b + 2$  (Node 5)

3 points

Def1(a) = USE1(a)

Def1(b) = USE3(b) || USE5(b)

Def1(x) = USE2(x)

Def2(c) = USE4(c) || USE5(c)

Def3(c) = USE4(c)

Def1(a) = USE1(a)

Def1(b) = USE3(b) || USE1(b) || USE5(b)

Def1(x) = USE2(x)

Def2(c) = USE4(c) || USE5(b)

Def3(c) = USE4(c)



Def1(a) = USEI(a)

Def1(b) = USE3(b) || USEII(b) || USE5(b)

Def1(x) = USE2(x)

Def2(c) = USE4(c)

Def3(c) = USE4(c)



Def1(a) = USEI(a)

Def1(b) = USE3(b) || USEII(b) || USE5(b)

Def1(x) = USE2(x)

Def2(c) = USE4(c)

26.

Question 26

Data flow testing tests the same aspects as control flow testing.

3 points



True



False

27.

Question 27

A valid student ID can only contain letters between and including p through x. Which of the following is the correct set of boundary values that need to be tested.

**3 points**

p,q,x,y

o,p,w,x

o,q,w,y

o,p,x,y

28.

Question 28

Given the code below, how many test cases are needed to achieve 100% multiple condition coverage?

If a > 15 or b < 2 and c < -5

Y = 25;

Else

Y = 30;

**3 points**

8

3

6

4

29.

Question 29

What can definition use coverage be applied towards?

**3 points**



Control flow testing



Neither data flow or control flow testing



Data flow testing



Both data flow and control flow testing

30.

Question 30

Which software methodology(s) follow continuous integration and testing?

**3 points**



Waterfall Development and Test Driven Development



Waterfall Development



Agile Development and Waterfall Development



Agile Development

## Question 5

1 / 1 pts

Given 2 input variables, age and height, an output of vitamins, and a function that computes the number of vitamins a person should take based on age and height, which method(s) can be used to test this example?

Correct!

- Cause Effect Analysis

Both cause effect analysis and equivalence partitioning

Mutation testing

Equivalence partitioning

Cause Effect Analysis. You selected this answer. This was the correct answer.

## Question 6

0 / 5 pts

**Question 6**

0 / 5 pts

Assume we are testing a function with 3 variables:

Variable X: has values 5 and 10

Variable Y: has values 5 and 10

Variable Z: has values 5 and 10

What is the total 2-way variable value configuration coverage achieved by the following tests:

X=5; Y=5; Z=5

X=5; Y=10; Z=10

X=10, Y=10, Z=5

**Correct Answer** 9/12**You Answered** 8/12

Possible combinations:

- X=5 Y=5;
- X=5 Z=5;
- Y=5 Z=5;
- X=5 Y=10;
- X=5 Z=10;
- Y=10 Z=10;
- X=10 Y=10;
- X=10 Z=5;
- Y=10 Z=5

## Question 7

5 / 5 pts

Given 3 inputs: P1 with values V1, V2 and V3; P2 with values V4 and V5; P3 with values V6, V7 and V8, what are the correct tests for a pairwise combination design of experiments?

Correct!

V1	V4	V6
V2	V5	V7
V1	V4	V7
V2	V5	V6
V3	V4	V8
V3	V5	V8
V3	V4	V6
V1	V5	V8
V2	V4	V8
V3	V4	V7

## Question 8

0 / 5 pts

What is one way to reduce the number of test cases in a cause and effect decision table?

Write as many test cases as there are partitions

Correct Answer

Make assumptions about how the partitions are related

Write as many test cases as there are partitions.

You Answered

- Write only valid test cases

Testing invalid cases is necessary to see how it affects the results

## Question 9

5 / 5 pts

Equivalence partitioning is a good technique to utilize when there are multiple independent inputs.

## Question 9

5 / 5 pts

Equivalence partitioning is a good technique to utilize when there are multiple independent inputs.

Correct!

- True

Equivalence partitioning must be applied with independent inputs. In the lecture example of  $\text{abs}(x)$ , it is necessary to test a negative value, 0, and a positive value which are all independent inputs.

