

Indian Institute of Technology, Madras - Centre for Continuing Education

Notations :

- 1.Options shown in **green** color and with ✓ icon are correct.
- 2.Options shown in **red** color and with ✗ icon are incorrect.

Question Paper Name :	IIT M DIPLOMA AN2 EXAM ETD2 11 Dec 2022
Subject Name :	2022 Dec: IIT M DIPLOMA AN2 EXAM ETD2
Creation Date :	2022-12-08 17:15:26
Duration :	180
Total Marks :	1030
Display Marks:	Yes
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
Calculator :	Scientific
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No

Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

Group I

Group Number :	1
Group Id :	64065310853
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	1030
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No
Revisit allowed for group Instructions? :	Yes
Maximum Instruction Time :	0
Minimum Instruction Time :	0
Group Time In :	Minutes
Navigate To Group Summary From Last Question? :	No
Disable Submit Button During Assessment? :	No
Section Selection Time? :	0
No of Optional sections to be attempted :	0

Section Id :	64065329431
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	24
Number of Questions to be attempted :	24
Section Marks :	100
Display Number Panel :	Yes
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 :	64065365805
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 1 Question Id : 640653455118 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 "[DIPLOMA LEVEL: PROGRAMMING CONCEPTS USING JAVA](#)"

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

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

(IF IT IS NOT THE CORRECT SUBJECT ,PLS CHECK THE SECTION AT THE [TOP](#) FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531513481. ✓ YES

6406531513482. ✘ NO

Sub-Section Number : 2

Sub-Section Id : 64065365806

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 2 Question Id : 640653455119 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

Consider the code given below.

```
import java.util.*;
import java.util.concurrent.*;
class Example extends Thread{
    Map siMap;
    Example(Map m){
        this.siMap = m;
    }
    public void run(){
        siMap.put("D",4);
    }
}
public class Test{
    public static void main (String[] args) throws InterruptedException{
        Map<String, Integer> siMap = new LinkedHashMap<String, Integer>();
        String[] str = {"A", "B", "C"};
        Integer[] arr = {1, 2, 3};
        for(int i = 0; i < str.length; i++){
            siMap.put(str[i],arr[i]);
        }
        Example t = new Example(siMap);
        t.start();
        t.join();
        Set s = siMap.entrySet();
        Iterator itr = s.iterator();
        while(itr.hasNext()){
            Map.Entry m = (Map.Entry)itr.next();
            System.out.println(m.getKey() + " => " + m.getValue());
        }
    }
}
```

Which of the following is true about the given code?

Options :

6406531513483. ❌ This program may generate ConcurrentModificationException.

This program generates the output:

A => 1
B => 2
C => 3

6406531513484. ✅ D => 4

6406531513485. ❌ This program results in a deadlock.

This program generates the output:

A => 1
B => 2
C => 3

6406531513486. *

Question Number : 3 Question Id : 640653455122 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

Consider the code given below.

```
interface Displayable{
    void display();
}

abstract class Delivery implements Displayable{
    public abstract void deliver();
}

class Fpkart extends Delivery{
    public void display() {
        System.out.println("Fpkart display");
    }
    public void deliver() {
        System.out.println("Fpkart delivery");
    }
}

class Amzn extends Delivery{
    public void deliver() {
        System.out.println("Amzn delivery");
    }
    public void display() {
        System.out.println("Amzn display");
    }
}

public class User {
    // CODE BLOCK
    public static void main(String[] args) {
        showDetails(new Fpkart());
        showDetails(new Amzn());
    }
}
```

Choose the correct option to fill in place of CODE BLOCK so that the output is:

Fpkart delivery
Fpkart display
Amzn delivery
Amzn display

Options :

```
        public static void showDetails(Displayable obj) {
            obj.deliver();
            obj.display();
        }
```

6406531513495. ✘ }

6406531513496. ✘

```
public void showDetails(Displayable obj) {  
    obj.deliver();  
    obj.display();  
}
```

```
public void showDetails(Delivery obj) {  
    obj.deliver();  
    obj.display();  
}
```

6406531513497. ✘ }

```
public static void showDetails(Delivery obj) {  
    obj.deliver();  
    obj.display();  
}
```

6406531513498. ✓ }

Question Number : 4 Question Id : 640653455123 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

Method Stream.iterate(e, f) returns an infinite sequential ordered Stream produced by iterative application of a function f to an initial element e, producing a Stream consisting of e, f(e), f(f(e)), etc. Based on the above information, consider the code given below, and answer the question that follows.

```
import java.util.stream.*;  
public class Test {  
    public static void main(String[] args) {  
        Stream.iterate(10, n -> n-1)  
            .map(n -> n + 2)  
            .filter(n -> n % 3 == 0)  
            .limit(4)  
            .forEach((x) -> System.out.print(x + " "));  
    }  
}
```

What will the output be?

Options :

6406531513499. ✓ 12 9 6 3

6406531513500. ✘ 9 6 3 0

6406531513501. ✘ 10 7 4 1

6406531513502. ✘ 7 4 1 0

Question Number : 5 Question Id : 640653455126 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

Consider the Java code given below.

```
class Student{
    String name;
    public Student(String name) {
        this.name = name;
    }
    public String toString() {
        return "name = "+ name;
    }
}
class Researcher extends Student{
    String project;
    public Researcher(String n, String p) {
        super(n);
        project = p;
    }
    public Researcher(Researcher r) {
        super(r.name);
        project = r.project;
    }
    public String toString() {
        return super.toString() + ", " + "project = " + project;
    }
}
public class School{
    public static void main(String args[]){
        Student s1 = new Researcher("John", "ABC");
        Student s2 = new Researcher((Researcher)s1);
        s2.name = "Jenny";
        System.out.println(s1 + "\n" + s2);
    }
}
```

What will the output be?

