

SW Testing

Section Id :	64065357853
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653120914
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 28 Question Id : 640653821443 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "**DEGREE LEVEL : SOFTWARE TESTING (COMPUTER BASED EXAM)**"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS

REGISTERED BY YOU)

Options :

6406532756896. ✓ YES

6406532756897. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653120915
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 29 Question Id : 640653821444 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

What is/are the main disadvantages of Test-Driven Development (TDD)?

Options :

6406532756898. ✗ Fault isolation is difficult.

6406532756899. ✓ The final combined code size may become very large and complex, and it may not be efficient and too cumbersome for (human) readability.

6406532756900. ✓ High dependency on test frameworks

6406532756901. ✗ A TDD based project is not efficient for pair programming, where writing code and testing can go hand in hand.

Sub-Section Number :	3
Sub-Section Id :	640653120916
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 30 Question Id : 640653821457 Question Type : MSQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Identify the predicate(s) which are in Conjunctive Normal Form (CNF).

Options :

6406532756950. ✓ $x \wedge y \wedge z$

6406532756951. ✗ $x \vee (y \wedge z)$

6406532756952. ✓ $(u \vee v \vee x) \wedge (y \vee z)$

6406532756953. ✗ $(u \wedge v) \vee (y \wedge z) \vee x$

Sub-Section Number :	4
Sub-Section Id :	640653120917
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 640653821466 Question Type : MSQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following classes for the code base to be tested and the test class.

```
//code base
class A{
    protected int a, b;
    public void setA(int a) { this.a = a; }
    public void setB(int b) { this.b = b; }
    public int getA() { return a; }
    public int getB() { return b; }
}

class B extends A{
    protected int b, c;
    public void setB(int b) { this.b = b; }
    public void setC(int c) { this.c = c; }
    public int getC() { return c; }
    public int getA() { return a; }
}

//test class
import static org.junit.Assert.*;
import org.junit.Test;

public class ClassAccessorTest {
    private A objA;
    private B objB;
    @Test
    public void testCase1() {
        objA = new A();
        objA.setB(10);
        assertEquals(10, objA.getB());
    }
    @Test
    public void testCase2() {
        objB = new B();
        objB.setB(10);
        assertEquals(10, objB.getB());
    }
    @Test
    public void testCase3() {
        objA = new B();
        objA.setB(10);
        assertEquals(10, objA.getB());
    }
    @Test
    public void testCase4() {
        objA = new B();
        objA.setA(10);
        assertEquals(10, objA.getA());
    }
}
```

Identify the test case method(s) that will fail for the given code base.

Options :

6406532756978. ✖ testCase1()

6406532756979. ✔ testCase2()

6406532756980. ✔ testCase3()

6406532756981. ✖ testCase4()

Sub-Section Number : 5

Sub-Section Id : 640653120918

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 32 Question Id : 640653821445 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Defect Removal Effectiveness (DRE) is an example of which kind of metrics?

Options :

6406532756902. ✖ Product quality metrics
6406532756903. ✔ In-process quality metrics
6406532756904. ✖ Maintenance quality metrics
6406532756905. ✖ Project metrics

Question Number : 33 Question Id : 640653821449 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Match the following regarding the various ways of deploying software:

Deployment types	Description
A. Bundled	1. Installed on a hardware device, usually with no direct communication with user
B. Shrink-wrap	2. Executed across the Internet through HTTP
C. Embedded	3. Pre-installed on computer
D. Web	4. Bought and installed by end-users

Options :

6406532756918. ✔ A-3, B-4, C-1, D-2

6406532756919. ✖ A-4, B-1, C-3, D-2

6406532756920. ✖ A-3, B-1, C-4, D-2

6406532756921. ✖ A-4, B-3, C-1, D-2

Question Number : 34 Question Id : 640653821450 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Consider the following Java classes.

```
1. class Base{
2.     protected int a;
3.     protected int b;
4.     public void setAll(int a, int b) {
5.         this.a = a;
6.         setB(b);
7.     }
8.     public void setB(int b) {
9.         this.b = b;
10.    }
11.    public void print() {
12.        System.out.print(a + " " + b);
13.    }
14.}
15.class Derived extends Base{
16.    protected int b;
17.    public void setB(int b) {
18.        this.b = b;
19.    }
20.}
```

Consider creating a mutant by modifying the statements at LINE 6 and LINE 8 as follows:

```
6a.         setB1(b);
8a.     public void setB1(int b) {
```

Which of the following mutation operator is used in creating the above mutant?