False

## Question 10

5 / 5 pts

False

### Question 10

5 / 5 pts

(True or False) Fuzz testing consists of random, invalid or unexpected inputs that are created automatically.

Correct!

True

Fuzz testing is an approach to testing where invalid, random or unexpected inputs are automatically generated.

False

## Question 11

0 / 5 pts

Why do defects cluster?

Because a developer intentionally includes them to be found by testers

You Answered

- Defects are actually distributed evenly across every thousand lines of code.

Because a developer intentionally includes them to be found by testers.

Defects are not evenly distributed due to them usually appearing because of the complexity of the code in certain areas, the ability of a developer who coded a certain portion, etc.

Because there are no changes happening to the codebase

Correct Answer

- Because of the complexity of code, programmer skill, etc.

## Question 12

5 / 5 pts

Without using a calculator, what would be the expected output of this example using metamorphic testing for the third test case?

Initial Test: 5 10 15 20 25 Stan. Dev Result: 7.2

Second Test: 5 15 25 35 45 Stan Dev Result: 14.4

Third test: 15 20 25 30 35 Stan Dev Result: \_\_\_\_\_

14.4

28.8

3.6

7.2

The values are incremented by 5 in the third test, and thus has a standard deviation of 7.2

Correct!

## Question 13

5 / 5 pts

Consider, as an example, a program that compute the cosine function ( $\cos(x)$ ). Suppose the program produces output  $-0.3999$  when run with input  $x=42$  radians. An important property of the cosine function is  $\cos(x)=\cos(-x)$ .

Using this property, we design a new test case with  $x=-42$ . Assume the output of the program for this input is  $0.4235$ . And we concluded that the program is not correct.

What kind of testing did we do?

Correct!

- Metamorphic Testing

Using the metamorphic property we conducted a metamorphic testing.

Fuzz Testing

Mutation Testing

Explonatory Testing

## Question 14

0 / 10 pts

Given the code below, how many test cases are needed to achieve 100% multiple condition coverage?

If  $a > 15$  or  $b < 2$  or  $c > 5$

then  $Y = 25$

else  $Y = 30;$

If  $w > 5$  or  $z < 10$

then  $X = 14$

else  $X = 0;$

16

You Answered

32

Correct Answer

8

4

## Question 16

0 / 10 pts

Consider testing utilizing equivalence partitioning a program with the following 2 inputs and equivalence partitions? Which of the following describes the minimum number of tests needed?

Input 1: A

10..100 (V)

101.. 500 (V)

<10 (I)

> 500 (I)

Input 2: B

40..65 (V)

66.. 70 (V)

71.. 80 (V)

81.. 90 (V)

<40 (I)

>90 (I)

2 valid tests and 2 invalid tests

You Answered

3 valid tests and 4 invalid tests

3 valid tests and 4 invalid tests

101.. 500 (V)

<10 (I)

> 500 (I)

Input 2: B

40..65 (V)

66.. 70 (V)

71.. 80 (V)

81.. 90 (V)

<40 (I)

>90 (I)

2 valid tests and 2 invalid tests

You Answered

3 valid tests and 4 invalid tests

3 valid tests and 4 invalid tests

Correct Answer

4 valid tests and 4 invalid tests

2 valid tests and 4 invalid tests

0 / 10 pts

## Question 15

A new program for calculating auto insurance policy renewal premiums has been developed the the following rules. If one were to develop a decision table for testing this program, how many test cases / columns would be needed?

- 0 claims, age less than or equal to 22: raise by \$50;
- 0 claims, age greater than 22: raise by \$25
- 1 claims, age less than or equal to 22: raise by \$100;
- 1 claims, age greater than 22: raise by \$50
- 2 claims, age less than or equal to 22: raise by \$200;
- 3 or more claims regardless of age: cancel policy

12

4

You Answered

6

Correct Answer

8

## Question 5

1 / 1 pts

Given 2 input variables, age and height, an output of vitamins, and a function that computes the number of vitamins a person should take based on age and height, which method(s) can be used to test this example?