Options :

name = Jenny

6406531513511. ✘ name = Jenny

name = Jenny, project = ABC

6406531513512. ✘ name = Jenny, project = ABC

name = John

6406531513513. ✘ name = Jenny

name = John, project = ABC
6406531513514. ✓ name = Jenny, project = ABC

Question Number : 6 Question Id : 640653455127 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

Consider the code given below.

```
class AQ{  
    public void solution() {  
        System.out.println("Solution is not required");  
    }  
    public void score() {  
        System.out.println("Score not considered");  
    }  
}  
class PQ extends AQ{  
    public void solution() {  
        System.out.println("Solution is required");  
    }  
}  
class GQ extends PQ{  
    public void score() {  
        System.out.println("Score should be considered");  
    }  
}  
public class InheritanceTest {  
    public static void main(String[] args) {  
        PQ obj = new GQ();  
        obj.solution();  
        obj.score(); //LINE 1  
    }  
}
```

Choose the correct option.

Options :

This program generates the output:

Solution is required

6406531513515. ✓ Score should be considered

This program generates the output:

Solution is required

6406531513516. ✘ Score not considered

This program generates the output:

Solution is not required

6406531513517. ✘ Score not considered

6406531513518. ✘ LINE 1 generates compilation error

Question Number : 7 Question Id : 640653455129 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

Consider the code given below.

```
interface Memory{
    void capacity();
}

class Laptop{
    public HardDisk getMemory1() {
        return new HardDisk();
    }
    public Cloud getMemory2() {
        return new Cloud();
    }
    private class HardDisk implements Memory{
        public void capacity() {
            System.out.println("Limited capacity");
        }
    }
    private class Cloud implements Memory{
        public void capacity() {
            System.out.println("Unlimited capacity");
        }
    }
}
public class PrivateTest {
    public static void main(String[] args) {
        Laptop m = new Laptop();
        // CODE BLOCK
        obj1.capacity();
        obj2.capacity();
    }
}
```

Choose the correct option(s) to fill in place of CODE BLOCK so that the output is:

Limited capacity
Unlimited capacity

Options :

HardDisk obj1 = new HardDisk();
6406531513523. ✘ Cloud obj2 = new Cloud();

HardDisk obj1 = m.getMemory1();
6406531513524. ✘ Cloud obj2 = m.getMemory2();

Memory obj1 = m.getMemory1();
6406531513525. ✓ Memory obj2 = m.getMemory2();

Memory obj1 = new HardDisk();
6406531513526. ❌ Memory obj2 = new Cloud();

Question Number : 8 Question Id : 640653455130 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

Consider the Java program given below.

```
import javax.swing.*;
import java.awt.event.*;
class GUIDemo extends JFrame implements ActionListener{
    JButton btn;
    JCheckBox cb;
    JLabel label;
    JPanel p1, p2, p3;
    public GUIDemo() {
        // p1, p2, p3 JPanel objects created

        btn = new JButton("Button");
        cb = new JCheckBox("Check Box");
        label = new JLabel();

        // cb, label and btn added to p1, p2 and p3 resp.
        // p1, p2, and p3 added to frame at North, Center and South resp.

        btn.addActionListener(this);
        cb.addActionListener(this);
        setVisible(true);
        setSize(300,300);
    }
    public void actionPerformed(ActionEvent e) {
        // CODE BLOCK
    }
}
public class GUITest {
    public static void main(String[] args) {
        new GUIDemo();
    }
}
```



Choose the correct code segment to be filled inside method `actionPerformed()` such that on clicking the button, the label text changes to `Button Activated` and on selecting the checkbox, the label text changes to `CheckBox Activated`.

Options :

```
if(e.getSource().equals(btn))
    label.setText("Button Activated");
if(e.isSelected().equals(cb))
    label.setText("CheckBox Activated");
6406531513527. *
```

6406531513528. ✓

```
if(e.getSource().equals(btn))
    label.setText("Button Activated");
if(cb.isSelected())
    label.setText("CheckBox Activated");

        if(e.equals(btn))
            label.setText("Button Activated");
        if(e.equals(cb))
            label.setText("CheckBox Activated");
6406531513529. ✘
```



```
if(e.isSelected())
    label.setText("Button Activated");
if(cb.isSelected())
    label.setText("CheckBox Activated");
6406531513530. ✘
```

Question Number : 9 Question Id : 640653455131 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

Method `Optional.ofNullable(T value)` returns an `Optional` describing the specified value, if non-null, otherwise returns an empty `Optional`. Based on this description, consider the code given below, and answer the question that follows.

```
import java.util.*;
class Car{
    String brand;
    String model;
    //Constructor to initialize instance variables
}
public class OptionalTest {
    public static void main(String[] args) {
        var cList = new ArrayList<Car>();
        cList.add(new Car("Maruthi", "Swift"));
        cList.add(new Car("TATA", null));
        for(Car obj:cList) {
            Optional<String> op1 = Optional.ofNullable(obj.model);
            op1.ifPresent(s->System.out.println(s));
        }
    }
}
```

Choose the correct option.

Options :

This program terminates abnormally due to `NullPointerException` without printing any value.
6406531513531. ❌

This program terminates abnormally due to `NullPointerException` after printing the value:

6406531513532. ❌ Swift

This program generates the output:

6406531513533. ✓ Swift

This program generates the output:

Swift

6406531513534. ❌ null

Question Number : 10 Question Id : 640653455133 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

Consider the code given below.

Assume that, before execution of the given code, the files "file1.txt" and "file2.txt" have the following text in them.

In Static Typing

```
import java.io.*;
public class FileTest {
    public static void main(String[] args) {
        try {
            var out = new FileOutputStream("file1.txt", false);
            var dout = new DataOutputStream(out);
            dout.writeBytes(", type checking is performed during compile time");
            dout.close();

            var out2 = new FileOutputStream("file2.txt", true);
            var dout2 = new DataOutputStream(out2);
            dout2.writeBytes(", type checking is performed during compile time");

            dout2.close();
        }
        catch(IOException e) {
            System.out.println(e);
        }
    }
}
```

Choose the correct option regarding the contents of file1.txt and file2.txt after the program finishes execution.