Options :

6406532756922. ✖ OMM (Overriding method moving) operator

6406532756923. ✔ OMR (Overridden method rename) operator

6406532756924. ✖ OMD (Overriding method deletion) operator

6406532756925. ✖ OMC (Overloading method change) operator

Question Number : 35 Question Id : 640653821452 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Consider the following Java program.

```
class A{
    public void f() { }
    public void h() { }
    public void i() { }
}
class B extends A{
    public void f() { }
    public void g() { }
}
class C extends B{
    public void f() { }
}
public class MTest {
    public static void main(String[] args) {
        C obj = new C();
        obj.f();
        obj.g();
        obj.h();
        obj.i();
    }
}
```

Which of the following sets of the methods will be invoked in the above program?

Options :

6406532756930. ✖ {A::f(), A::g(), A::h(), A::i() }

6406532756931. ✖ $\{A::f(), B::g(), A::h(), A::i()\}$

6406532756932. ✖ $\{C::f(), A::g(), B::h(), C::i()\}$

6406532756933. ✔ $\{C::f(), B::g(), A::h(), A::i()\}$

Question Number : 36 Question Id : 640653821454 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Given a context free grammar (CFG) over a finite alphabet $\Sigma = \{a, b\}$, with the production rules as follows:

$$S \rightarrow aaXb,$$

$$X \rightarrow aaXb,$$

$$X \rightarrow aab.$$

Let S be the starting variable. Which of the following sets below corresponds to the language generated by the given grammar?

Options :

6406532756938. ✖ $\{a^{2n}b^n | n \geq 1\}$

6406532756939. ✔ $\{a^{2n}b^n | n \geq 2\}$

6406532756940. ✖ $\{a^{2n}b^n a^n b^{2n} | n \geq 1\}$

6406532756941. ✖ $\{a^{2n}b^n a^n b^{2n} | n \geq 0\}$

Question Number : 37 Question Id : 640653821455 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Let the three partitions with blocks be ["MALE", "FEMALE", "OTHER"], $[0 \leq \text{AGE} < 18, \text{AGE} \geq 18]$, and ["Rural", "Urban", "Suburban"]. What will be the minimum number of tests that need to be prepared using the Each Choice Coverage (ECC) criteria?

Options :

6406532756942. ✓ 3

6406532756943. ✖ 5

6406532756944. ✖ 6

6406532756945. ✖ 18

Question Number : 38 Question Id : 640653821456 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Consider the following code segment for symbolic testing.

```
int positiveProduct(int a, int b) {  
    //compute the product of positive inputs;  
    //return on any negative input  
    int i;  
    int pr = 1;  
    for(i = a; i <= b; i++) {  
        r = sym_input();  
        if(r < 0)  
            break; //come out of the loop  
        pr *= r;  
    }  
    return sum;  
}
```

Identify the value of `pr` at the end of the symbolic execution of the `for` loop with a sequence of n positive inputs followed by a negative input. Consider each r_i is a fresh symbolic value.

Options :

6406532756946. ✖ $\{pr \mapsto \prod_{i \in [a,b]} r_i\}$

6406532756947. ✖ $\{pr \mapsto \prod_{i \in [1,n-1]} r_i\}$

6406532756948. ✔ $\{pr \mapsto \prod_{i \in [a,a+n-1]} r_i\}$

6406532756949. ✖ $\{pr \mapsto \prod_{i \in [1,b+n]} r_i\}$

Sub-Section Number :

6

Sub-Section Id :

640653120919

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 39 Question Id : 640653821446 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Which of the following tests involves a rapid and significant increase in the number of users, followed by measuring the system's performance?