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0 / 5 pts

## Question 6

0 / 5 pts

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Variable X: has values 5 and 10

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Variable Z: has values 5 and 10

What is the total 2-way variable value configuration coverage achieved by the following tests:

X=5; Y=5; Z=5

X=5; Y=10; Z=10

X=10, Y=10, Z=5

Correct Answer

9/12

You Answered

8/12

Possible combinations:

- X=5 Y=5;
- X=5 Z=5;
- Y=5 Z=5;
- X=5 Y=10;
- X=5 Z=10;
- Y=10 Z=10;
- X=10 Y=10;
- X=10 Z=5;
- Y=10 Z=5

## Question 7

5 / 5 pts

Given 3 inputs: P1 with values V1, V2 and V3; P2 with values V4 and V5; P3 with values V6, V7 and V8, what are the correct tests for a pairwise combination design of experiments?

Correct!

V1	V4	V6
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V3	V5	V8
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0 / 5 pts

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### Question 10

5 / 5 pts

False

### Question 10

5 / 5 pts

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5 / 5 pts

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5 / 5 pts

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Explonatory Testing

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0 / 10 pts

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If  $w > 5$  or  $z < 10$

then  $X = 14$

else  $X = 0;$

16

You Answered

32

Correct Answer

8

4

## Question 16

0 / 10 pts

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71.. 80 (V)

81.. 90 (V)

<40 (I)

>90 (I)

2 valid tests and 2 invalid tests

You Answered

3 valid tests and 4 invalid tests

Correct Answer

4 valid tests and 4 invalid tests

2 valid tests and 4 invalid tests

0 / 10 pts

## Question 15

A new program for calculating auto insurance policy renewal premiums has been developed the the following rules. If one were to develop a decision table for testing this program, how many test cases / columns would be needed?

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- 1 claims, age less than or equal to 22: raise by \$100;
- 1 claims, age greater than 22: raise by \$50
- 2 claims, age less than or equal to 22: raise by \$200;
- 3 or more claims regardless of age: cancel policy

12

4

You Answered

6

Correct Answer

8

### Question 1

4 / 4 pts

Which of the following best describes the difference between verification and validation?

- Validation answers the question: are we building the product right.
- Validation primarily targets requirements errors.
- Verification answers the question are we building the right product.
- Verification primarily targets requirements errors.

Correct!

### Question 2

9 / 9 pts

Consider the following specification for a program:

*A computerized letter is to be sent to high school seniors telling them their graduation status. There are three inputs.*

*The first input is a 10 digit identifying number (ID Number).*

*The second input is the student's grade point average (gpa) which is a real number.*

*The third input is a real number indicating the balance of the student's account.*

**Question 2**

9 / 9 pts

Consider the following specification for a program:

A computerized letter is to be sent to high school seniors telling them their graduation status. There are three inputs.

The first input is a 10 digit identifying number (ID Number).

The second input is the student's grade point average (gpa) which is a real number.

The third input is a real number indicating the balance of the student's account.

For students with  $0 \leq gpa < 1.0$  a letter is output informing the student that they will not graduate. For  $1.0 \leq gpa < 3.0$  a letter is output informing the student that they have met the requirements for graduation.

For  $3.0 \leq gpa < 3.7$  a letter is output informing the student that they will graduate with honors. For  $3.7 \leq gpa \leq 4.0$  a letter is output informing the student they will graduate with highest honors. The letter also contains the balance of the student's account.

Which of the following best describes the set of equivalence partitions for gpa.

- gpa < 0 (I)
- gpa > 4 (I)
- $1.0 \leq gpa < 3.0$  (V)
- $3.0 \leq gpa < 3.7$  (V)
- $3.7 \leq gpa \leq 4.0$  (V)

**Correct!**

- gpa < 0 (I)
- gpa > 4 (I)
- $0 \leq gpa < 1.0$  (V)

gpa 0 (I) gpa 4 (I) 0 = gpa 1.0 (V) 1.0 = gpa 3.0 (V) 3.0 = gpa 3.7 (V) 3.7 = gpa = 4.0 (V). You selected this answer. This was the correct answer.