Options :

file1.txt:

, type checking is performed during compile time

file2.txt:

6406531513539. ✓ In Static Typing, type checking is performed during compile time

file1.txt and file2.txt

6406531513540. ✗ In Static Typing, type checking is performed during compile time

6406531513541. ✗

file1.txt:

In Static Typing, type checking is performed during compile time

file2.txt:

, type checking is performed during compile time

file1.txt and file2.txt

, type checking is performed during compile time

6406531513542. ❌

Question Number : 11 Question Id : 640653455134 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

Method `Collectors.summarizingInt(mapping function)` returns a Collector which applies an int-producing mapping function to each input element, and returns summary statistics, such as count, min, max, sum, and average, for the resulting values.

```
import java.util.*;
import java.util.stream.*;
public class Test{
    public static void main(String[] args){
        var list=new ArrayList<Integer>();
        for(int i=0;i<=10;i++){
            list.add(i);
        }
        IntSummaryStatistics stat = list.stream().
        collect(Collectors.summarizingInt(x->x));
        System.out.println(stat.getMin()+"\n"+
                           stat.getMax()+"\n"+stat.getSum()+"\n"+stat.getAverage());
    }
}
```

Choose the correct option.

Options :

This program gives compile time error because a list cannot be converted to a stream.

6406531513543. ❌

This program generates compile time error with the message:

6406531513544. ❌ incompatible types: possible lossy conversion from double to int

This program generates the output:

1
10
50

6406531513545. ✘ 5.0

This program generates the output:

0
10
55

6406531513546. ✓ 5.0

Question Number : 12 Question Id : 640653455135 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

Consider the Java code given below.

```
1 class ClassOne{
2     public void methodOne(){
3         // ...
4         methodTwo();
5         // ...
6     }
7     public void methodTwo(){
8         // ...
9     }
10 }
11 class ClassTwo{
12     public static void methodThree(){
13         // ...
14         ClassOne c = new ClassOne();
15         c.methodOne();
16         // ...
17     }
18     public static void main(String[] args) {
19         // ...
20         methodThree();
21     }
22 }
```

During execution of Line 16 in the above code, the activation record of which method is at the top of the stack of activation records?

Options :

6406531513547. ✘ main

6406531513548. ✘ methodOne

6406531513549. ✘ methodTwo

6406531513550. ✓ methodThree

Question Number : 13 Question Id : 640653455136 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

A teacher has to find the average marks in a subject for a class of students. The teacher splits the class into two equal groups, and computes the average in each group simultaneously, and then finds the average of the two. Based on this information, consider the Java code given below.

```
import java.util.*;  
  
class AvgCompute implements Runnable{  
    ArrayList<Integer> half_batch = new ArrayList();  
    int avg;  
    public AvgCompute(ArrayList<Integer> hb) {  
        half_batch = (ArrayList<Integer>)hb.clone();  
        avg = -1;  
    }  
    public void run() {  
        // compute avg = <average of marks in half_batch>  
    }  
    public int getAvg() {  
        return avg;  
    }  
}  
public class AvgMarks {  
    public static void main(String[] args) {  
        int avg = -1;  
  
        // Accept the marks into two  
        // ArrayList<Integer> objects batch1 and batch2  
        AvgCompute sc1 = new AvgCompute(batch1);  
        AvgCompute sc2 = new AvgCompute(batch2);  
        Thread t1 = new Thread(sc1);  
        Thread t2 = new Thread(sc2);  
        t1.start();  
        t2.start();  
  
        //----- LINE-1  
  
        avg = (sc1.getAvg() + sc2.getAvg())/2;  
        System.out.println(avg);  
    }  
}
```

What should be added at LINE-1 so that the program will always give the correct result?

Options :

6406531513551. ✘ Thread.sleep(1000);

No code is required at LINE-1. The code will always generate the correct output.

No line of code at LINE-1 can ensure that this code will always generate the correct output.

6406531513554. ✓ while(sc1.getAvg() == -1 || sc2.getAvg() == -1) {}

6406531513555. ✗ while(sc1.getAvg() == -1 && sc2.getAvg() == -1) {}

Question Number : 14 Question Id : 640653455137 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

Consider the following block of code.

```
// ...
Integer i = sc.nextInt();
if(i < 0)
    throw new RuntimeException("Input is a negative integer");
// ...
```

Which among the following code blocks can replace the given code in order to generate a customized assertion error as shown below?

```
Exception in thread "main" java.lang.AssertionError: Input is a negative integer
        at PositiveAssert.main(PositiveAssert.java:<line number>)
```

Options :

```
try {
    Integer i = sc.nextInt();
    assert i >= 0;
}
catch(RuntimeException e) {
    System.out.println("Input is a negative integer");
```

6406531513556. ✗ }

```
Integer i = sc.nextInt();
assert i >= 0;
if (i < 0)
    System.out.println("Input is a negative integer");
6406531513557. *
```

```
Integer i = sc.nextInt();
try {
    assert i >= 0;
}
catch (AssertionError e) {
    System.out.println("Input is a negative integer");
}
```

6406531513558. *

```
Integer i = sc.nextInt();
assert i >= 0 : "Input is a negative integer";
6406531513559. ✓
```

Question Number : 15 Question Id : 640653455138 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

Consider the following Java code that uses chained exceptions.

```
// ... class NoDBConnectionException is defined here
// ... class InvalidUserException is defined here

public class ExceptionTest {
    public static void main(String[] args) {
        try{
            getConnection();
        }
        catch (NoDBConnectionException e) {
            System.out.println(e.getMessage());
            System.out.println(e.getCause().getMessage());
        }
    }

    static void getConnection() throws NoDBConnectionException {
        try {
            whoIsUser();
        }
        catch (InvalidUserException e) {
            NoDBConnectionException dt =
                new NoDBConnectionException("No valid DB connection exists");
            dt.initCause(e);
            throw dt;
        }
    }

    static void whoIsUser() throws InvalidUserException {
        throw new InvalidUserException("Wrong user credentials");
    }
}
```

What is the output of this code?

