Sw Testing

Section Id :	64065357824
Section Number :	3
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 :	640653120728
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 71 Question Id : 640653820726 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 :

6406532754822. ✔ YES

6406532754823. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	640653120729
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 72 Question Id : 640653820728 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

Backlog Management Index (BMI) is an example of which kind of metrics?

Options :

6406532754828. ✖ Product quality metrics

6406532754829. ✖ In-process quality metrics

6406532754830. ✔ Maintenance quality metrics

6406532754831. ✖ Project metrics

Question Number : 73 Question Id : 640653820729 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 is performed to monitor the system parameters, such as memory utilization, to detect memory leaks or other performance issues under the continuous expected load?

Options :

6406532754832. ✖ Load testing

6406532754833. ✖ Stress testing

6406532754834. ✔ Soak testing

6406532754835. ✖ Spike testing

Question Number : 74 Question Id : 640653820730 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 tries to verify Web applications by executing test cases that interrupt the normal execution sequence, like altering the control flow by pressing the back button, pressing the refresh button, or directly entering an URL into a browser?

Options :

6406532754836. ✖ Value level bypass testing

6406532754837. ✖ Parameter level bypass testing

6406532754838. ✔ Control flow level bypass testing

6406532754839. ✖ User-session data based testing

Question Number : 75 Question Id : 640653820736 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 types of mutants can be killed by almost any test case?

Options :

6406532754860. ✖ Stillborn mutant

6406532754861. ✔ Trivial mutant

6406532754862. ✖ Equivalent mutant

6406532754863. ✖ Dead mutant

Question Number : 76 Question Id : 640653820744 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 *preconditions* in Finite State Machine (FSM)?

Options :

6406532754888. ✖ They represent sets of values for (key) variables.

6406532754889. ✖ They model possible changes from one state to another

6406532754890. ✔ Those are the conditions that must be true for transitions to be made.

6406532754891. ✖ Those are the changes to the variables that cause transitions to be made.

Question Number : 77 Question Id : 640653820745 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 access an external object like a file.

Options :

6406532754892. ✖ Parameter coupling

6406532754893. ✖ Shared data coupling

6406532754894. ✔ External device coupling

6406532754895. ✖ Message-passing interfaces

Sub-Section Number :	3
Sub-Section Id :	640653120730
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 78 Question Id : 640653820732 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 types of transitions or edges in Application Transition Graph (ATG):

Transition types	Description
A. Form link transition	1. A transition out of the softwares control like back button, forward button, refresh button, etc.
B. Component expression transition	2. Server side transition, invisible to user
C. Operational transition	3. Execution of a software component causes a component expression to be sent to the client
D. Redirect transition	4. Form submission link

Options :

6406532754844. ✖ A-4, B-1, C-3, D-2

6406532754845. ✔ A-4, B-3, C-1, D-2

6406532754846. ✖ A-3, B-1, C-4, D-2

6406532754847. ✖ A-3, B-4, C-1, D-2

Question Number : 79 Question Id : 640653820733 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 Data{
2.     private int i;
3.     private char c;
4.     public void update(int i, char c) {
5.         this.i = i;
6.         this.c = c;
7.     }
8.     public void update(char c, int i) {
9.         this.i = i;
10.        this.c = c;
11.    }
12.}
13.public class MTest {
14.    public static void main(String[] args) {
15.         Data d = new Data();
16.         d.update(97, 'A');
17.     }
18.}
```

Consider creating a mutant by modifying the statement at LINE 16 as follows:

```
16a.        d.update('A', 97);
```

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

Options :

6406532754848. ✖ Overriding Method Moving (OMM) operator

6406532754849. ✖ Argument number change (ANC) operator

6406532754850. ✔ Argument order change (AOC) operator

6406532754851. ✖ Overloading Method Change (OMC) operator

Question Number : 80 Question Id : 640653820735 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() { }
}
class B extends A{
    public void f() { }
    public void g() { }
}
class C extends B{
    public void f() { }
    public void i() { }
}
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 :

6406532754856. ✖ {A::f(), B::g(), A::h(), C::i()}

6406532754857. ✔ {C::f(), B::g(), A::h(), C::i()}

6406532754858. ✖ {C::f(), A::g(), B::h(), C::i()}

6406532754859. ✖ {A::f(), A::g(), B::h(), C::i()}

Question Number : 81 Question Id : 640653820737 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 $\sum = \{a, b\}$, with the production rules as follows:

$$S \rightarrow aXbb,$$
$$X \rightarrow aXbb,$$
$$X \rightarrow abb$$

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

Options :

6406532754864. ✖ $\{a^n b^{2n} | n \geq 1\}$

6406532754865. ✔ $\{a^n b^{2n} | n \geq 2\}$

6406532754866. ✖ $\{a^n b^{2n} a^n b^{2n} | n \geq 1\}$

6406532754867. ✖ $\{a^n b^{2n} a^n b^{2n} | n \geq 0\}$

Question Number : 82 Question Id : 640653820738 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"], [$0 \leq$ age $<$ 60, age $\geq$ 60], and [salary $<$ 2,50,000, salary $\geq$ 2,50,000 $<$ 10,00,000, salary $\geq$ 10,00,000 $<$ 20,00,000, salary $\geq$ 20,00,000]. What will be the minimum number of tests that need to be prepared using the Each Choice Coverage (ECC) criteria?

Options :

6406532754868. ✔ 4

6406532754869. ✖ 6

6406532754870. ✖ 7

6406532754871. ✖ 24

Question Number : 83 Question Id : 640653820739 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 = a;
    int pr = 1;
    do {
        i++;
        r = sym_input();
        if(r < 0)
            break; //come out of the loop
        pr *= r;
    }while(i <= b);
    return sum;
}
```

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

Options :

6406532754872. ✖ $\{pr \mapsto \prod_{i\in[a,b]} r_i\}$

6406532754873. ✖ $\{pr \mapsto \prod_{i\in[1,n-1]} r_i\}$

6406532754874. ✔ $\{pr \mapsto \prod_{i\in[a+1,a+n]} r_i\}$

6406532754875. $\{pr \mapsto \prod_{i \in [a,b+n-1]} r_i\}$

Sub-Section Number :	4
Sub-Section Id :	640653120731
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 84 Question Id : 640653820731 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, . . .

	/* 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();

P_1	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;

	if(student_scores == null){
P_2	out.println("Invalid roll number</BR>");
	}
	else{
	for (Integer s : student_scores) {
P_3	total_score += s;
	}
P_4	avg_score = (double)total_score / student_scores.size();
	if(avg_score >= 90.0)
P_5	out.println("Scholarship granted</BR>");
	else
P_6	out.println("Scholarship not granted</BR>");
	}
P_7	out.println ("</BODY></HTML>"); out.close();

Identify the component expression corresponding to the given code above.

Options :

6406532754840. ✖ $P_1 \cdot (P_2 | (P_3^* \cdot (P_4 \cdot P_5 | P_6))) \cdot P_7$

6406532754841. ✖ $P_1 \cdot ((P_2^* \cdot P_3 \cdot (P_4 | P_5)) | P_6) \cdot P_7$

6406532754842. ✔ $P_1 \cdot (P_2 | (P_3^* \cdot P_4 \cdot (P_5 | P_6))) \cdot P_7$

6406532754843. ✖ $P_1 \cdot (P_2 | (P_3 \cdot P_4^* \cdot (P_5 | P_6))) \cdot P_7$

Question Number : 85 Question Id : 640653820734 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.

```
import java.util.*;
class ItemList{
    protected ArrayList<Integer> list;
    public ItemList() {
        list = new ArrayList<Integer>();
    }
    public void insertAt(int i, int v) {
        list.add(i, v);;
    }
    public void removeAt(int i) {
        list.remove(i);
    }
    public int size() {
        return list.size();
    }
}
class ItemStack extends ItemList{
    private int top = -1;
    public void push(int v) {
        top++;
        insertAt(top, v);
    }
    public boolean pop() {
        try {
            if(top == -1)
              return false;
          removeAt(top);
          top--;
          return true;
        }catch(Exception e) {
            return false;
        }
    }
}
public class MTest {
    public static void fun(ItemList li) {
        li.removeAt(li.size() - 1);
    }
    public static void main(String[] args) {
        ItemStack is = new ItemStack();
        is.push(10);
        is.push(20);
        is.push(30);
        fun(is);        //LINE-1
        if(!is.pop())   //LINE-2
            System.out.print("pop failed");
    }
}
```

The call to `is.pop()` at `LINE-2` throws an exception since the invocation of `fun(is)` at `LINE-1` calls the `removeAt` method from the parent type, which makes the `top` of `ItemStack` inconsistent. Identify the type of anomaly or fault in the given scenario.