The first input is a 10 digit identifying number (ID Number).

The second input is the student's grade point average (gpa) which is a real number.

The third input is a real number indicating the balance of the student's account.

For students with  $0 \leq gpa < 1.0$  a letter is output informing the student that they will not graduate. For  $1.0 \leq gpa \leq 3.0$  a letter is output informing the student that they have met the requirements for graduation.

For  $3.0 \leq gpa < 3.7$  a letter is output informing the student that they will graduate with honors. For  $3.7 \leq gpa \leq 4.0$  a letter is output informing the student they will graduate with highest honors. The letter also contains the balance of the student's account.

Which of the following best describes the set of equivalence partitions for gpa.

gpa < 0 (I)

gpa > 4 (I)

$1.0 \leq gpa < 3.0$  (V)

$3.0 \leq gpa < 3.7$  (V)

$3.7 \leq gpa \leq 4.0$  (V)

Correct!

gpa < 0 (I)

gpa > 4 (I)

$0 \leq gpa < 1.0$  (V)

$1.0 \leq gpa < 3.0$  (V)

$3.0 \leq gpa < 3.7$  (V)

$3.7 \leq gpa \leq 4.0$  (V)

gpa 0 (I) gpa 4 (I) 0 = gpa 1.0 (V) 1.0 = gpa 3.0 (V) 3.0 = gpa 3.7 (V) 3.7 = gpa = 4.0 (V). You selected this answer. This was the correct answer.

gpa < 0 (I)

gpa > 4 (I)

$0 \leq gpa \leq 4$  (V)

**Question 3**

0 / 3 pts

Which of the following is considered to be a data flow anomaly?

- Defining a variable, using it, and then redefining it
- Referencing an undefined variable
- Referencing a redefined variable
- Defining a variable more than once in a module

**Correct Answer****You Answered****Question 4**

10 / 10 pts

Given 4 inputs: P1 with values A,B; P2 with value C, P3 with values F, X, and P4 with values G, H, W, which of the following tests provides pairwise combination testing?

G	A	F	C
G	B	X	C
H	A	X	C

Question 4

10 / 10 pts

Given 4 inputs: P1 with values A,B; P2 with value C, P3 with values F, X, and P4 with values G, H, W, which of the following tests provides pairwise combination testing?

○

G	A	F	C
G	B	X	C
H	A	X	C
W	B	F	C

○

G	A	F	C
G	B	X	C
H	A	F	C
H	B	X	C
W	A	F	C

G	A	F	C
G	B	X	C
H	A	F	C
H	B	X	C
W	A	F	C
W	B	F	C

Correct!

G	A	F	C
G	B	X	C
H	A	X	C
H	B	F	C
W	A	X	C
W	B	F	C

**Question 5**

8 / 8 pts

You are asked to test a program which calculates the amount of medicine that would be given to a patient using the following rules.

- Patients with **age less than or equal to 30**; with **tcV level less than or equal to 3.5** and **YTF negative**; receives **1.0mg** of the medicine.
- Patients with **age less than or equal to 30**; with **tcV level less than or equal to 3.5** and **YTF positive**; receives **2.0mg** of the medicine.
- Patients with **age less than or equal to 30**; with **tcV level greater than 3.5** and **YTF negative**; receives **no** medicine
- Patients with **age less than or equal to 30**; with **tcV level greater than 3.5** and **YTF positive**; receives **1.0mg** medicine
- Patients with **age less than or equal to 50**; with **tcV level less than or equal to 3.5** and **YTF negative**; receives **2.0mg** of the medicine.
- Patients with **age less than or equal to 50**; with **tcV level less than or equal to 3.5** and **YTF positive**; receives **2.5mg** of the medicine.
- Patients with **age less than or equal to 50**; with **tcV level greater than 3.5** and **YTF negative**; receives **no** medicine
- Patients with **age less than or equal to 50**; with **tcV level greater than 3.5** and **YTF positive**; receives **2.0mg** of the medicine.
- Patients with **age less than or equal to 70**; regardless of **tcV** or **YTF** levels; receives no medicine.