Options :

Exception in thread "main" NoDBConnectionException:
 No valid DB connection exists
 // ...
 Caused by: InvalidUserException: Wrong user credentials
6406531513560. ✘ // ...

Exception in thread "main" InvalidUserException: Wrong user credentials
 // ...
 Caused by: NoDBConnectionException: No valid DB connection exists
6406531513561. ✘ // ...

No valid DB connection exists
6406531513562. ✓ Wrong user credentials

Wrong user credentials
6406531513563. ✗ No valid DB connection exists

Question Number : 16 Question Id : 640653455139 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

What is the output of the following code?

```
public class SetInheritanceTest {  
    public static void main(String[] args) {  
        Set<String> lhs = new LinkedHashSet<String>();  
        lhs.add("Bob");  
        lhs.add("Kane");  
        lhs.add("Abel");  
        Set<String> ts = new TreeSet<String>(lhs);      //LINE-1  
        System.out.println(ts);  
    }  
}
```

Options :

This generates the output:
6406531513564. ✗ [Bob, Kane, Abel]

This generates the output:
6406531513565. ✓ [Abel, Bob, Kane]

Compiler error because objects of type `LinkedHashSet<String>` and `TreeSet<String>`
6406531513566. ✗ cannot be assigned to variables of type `Set<String>`.

This generates a runtime exception because an object of type `LinkedHashSet<String>`
cannot be used to create an object of type `TreeSet<String>` (see LINE-1).
6406531513567. ✗

Sub-Section Number : 3
Sub-Section Id : 64065365807
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 17 Question Id : 640653455120 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

Method `merge` of interface Map has the following structure and functionality:

```
merge(K key, V value, remappingFunction)
```

If the specified key is not already associated with a value or is associated with null, associates it with the given non-null value. Otherwise, replaces the associated value with the results of the given remapping function, or removes if the result is null. Consider the code given below that uses the merge method to merge two maps, and answer the question that follows.

```
import java.util.*;
class Calculator{
    public static int avg(int a, int b){
        return (a + b)/2;
    }
}
public class Student{
    public static void main(String[] args){
        Map<String, Integer> exam1 = new TreeMap<String, Integer>();
        Map<String, Integer> exam2 = new TreeMap<String, Integer>();
        Map<String, Integer> score = new TreeMap<String, Integer>();

        exam1.put("math", 54);
        exam1.put("physics", 42);

        exam2.put("biology", 34);
        exam2.put("physics", 44);

        for (Map.Entry<String, Integer> e : exam1.entrySet())
            score.put(e.getKey(), e.getValue());

        for (Map.Entry<String, Integer> e : exam2.entrySet())
            score.merge(e.getKey(), e.getValue(), Calculator::avg);

        System.out.print(score);
    }
}
```

Choose the correct option regarding the code.

Options :

6406531513487. ❌ It generates output: {math=54, physics=43, biology=34}

6406531513488. ✓ It generates output: {biology=34, math=54, physics=43}

6406531513489. ❌ It generates output: {biology=34, math=54, physics=44}

6406531513490. ❌ It generates output: {biology=34, physics=43, math=54}

Question Number : 18 Question Id : 640653455124 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 code given below.

```
class Customer implements Cloneable{
    String name;
    String[] items;
    public Customer(String n, String[] itm) {
        name = n;
        items = itm;
    }
    public Object clone() throws CloneNotSupportedException{
        return super.clone();
    }
}

public class Cloning {
    public static void main(String[] args) throws CloneNotSupportedException{
        String[] itm = {"Milk", "Eggs", "Bread"};
        Customer c1 = new Customer("Tina", itm);
        Customer c2 = (Customer)c1.clone();
        Customer c3 = c1;
        c2.items[1] = "Noodles";
        c3.name = "Raju";
        System.out.println(c1.name + " " + c1.items[1]);
        System.out.println(c2.name + " " + c2.items[1]);
        System.out.println(c3.name + " " + c3.items[1]);
    }
}
```

Options :

Raju Eggs
Tina Noodles

6406531513503. ✘ Raju Eggs

Raju Noodles
Tina Noodles

6406531513504. ✓ Raju Noodles

6406531513505. ✘

Tina Eggs
Tina Noodles
Raju Eggs

Tina Noodles
Tina Noodles
6406531513506. * Raju Noodles

Question Number : 19 Question Id : 640653455128 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 code given below that checks whether two voters belong to the same constituency. Method `equals` is overridden to compare two `Voter` objects as follows. If two voters have the same pincode, then both belong to the same constituency. Based on the given information, answer the question that follows.

```
class Voter{  
    private String name;  
    private int pincode;  
    //Constructor to initialize instance variables  
    public String toString() {  
        return name;  
    }  
    public boolean equals(Object obj) {  
        // CODE BLOCK  
    }  
}  
public class EqualsTest {  
    public static void main(String[] args) {  
        Voter v1 = new Voter("Harsha", 508206);  
        Voter v2 = new Voter("Munna", 500082);  
        Voter v3 = new Voter("Sudarshan", 508206);  
        if(v1.equals(v3))  
            System.out.println(v1+", "+v3+" belong to the same constituency");  
        if(v2.equals(v3))  
            System.out.println(v2+", "+v3+" belong to the same constituency");  
    }  
}
```

Choose the correct option to fill in place of CODE BLOCK so that the output is:

Harsha, Sudarshan belong to the same constituency

Options :

```
if(obj instanceof Voter) {  
    Voter v = (Voter)obj;  
    if(this.pincode == v.pincode)  
        return false;  
}  
6406531513519. ✘ return true;
```

```
if(obj instanceof Voter) {  
    Voter v = (Voter)obj;  
    if(this.pincode == v.pincode)  
        return true;  
}  
6406531513520. ✓ return false;
```

```
if(obj instanceof Voter) {  
    Voter v = obj;  
    if(this.pincode == v.pincode)  
        return true;  
}  
6406531513521. ✘ return false;
```

```
if(obj instanceof Voter) {  
    Voter v = obj;  
    if(this.pincode == v.pincode)  
        return false;  
}  
6406531513522. ✘ return true;
```