Options :

6406532756906. ✖ Load testing

6406532756907. ✖ Stress testing

6406532756908. ✖ Soak testing

6406532756909. ✔ Spike testing

Question Number : 40 Question Id : 640653821447 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Which type of client-side testing can significantly reduce the effort to generate test cases and is also empirically proven to find faults in web sites related to first-time users, sudden spikes in the number of users, etc.?

Options :

6406532756910. ✖ Value level bypass testing

6406532756911. ✖ Parameter level bypass testing

6406532756912. ✖ Control flow level bypass testing

6406532756913. ✔ User-session data based testing

Question Number : 41 Question Id : 640653821453 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Mutations of the statement $m == y / x$ to the statements like $m == +y / x$, $m == -y / x$, $m == y / +x$, and $m == y / -x$ are examples of which kind of mutation operator?

Options :

6406532756934. ✓ Unary operator insertion

6406532756935. ✖ Unary operator deletion

6406532756936. ✖ Scalar variable replacement

6406532756937. ✖ Arithmetic operator replacement

Question Number : 42 Question Id : 640653821461 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Which of the following is true about *triggering events* in Finite State Machine (FSM)?

Options :

6406532756962. ✖ They represent sets of values for (key) variables.

6406532756963. ✖ They model possible changes from one state to another.

6406532756964. ✖ Those are the conditions that must be true for transitions to be made.

6406532756965. ✓ Those are the changes to the variables that cause transitions to be made.

Question Number : 43 Question Id : 640653821462 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Coupling variables are variables that are defined in one unit and used in the other. Identify the type

of coupling where two units communicate by sending and receiving messages over buffers.

Options :

6406532756966. ✖ Parameter coupling

6406532756967. ✖ Shared data coupling

6406532756968. ✖ External device coupling

6406532756969. ✔ Message-passing interfaces

Sub-Section Number :	7
Sub-Section Id :	640653120920
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 44 Question Id : 640653821448 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the code segment of a Java servlet below. The atomic sections are marked as P_1, P_2, P_3, \dots .

	<pre> /* student_scores stores the scores of each student for various courses registered by him/her */ ArrayList<Integer> student_scores = null; response.setContentType("text/html"); PrintWriter out=response.getWriter(); </pre>
P_1	<pre> out.println("<HTML><HEAD><TITLE>Scholarship</TITLE></HEAD><BODY>"); String rollnum = request.getParameter("roll_num"); /* getScores() takes roll number (rollnum) as input, runs a query in the database, and returns a ArrayList object containing the scores of all the courses for the given rollnum */ student_scores = getScores(rollnum); int total_score = 0; double avg_score = 0.0; </pre>
	<pre> if(student_scores != null){ </pre>
	<pre> for (Integer s : student_scores) { </pre>
P_2	<pre> total_score += s; </pre>
	<pre> } </pre>
P_3	<pre> avg_score = (double)total_score / student_scores.size(); </pre>
	<pre> if(avg_score >= 90.0) </pre>
P_4	<pre> out.println("Scholarship granted</BR>"); </pre>
	<pre> else </pre>
P_5	<pre> out.println("Scholarship not granted</BR>"); </pre>
	<pre> } </pre>
	<pre> else{ </pre>
P_6	<pre> out.println("Invalid roll number</BR>"); </pre>
	<pre> } </pre>
P_7	<pre> out.println("</BODY></HTML>"); out.close(); </pre>

Identify the component expression corresponding to the given code above.