If one were to develop a **decision table** for testing this program, how many test cases / columns would be needed?

 8 4 9

- Patients with **age less than or equal to 30**; with tcV level **less than or equal to 3.5** and YTF **positive**; receives **2.0mg** of the medicine
- Patients with **age less than or equal to 30**; with tcV level **greater than 3.5** and YTF **negative**; receives **no medicine**
- Patients with **age less than or equal to 30**; with tcV level **greater than 3.5** and YTF **positive**; receives **1.0mg** medicine
- Patients with **age less than or equal to 50**; with tcV level **less than or equal to 3.5** and YTF **negative**; receives **2.0mg** of the medicine.
- Patients with **age less than or equal to 50**; with tcV level **less than or equal to 3.5** and YTF **positive**; receives **2.5mg** of the medicine.
- Patients with **age less than or equal to 50**; with tcV level **greater than 3.5** and YTF **negative**; receives **no medicine**
- Patients with **age less than or equal to 50**; with tcV level **greater than 3.5** and YTF **positive**; receives **2.0mg** of the medicine.
- Patients with **age less than or equal to 70**; regardless of tcV or YTF levels; receives no medicine.

If one were to develop a **decision table** for testing this program, how many test cases / columns would be needed?

8

4

9

12

Correct!

8 / 8 pts

### Question 6

You are asked to test a program which calculates the amount of medicine that would be given to a patient

**Question 6**

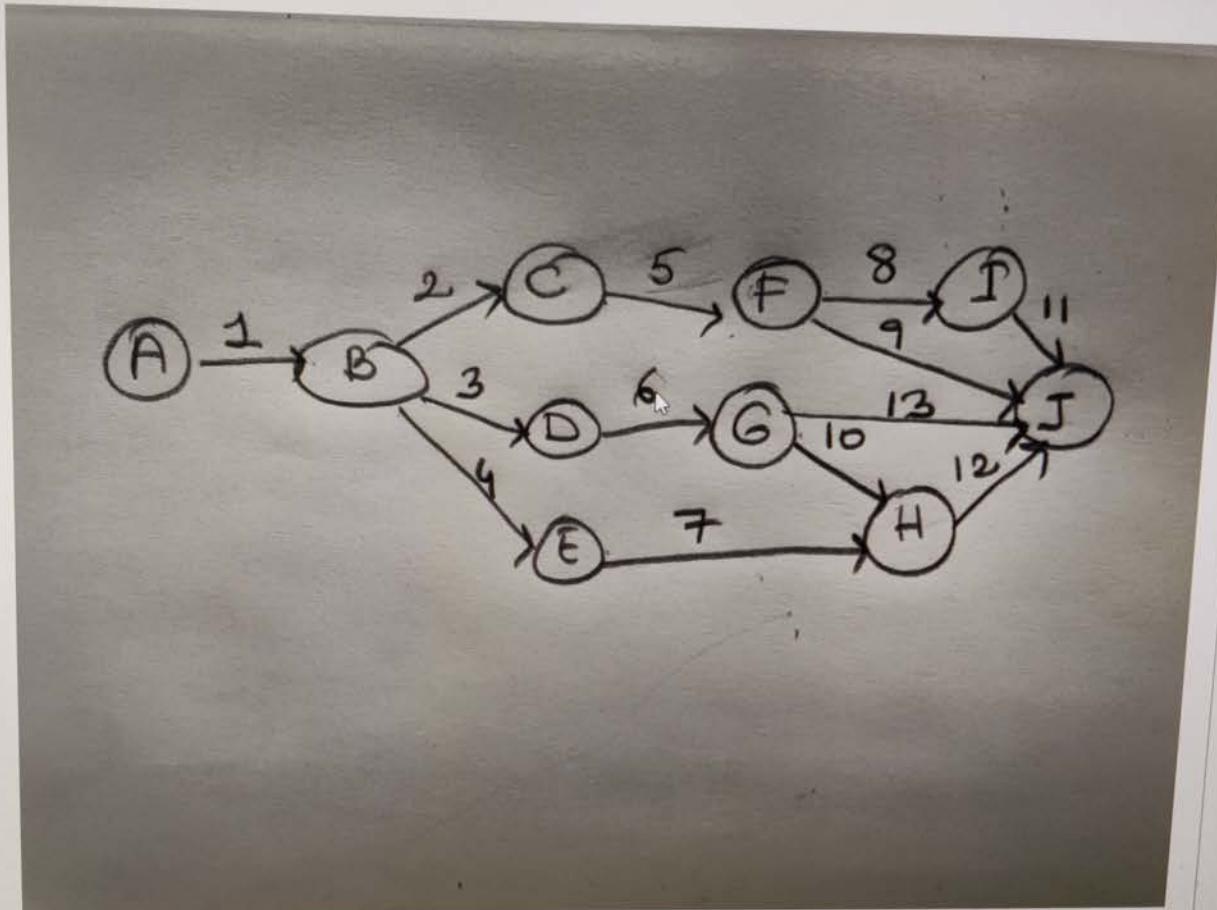
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- Patients with **age less than or equal to 30**; with **tcV level less than or equal to 3.5** and **YTF positive**; receives **2.0mg** of the medicine
- Patients with **age less than or equal to 30**; with **tcV level greater than 3.5** and **YTF negative**; receives **0.5mg medicine**
- Patients with **age less than or equal to 30**; with **tcV level greater than 3.5** and **YTF positive**; receives **1.0mg** medicine
- Patients with **age less than or equal to 50**; with **tcV level less than or equal to 3.5** and **YTF negative**; receives **2.0mg** of the medicine.
- Patients with **age less than or equal to 50**; with **tcV level less than or equal to 3.5** and **YTF positive**; receives **2.5mg** of the medicine.
- Patients with **age less than or equal to 50**; with **tcV level greater than 3.5** and **YTF negative**; receives **0.5mg medicine**
- Patients with **age less than or equal to 50**; with **tcV level greater than 3.5** and **YTF positive**; receives **2.0mg** of the medicine.
- Patients with **age less than or equal to 70**; regardless of tcV or YTF levels; receives **0.5mg medicine**