Question Number : 20 Question Id : 640653455132 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 code given below.

```
import java.io.*;
class Customer implements Serializable{
    private transient int accno;
    private String uname;
    private transient String pwd;

    //Constructor to initialize instance variables

    public String toString() {
        return "accno=" + accno + ", username=" + uname + ", password=" + pwd;
    }
    private void writeObject(ObjectOutputStream out) throws IOException{
        out.defaultWriteObject();
        out.writeInt(accno*1000);
    }
    private void readObject(ObjectInputStream in) throws Exception{
        in.defaultReadObject();
        accno = in.readInt() / 1000;
    }
}
public class SerialTest {
    public static void main(String[] args) throws Exception{
        var fos = new FileOutputStream("customer.txt");
        var oos = new ObjectOutputStream(fos);
        Customer payment = new Customer(543210, "cust9876", "cust@123");
        oos.writeObject(payment);

        var fis = new FileInputStream("customer.txt");
        var ois = new ObjectInputStream(fis);
        Customer obj = (Customer)ois.readObject();
        System.out.println(obj);
    }
}
```

What will the output be?

Options :

6406531513535. ✘ accno=0, username=cust9876, password=cust@123

6406531513536. ✘ accno=543210, username=cust9876, password=cust@123

6406531513537. ✘ accno=0, username=cust9876, password=null

Question Number : 21 Question Id : 640653455141 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**

A TreeMap is sorted according to the natural ordering of its keys, or by a Comparator provided at map creation time, depending on which constructor is used.

A LinkedHashMap, on the other hand, is a hash table and linked list implementation of the Map interface, with the ordering of entries being the order in which keys were inserted into the map (insertion-order).

You are given a type Student with instance variables `name` and `total_marks`. If you wish to map the roll number of each student to the Student object in each of the following scenarios, then choose the appropriate collection to use for each scenario.

I. To obtain the list of students in decreasing order of their total marks	A. TreeMap
II. To list the students in decreasing order of their roll number	B. LinkedHashMap
III. To process the list of student requests in the order in which the applications were submitted by them	
IV. To select the first 10 students who submitted their homework	

Options :

6406531513572. ✘ I,IV-A and II,III-B

6406531513573. ✘ I,IV-B and II,III-A

6406531513574. ✘ I,II-B and III,IV-A

6406531513575. ✓ I,II-A and III,IV-B

Sub-Section Number : 4**Sub-Section Id :** 64065365808**Question Shuffling Allowed :** Yes**Is Section Default? :** null

Question Number : 22 Question Id : 640653455121 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 5 Selectable Option : 0

Question Label : Multiple Select Question

Consider the code given below.

```
class Enquiry{  
    int available = 1;  
    public synchronized void request(int n, String name){  
        if(available >= n){  
            available = available - n;  
            System.out.println(name + " booked " + n + " ticket");  
        }  
        else{  
            System.out.println(name + " cannot book " + n + " ticket");  
        }  
    }  
}  
  
class TicketBooking implements Runnable{  
    Enquiry e;  
    String name;  
    int n_tickets;  
    public TicketBooking(Enquiry e1, String n, int t){  
        // constructor  
    }  
    public void run(){  
        e.request(n_tickets, name);  
    }  
}  
  
public class Test{  
    public static void main(String[] args){  
        Enquiry obj = new Enquiry();  
        TicketBooking tb1 = new TicketBooking(obj, "Sita", 1);  
        TicketBooking tb2 = new TicketBooking(obj, "Raju", 1);  
        Thread t1 = new Thread(tb1);  
        Thread t2 = new Thread(tb2);  
        t2.start();  
        t1.start();  
    }  
}
```

Which of the following options is/are possible result/s of the above code?

Options :

Raju booked 1 ticket

6406531513491. ✓ Sita cannot book 1 ticket

Raju booked 1 ticket

6406531513492. ✗ Sita booked 1 ticket

Sita booked 1 ticket

6406531513493. ✓ Raju cannot book 1 ticket

All of these

Question Number : 23 Question Id : 640653455125 Question Type : MSQ Is Question

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

Correct Marks : 5 Selectable Option : 0

Question Label : Multiple Select Question

Consider the Java code given below that prints the highest mileage of the given Vehicle objects. From among the options, identify the appropriate function header for function printMileage that takes as input an array of Vehicle objects and prints the highest mileage among them.

```
import java.util.*;
abstract class Vehicle {
    public abstract double getMileage();
}
class Car extends Vehicle{
    // getMileage() method that returns mileage of car
}
class Bike extends Vehicle{
    // getMileage() method that returns mileage of bike
}
public class Survey{
    // LINE 1: FUNCTION HEADER
    {
        // invokes method getMileage()
        // to print the value of highest mileage
    }
    public static void main(String[] args) {
        Vehicle[] v = {new Car(), new Bike()};
        printMileage(v);
    }
}
```

Choose the correct option(s).

Options :

6406531513507. ❌ public static void printMileage(<?> v)

6406531513508. ✓ public static void printMileage(Vehicle[] v)

6406531513509. ❌ public static void printMileage(T[] v)

6406531513510. ✓ public static <T extends Vehicle> void printMileage(T[] v)

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

Time : 0

Correct Marks : 5 Selectable Option : 0

Question Label : Multiple Select Question

Consider the Java code given below. Which among the code blocks given in the options, when placed in place of CODE BLOCK will NOT print the items in List<Integer> ls?

```
public class LinkedListIterator {  
    public static void main(String[] args) {  
        List<Integer> ls = new LinkedList<Integer>();  
        ls.add(10);  
        ls.add(20);  
        ls.add(30);  
  
        //CODE BLOCK  
  
    }  
}
```

Options :

6406531513568. ✘

```
for (int i=0; i<ls.size();i++){  
    System.out.println(ls.get(i));  
}
```