Options :

6406532756914. ✖ $P_1 \cdot ((P_2 \cdot P_3^* \cdot (P_4|P_5^*))|P_6) \cdot P_7$

6406532756915. ✔ $P_1 \cdot ((P_2^* \cdot P_3 \cdot (P_4|P_5))|P_6) \cdot P_7$

6406532756916. ✖ $P_1 \cdot (P_2|(P_3 \cdot P_4|P_5)) \cdot P_6$

6406532756917. ✖ $P_1 \cdot ((P_2^* \cdot (P_3 \cdot P_4 | P_5)) | P_6) \cdot P_7$

Question Number : 45 Question Id : 640653821451 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the following Java program.

```
class B{
    protected int u, v;
    public void setAll(int a, int b) {
        u = a;
        v = b;
    }
    public void printAll() {
        System.out.print(u + ", " + v);
    }
}
class D extends B{
    protected int w;
    public void printAll() {
        System.out.println(u + ", " + v + ", " + w);
    }
}
class DD extends D{
    public void setAll(int a, int b) {
        u = a;
        w = b;
    }
}
public class MTest {
    public static void main(String[] args) {
        B obj = new DD();
        obj.setAll(10, 20);
        obj.printAll();
    }
}
```

The above program generates output as 10, 0, 20, instead 10, 20, 0 since the over-riding method `setALL` in class `DD` does not initialize `v`, which is declared in class `B` and we call `obj.setAll(10, 20);` before calling `obj.printAll();`. Identify the type of anomaly or fault in the given scenario.

Options :

6406532756926. ✖ Inconsistent type use

6406532756927. ✔ State definition anomaly

6406532756928. ✖ State definition inconsistency anomaly

6406532756929. ✖ State visibility anomaly

Sub-Section Id :

640653120921

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Id : 640653821458

Question Type : COMPREHENSION

Sub Question Shuffling Allowed : No

Group Comprehension Questions : No

Question Pattern Type : NonMatrix

Calculator : None

Response Time : N.A

Think Time : N.A

Minimum Instruction Time : 0

Question Numbers : (46 to 47)

Question Label : Comprehension

Consider the truth table for the predicate $p = a \wedge b \vee c$.

Row#	a	b	c	p	p_a	p_b	p_c
1	T	T	T	T			
2	T	T		T	T	T	
3	T		T	T			T
4	T					T	T
5		T	T	T			T
6		T			T		T
7			T	T			T
8							T

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 46

Question Id : 640653821459

Question Type : MCQ

Is Question Mandatory : No

Calculator : None

Response Time : N.A

Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Identify all pairs of rows from your table that satisfy Restricted Active Clause Coverage (RACC) with respect to clause a .

Options :

6406532756954. ✓ (2, 6)

6406532756955. ✗ (2, 4)

6406532756956. ✖ (3, 4), (5, 6), (7, 8)

6406532756957. ✖ (1, 5), (3, 7)

Question Number : 47 Question Id : 640653821460 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 4

Question Label : Multiple Choice Question
Identify all pairs of rows from your table that satisfy Restricted Inactive Clause Coverage (RICC) with respect to clause a .

Options :

6406532756958. ✖ (2, 6) for $p = true$, (3, 7) for $p = false$
6406532756959. ✖ (1, 2) for $p = true$, no feasible pair for $p = false$
6406532756960. ✔ (1, 5), (3, 7) for $p = true$, (4, 8) for $p = false$
6406532756961. ✖ (1, 3), (5, 7) for $p = true$, (6, 8) for $p = false$

Sub-Section Number :	9
Sub-Section Id :	640653120922
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653821463 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Question Numbers : (48 to 49)
Question Label : Comprehension

Consider the control flow graph (CFG), $G = \{V, E\}$, where

- Set of vertices $V = \{1, 2, 3, 4, 5, 6, 7\}$,
- Set of edges
 $E = \{(1, 2), (1, 4), (2, 3), (2, 4), (3, 2), (4, 5), (4, 6), (5, 7), (6, 7)\}$,
- Initial vertex $V_0 = 1$,
- Final vertex $V_f = 7$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 48 Question Id : 640653821464 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

What is the number of requirements for the edge-pair coverage of the given CFG?

Options :

6406532756970. ✖ 9

6406532756971. ✖ 10

6406532756972. ✔ 11

6406532756973. ✖ 12

Question Number : 49 Question Id : 640653821465 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

What is the number of requirements for the prime path coverage of the given CFG?

Options :

6406532756974. ✔ 9

6406532756975. ✖ 10

6406532756976. ✖ 11

6406532756977. ✖ 12