If one were to develop a **decision tree** for testing this program, how many test cases would be needed?

**Correct!** 9 18 12 8

Given the state testing diagram below, how many test sequences would one find in the state testing tree?  
You may assume "A" is the start state and "J" is the terminal state.



4

Correct!

5

**Question 8**

3 / 3 pts

Which of the following is considered a classic testing mistake?

- Believing the primary objective of system testing is to find important bugs
- not focusing on usability issues
- documenting and reviewing test designs
- good communication with developers

**Correct!****Question 9**

3 / 3 pts

Which of the following best describes exploratory testing?

- All tests are created in advance and sources of errors are further explored.
- Exploratory testing does not require the use of a test oracle.
- All tests are not created in advance and new tests are added during the testing process.
- Testing tours are used to ensure 100% functional and code coverage.

**Correct!**



## Question 10

3 / 3 pts

What is an advantage of model based test development?

- If there is a change in the model, tests will remain the same
- Model based test development executes the system
- If there is a change in the model, new tests can automatically be generated
- There are a set number of test generation criteria we can use

**Correct!**

## Question 11

8 / 8 pts

Assume we are testing a function with 3 variables:

Variable X: has values 'a', and 'b'

Variable Y: has values 'c' and 'd'

Variable Z: has values 'e', 'f' and 'g'

What is the total 2-way variable value configuration coverage achieved by the following tests:

X='a'; Y='c'; Z='e'

X='a'; Y='c'; Z='f'

X='a'; Y='d'; Z='e'

- There are a set number of test generation criteria we can use

### Question 11

8 / 8 pts

Assume we are testing a function with 3 variables:

Variable X: has values 'a', and 'b'

Variable Y: has values 'c' and 'd'



Variable Z: has values 'e', 'f' and 'g'

What is the total 2-way variable value configuration coverage achieved by the following tests:

X='a'; Y='c'; Z='e'

X='a'; Y='c'; Z='f'

X='a'; Y='d'; Z='e'

X='a'; Y='d'; Z='f'

X='b'; Y='d'; Z='g'

5/16

5/8

6/8

11/16

Correct!

testing needs to know specifications of the test input to create random test data.