6406531513569. ✘

```
for (Integer s:ls){  
    System.out.println(s);  
}
```

6406531513570. ✘

```
Iterator<Integer> it = ls.iterator();  
while (it.hasNext()){  
    System.out.println(it.next());  
}
```

6406531513571. ✓

```
Iterator<Integer> it = ls.iterator();  
for(int i;i<it.length;i++){  
    System.out.println(it.getNext());  
}
```

MLT

Section Id :	64065329432
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	21
Number of Questions to be attempted :	21
Section Marks :	100
Display Number Panel :	Yes
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 :	64065365809
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 25 Question Id : 640653455142 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 "DIPLOMA LEVEL: MACHINE LEARNING TECHNIQUES"

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 :

6406531513576. ✓ YES

6406531513577. ✗ NO

Sub-Section Number : 2**Sub-Section Id :** 64065365810**Question Shuffling Allowed :** Yes**Is Section Default? :** null**Question Number : 26 Question Id : 640653455171 Question Type : MCQ Is Question****Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 3**

Question Label : Multiple Choice Question

What will be the result of applying ReLU to the following values?:

-2.7, 3.9, -1.0, 4.2, 6.4, -7.3

Options :

6406531513629. ✗ 1, 3.9, 1, 4.2, 6.4, 1

6406531513630. ✗ 0, 1, 0, 1, 1, 0

6406531513631. ✗ -2.7, 0, -1.0, 0, 0, -7.3

6406531513632. ✗ -1, +1, -1, +1, +1, -1

6406531513633. ✓ 0, 3.9, 0, 4.2, 6.4, 0

Question Number : 27 Question Id : 640653455176 Question Type : MCQ Is Question**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 3**

Question Label : Multiple Choice Question

Suppose you run gradient descent for linear regression for 500 iterations with a learning rate 0.02. You observe that the training loss (sum of squared loss) is increasing after every iteration. What may be the reason? What changes would you make to the set-up for the gradient descent to converge to a solution?

Options :

6406531513637. ❌ Number of features in the training data may be too low, try increasing them.
6406531513638. ❌ Number of features in the training data may be too high, try reducing them.
6406531513639. ❌ Learning rate may be too low; Try increasing it.
6406531513640. ✓ Learning rate may be too high; Try reducing it.

Sub-Section Number :

3

Sub-Section Id :

64065365811

Question Shuffling Allowed :

Yes

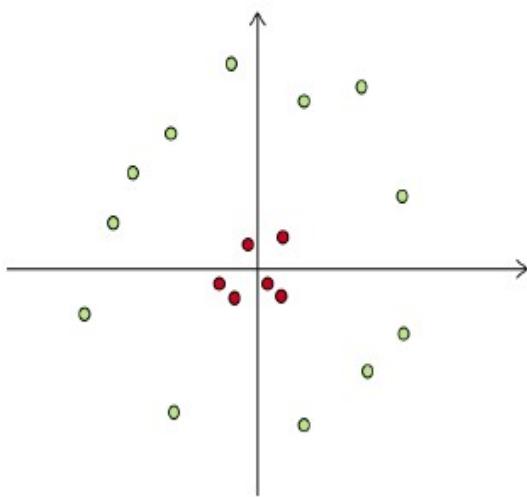
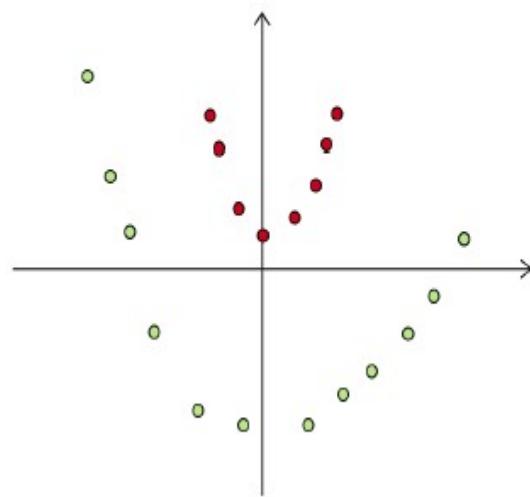
Is Section Default? :

null

Question Number : 28 Question Id : 640653455151 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

Each of the datasets given below corresponds to a binary classification problem. The labels are red and green for the two classes.

Dataset-1**Dataset-2**

On which of these two datasets can we train a hard-margin, kernel-SVM with quadratic kernel?

Options :

6406531513593. ❌ Only dataset-1
6406531513594. ❌ Only dataset-2

6406531513595. ✓ On both dataset-1 and dataset-2

6406531513596. ✗ Neither dataset-1 nor dataset-2

Question Number : 29 Question Id : 640653455157 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

let $k : \mathbb{R} \times \mathbb{R} \rightarrow \mathbb{R}$ be a valid kernel. Is $x_1^3 x_2^3 k(x_1, x_2)$ a valid kernel? Here, $x_1, x_2 \in \mathbb{R}$?

Options :

6406531513601. ✓ Yes

6406531513602. ✗ No

Question Number : 30 Question Id : 640653455177 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

A set of data points is generated by the following process:

$y_i = w_0 + w_1 x_i + w_2 x_i^2 + w_3 x_i^3 + w_4 x_i^4 + w_5 x_i^5 + \epsilon$ where ϵ is a Gaussian noise.

You use two models to fit the data:

Model 1: $\hat{y} = a_0 + a_1 x + a_2 x^2$

Model 2: $\hat{y} = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + \dots + a_{10} x^{10}$

Using a fixed number of training examples, Model 2 will have _____ bias than Model 1,
and Model 1 is more likely to _____

Options :

6406531513641. ✗ Higher, underfit

6406531513642. ✗ Lower, overfit

6406531513643. ✗ Higher, overfit

6406531513644. ✓ Lower, underfit

Sub-Section Number :	4
Sub-Section Id :	64065365812
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 640653455147 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 linearly separable training dataset for a binary classification problem in \mathbb{R}^2 :

$$\mathbf{x}_1 = \begin{bmatrix} 0 \\ -1 \end{bmatrix}, y_1 = 1 \quad \mathbf{x}_2 = \begin{bmatrix} -2 \\ 3 \end{bmatrix}, y_2 = 1$$

$$\mathbf{x}_3 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}, y_3 = -1 \quad \mathbf{x}_4 = \begin{bmatrix} 1 \\ -1 \end{bmatrix}, y_4 = -1$$

A hard-margin, linear-SVM is trained on this dataset. Among the four options given below, one of them is the optimal weight vector \mathbf{w}^* . Identify this vector. Recall that the optimal weight vector is the solution to the primal problem.