Options :

6406532754852. ✔ Inconsistent type use

6406532754853. ✖ State definition anomaly

6406532754854. ✖ State definition inconsistency anomaly

6406532754855. ✖ State visibility anomaly

Sub-Section Number : 5

Sub-Section Id : 640653120732

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 86 Question Id : 640653820727 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 advantages of Test-Driven Development (TDD)?

Options :

6406532754824. ✔ Fault isolation is easy

6406532754825. ✖ The final combined code size remains minimal, and it is always efficient and highly readable.

6406532754826. ✖ Low dependency on test frameworks

6406532754827. ✔ A TDD based project is ideal for pair programming one for writing code and one for testing.

Question Number : 87 Question Id : 640653820749 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

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

```
//code base
class X{
    protected int u, v;
    public void setU(int u) { this.u = u; }
    public void setV(int v) { this.v = v; }
    public int getU() { return u; }
    public int getV() { return v; }
}
class Y extends X{
    protected int u, w;
    public void setU(int u) { this.u = u; }
    public void setW(int w) { this.w = w; }
    public int getV() { return v; }
    public int getW() { return w; }
}
```

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

public class ClassAccessorTest {
    private X objX;
    private Y objY;
    @Test
    public void testCase1() {
        objX = new X();
        objX.setU(10);
        assertTrue(objX.getU() == 10);
    }
    @Test
    public void testCase2() {
        objY = new Y();
        objY.setU(10);
        assertTrue(objY.getU() == 10);
    }
    @Test
    public void testCase3() {
        objX = new Y();
        objX.setV(10);
        assertTrue(objX.getV() == 10);
    }
    @Test

    public void testCase4() {
        objX = new Y();
        objX.setU(10);
        assertTrue(objX.getU() == 10);
    }
}
```

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

Options :

6406532754904. ✖ testcase1()

6406532754905. ✔ testcase2()

6406532754906.

✖ testcase3()

6406532754907. ✔ testcase4()

Sub-Section Number : 6

Sub-Section Id : 640653120733

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 88 Question Id : 640653820740 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 Disjunctive Normal Form (DNF)?

Options :

6406532754876. ✖ $x \wedge y \wedge z$

6406532754877. ✔ $x \vee (y \wedge z)$

6406532754878. ✖ $(u \vee v \vee x) \wedge (y \vee z)$

6406532754879. ✔ $(u \wedge v) \vee (y \wedge z) \vee x$

Sub-Section Number : 7

Sub-Section Id : 640653120734

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653820741 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 : (89 to 90)

Question Label : Comprehension

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

Row#	a	b	c	p	p_a	p_b	p_c
1	T	T	T	T			
2	T	T		T	T		
3	T		T	T	T		
4	T			T	T		
5		T	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 : 89 Question Id : 640653820742 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

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

Options :

6406532754880. ✖ $(2, 6)$

6406532754881. ✖ $(5, 7)$

6406532754882. ✖ $(5, 6)$

6406532754883. ✔ $(2,6),(3,7),(4,8)$

Question Number : 90 Question Id : 640653820743 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

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

Options :

6406532754884. ✖ $(2,6)$ for $p = true$, $(3,7)$ for $p = false$

6406532754885. ✔ $(1,5)$ for $p = true$, no feasible pair for $p = false$

6406532754886. ✖ $(1,3),(2,4)$ for $p = true$, $(6,8)$ for $p = false$

6406532754887. ✖ $(1,2),(3,4)$ for $p = true$, $(7,8)$ for $p = false$

Question Id : 640653820746 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 : (91 to 92)

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

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 91 Question Id : 640653820747 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 :

6406532754896. ✖ 9

6406532754897. ✖ 10

6406532754898. ✔ 11

6406532754899. ✖ 12

Question Number : 92 Question Id : 640653820748 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 :

6406532754900. ✔ 9

6406532754901. ✖ 10

6406532754902. ✖ 11

6406532754903. ✖ 12