- There is no difference between mutation and generation based fuzz testing.
- Mutation based fuzz testing needs to know specifications of the test input to create random test data.  
Generation based fuzz does not require knowledge of inputs to create test data.
- Mutation based fuzz testing injects mutants / errors into the code based on typical defect types and frequencies.

### Question 13

3 / 3 pts

Which of the following best describes metamorphic testing?

Correct!

- Metamorphic testing utilizes metamorphic relations to determine expected results.
- Metamorphic testing is a form of fuzz testing.
- Metamorphic testing utilizes metamorphic relations to determine test inputs.
- Metamorphic testing integrates with test oracles to determine expected results.

3 / 3 pts

### Question 12

3 / 3 pts

What is the difference between mutation based fuzz testing and generation based fuzz testing?

Correct!

- Mutation based fuzz testing does not require knowledge of inputs to create test data. Generation based fuzz testing needs to know specifications of the test input to create random test data.
- There is no difference between mutation and generation based fuzz testing.
- Mutation based fuzz testing needs to know specifications of the test input to create random test data. Generation based fuzz does not require knowledge of inputs to create test data.
- Mutation based fuzz testing injects mutants / errors into the code based on typical defect types and frequencies.

### Question 13

3 / 3 pts

Which of the following best describes metamorphic testing?

Correct!

- Metamorphic testing utilizes metamorphic relations to determine expected results.
- Metamorphic testing is a form of fuzz testing.

3 / 3 pts

**Question 13****Correct!**

Which of the following best describes metamorphic testing?

- Metamorphic testing utilizes metamorphic relations to determine expected results.
- Metamorphic testing is a form of fuzz testing.
- Metamorphic testing utilizes metamorphic relations to determine test inputs.
- Metamorphic testing integrates with test oracles to determine expected results.

**Question 14**

3 / 3 pts

In defect based testing, a defect taxonomy is used...?

- To classify defects when test cases fail
- To derive test cases
- To categorize test cases once test cases are developed
- When performing only system level testing

**Correct!**

← → X ↻HELP CENTER

### Question 15

3 / 3 pts

Which of the following best describes tours in exploratory testing?

- Tour testing consists of randomly exploring the product.
- Tour testing is performed with the customer to provide them with an overview of product capabilities.
- Tour testing ensures 100% functional and code coverage during exploratory testing.

**Correct!**

- Tour testing uses a structure or method that gives the tester a particular focus in the way he or she goes about exploring a product.



Tour testing uses a structure or method that gives the tester a particular focus in the way he or she goes about exploring a product. You selected this answer. This was the correct answer.

### Question 16

9 / 9 pts

Consider testing utilizing equivalence partitioning a program with the following 2 inputs and equivalence partitions? Which of the following describes the minimum number of tests needed?

Input 1: X

1..10 (V)

<1 (I)

## Question 17

3 / 3 pts

Which of the following is used to assess the impact of asynchronous events.

**Correct!**

- interaction with synchronous events
- timeline
- nature of the asynchronous event
- impact of the asynchronous event on the user

## Question 18

9 / 9 pts

A student can score a minimum of 20 points and a maximum of 50 points on an exam. Which one of these testes can be used for boundary level testing?

**Correct!**

- Student score = {19, 20, 21, 49, 50, 51}

Student score = {19, 21, 49, 51}



- Student score = {3, 20, 21, 49, 50, 55}

- Student score = {18, 21, 52}

## Question 16

9 / 9 pts

Consider testing utilizing equivalence partitioning a program with the following 2 inputs and equivalence partitions? Which of the following describes the minimum number of tests needed?

Input 1: X

1..10 (V)

<1 (I)

> 50 (I)

Input 2: Y

75..80 (V)

81..100 (V)

<75 (I)

> 100 (I)

2 valid tests and 2 invalid tests

1 valid and 2 invalid tests

1 valid test and 4 invalid tests

2 valid tests and 4 invalid tests

Correct!