Options :

6406531513584. ✓ $\begin{bmatrix} -2 \\ -1 \end{bmatrix}$

6406531513585. ✗ $\begin{bmatrix} -100 \\ -50 \end{bmatrix}$

6406531513586. ✗ $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$

6406531513587. ✗ $\begin{bmatrix} 1 \\ -1 \end{bmatrix}$

Question Number : 32 Question Id : 640653455178 Question Type : MCQ Is Question

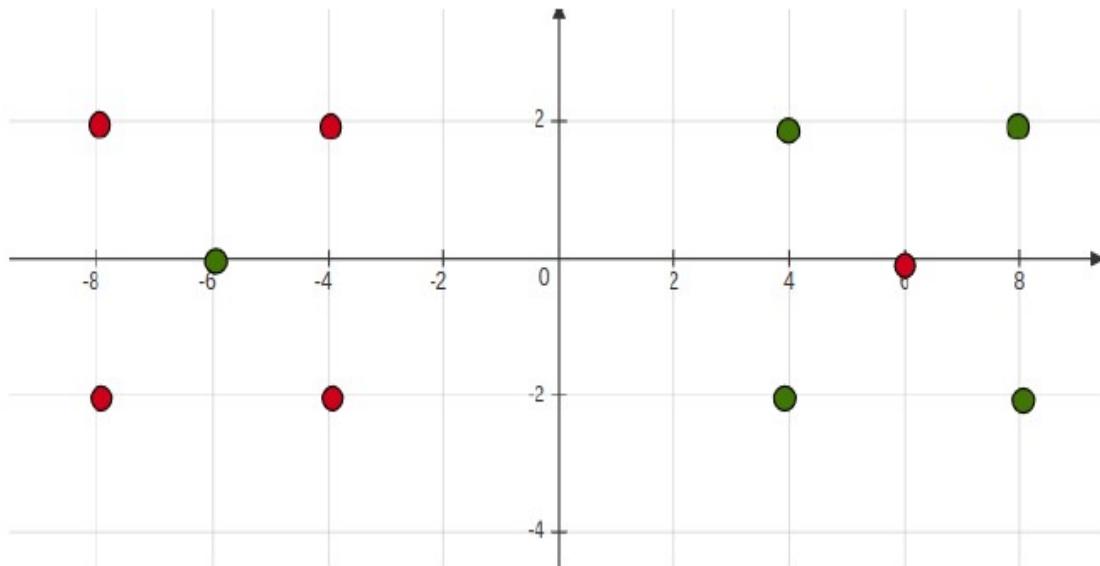
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Consider the following data set:



Which of the following will have lower leave-one-out cross-validation error?

Options :

6406531513645. ❌ 1-Nearest Neighbor

6406531513646. ✓ 3-Nearest Neighbor

Sub-Section Number : 5

Sub-Section Id : 64065365813

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 33 Question Id : 640653455179 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 that we introduce negative marking in this exam. After getting the results, you observe that eight of your friends $\{f_1, \dots, f_8\}$ have scored the following marks respectively:

$\{5, 6, -2, -3, 1, 7, -4, -1\}$

You want to cluster your friends into two groups based on their marks by using the Lloyd's algorithm.

You initialize the algorithm by keeping the first four friends, i.e., $\{f_1, f_2, f_3, f_4\}$ in cluster 1 (C_1) and the last four friends, i.e., $\{f_5, f_6, f_7, f_8\}$ in cluster 2 (C_2).

How would the clusters look like after executing one step of Lloyd's algorithm?

Options :

6406531513647. ✘ $C_1: (f_1, f_2, f_3, f_4), C_2: (f_5, f_6, f_7, f_8)$

6406531513648. ✘ $C_1: (f_1, f_2, f_5, f_6), C_2: (f_3, f_4, f_7, f_8)$

6406531513649. ✘ $C_1: (f_2, f_4, f_6), C_2: (f_1, f_3, f_5, f_7, f_8)$

6406531513650. ✓ $C_1: (f_1, f_2, f_6), C_2: (f_3, f_4, f_5, f_7, f_8)$

Sub-Section Number : 6

Sub-Section Id : 64065365814

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 34 Question Id : 640653455168 Question Type : MSQ Is Question

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

Correct Marks : 5 Selectable Option : 0

Question Label : Multiple Select Question

Let w^*, ξ^* be the optimal primal solutions, and α^*, β^* be the optimal dual solutions of the soft-margin SVM problem. Select the options which are always true.

Options :

6406531513619. ✓

If $\beta_i^* = 0$, the i^{th} point is either incorrectly classified by w^* or correctly classified with a margin less than 1.

6406531513620. ✘ If the i^{th} data point pays a nonzero bribe, then $\alpha_i^* = 0$.

6406531513621. ✘ If i^{th} data point lies on one of the supporting hyperplanes, then $\alpha_i^* = C$.

6406531513622. ✓ If i^{th} data point lies on the correct supporting hyperplane, it does **not** pay any bribes.

Sub-Section Number : 7

Sub-Section Id : 64065365815

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 35 Question Id : 640653455169 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following estimators are more likely to be preferred for bagging? Select all that apply.

Options :

6406531513623. ✘ A decision stump

6406531513624. ✘ A decision stump with randomly selected features for splitting the nodes

6406531513625. ✓ k -NN classifier with a smaller value of k .

6406531513626. ✘ k -NN classifier with a larger value of k .

6406531513627. ✓ A fully grown decision tree with randomly selected features for splitting the nodes

Sub-Section Number : 8

Sub-Section Id : 64065365816

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 36 Question Id : 640653455143 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Short Answer Question

Let $\{15, 21.3, 8.5, 2, 40, 33, 28.4\}$ be 7 points sampled independently and uniformly from $[0, a]$ for some unknown $a > 0$. Find the maximum likelihood estimator \hat{a}_{ML} of a given these samples.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

40

Question Number : 37 Question Id : 640653455175 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Short Answer Question

Consider a linearly separable binary classification data set with 500 data points and 50 features.

Assume that there exists a w such that $\|w\| = 1$, $y_i(w^T x_i) \geq 0.25 \forall i$. Also assume that

$\|x\|_2 \leq 1 \forall i$

What is the maximum number of mistakes that the Perceptron algorithm can make in this data set?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Sub-Section Number :	9
Sub-Section Id :	64065365817
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 38 Question Id : 640653455170 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider a neural network with 8 inputs and 2 outputs. If there are 4 hidden layers each with 4 neurons, how many parameters need to be learnt if there is a bias associated with each neuron in the hidden and output layers?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

106

Sub-Section Number :	10
Sub-Section Id :	64065365818
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653455158 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 : (39 to 40)

Question Label : Comprehension

We fit the following two models on a given one-dimensional dataset:

Model 1: $\hat{y}_i = w_0 + w_1x + w_2x^2$

Model 2: $\hat{y}_i = w_0 + w_1x + w_2x^2 + w_3x^3$

The training dataset for both models is the same. The test dataset used to evaluate both models is the same.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 39 Question Id : 640653455159 Question Type : MCQ Is Question

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

Correct Marks : 2.5

Question Label : Multiple Choice Question

Which of the two models is more likely to fit the training data better?

Options :

6406531513603. ✘ Model 1

6406531513604. ✓ Model 2

6406531513605. ✘ Both will fit equally well

6406531513606. ✘ Can not say

Question Number : 40 Question Id : 640653455160 Question Type : MCQ Is Question

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

Correct Marks : 2.5

Question Label : Multiple Choice Question

Which model is more likely to give less test error?

Options :

6406531513607. ✘ Model 1

6406531513608. ✘ Model 2

6406531513609. ✓ It will depend upon the underlying distribution that generates the dataset and

therefore, can not say.

6406531513610. ✘ Both will give the equal error

Sub-Section Number :	11
Sub-Section Id :	64065365819
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653455144 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 : (41 to 42)

Question Label : Comprehension

Upon performing standard PCA on a centered dataset in \mathbb{R}^3 , we get the principal components to be:

$$\mathbf{w}_1 = [1 \ 0 \ 0]^T, \quad \mathbf{w}_2 = [0 \ 1 \ 0]^T, \quad \mathbf{w}_3 = [0 \ 0 \ 1]^T$$

\mathbf{C} is the covariance matrix of the centered dataset. The off-diagonal entries are hidden from your view:

$$\mathbf{C} = \begin{bmatrix} 12 & a & b \\ a & 6 & c \\ b & c & 3 \end{bmatrix}$$

$[x_1 \ x_2 \ x_3]^T$ denotes a data-point. Here, x_1, x_2, x_3 are the three features.

Note: The word standard indicates that no kernel has been used.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 41 Question Id : 640653455145 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What is the variance along the first principal component?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

12

Question Number : 42 Question Id : 640653455146 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

The off-diagonal elements of **C** correspond to the covariance between a pair of features, (x_i, x_j) with $i \neq j$. Which of the following statements about the features of this dataset is true?

Options :

Each pair of features has a strong positive correlation. For instance is, if x_1 increases, then x_2 also increases.

6406531513580. ❌

Each pair of features has a strong negative correlation. For instance is, if x_1 increases, then x_2 decreases.

6406531513581. ❌

Each pair of features is uncorrelated. For instance is, if x_1 increases, we can say nothing about the trend of x_2 .

6406531513582. ✓

Unless we know the exact values of the off-diagonal elements a , b and c , we can't comment about the correlation among features.

6406531513583. ❌

Question Id : 640653455161 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 : (43 to 44)

Question Label : Comprehension

A binary classification (labels are 0 and 1) dataset contains n examples belonging to $\{0, 1\}^4$ such that the first feature values for all n examples are 0. Assume that no smoothing is done.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 43 Question Id : 640653455162 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What will be the value of \hat{p}_1^1 ? \hat{p}_j^y is the estimate for the probability that the j^{th} feature value of an example is 1 given that the example belongs to the label y .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 44 Question Id : 640653455163 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

What will be the prediction for the point

$x = [1, 1, 1, 0]$ using the naive Bayes classifier?

Options :

6406531513612. ✘ 0

6406531513613. ✘ 1

6406531513614. ✘ Indeterminate as $P(y = 0|x) = P(y = 1|x) = 1$

6406531513615. ✓ Indeterminate as $P(y = 0|x) = P(y = 1|x) = 0$

Question Id : 640653455172 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 : (45 to 46)

Question Label : Comprehension

Consider a data set $x_1 = [1, 1]$, $x_2 = [1, -1]$, $x_3 = [-1, -1]$, $x_4 = [-1, 1]$ and the corresponding class labels being $y_1 = -1$, $y_2 = +1$, $y_3 = +1$, $y_4 = -1$.

Assume you try to find the w (no bias) using the Perceptron algorithm. You decide to cycle through points in the order $\{x_4, x_3, x_2, x_1\}$ repeatedly until you find a linear separator.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 45 Question Id : 640653455173 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

How many mistakes does your algorithm make?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 46 **Question Id :** 640653455174 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 3

Question Label : Short Answer Question

What is the squared length of the weight vector corresponding to the final linear separator your algorithm outputs?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number : 12

Sub-Section Id : 64065365820

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455152 **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 : (47 to 50)

Question Label : Comprehension

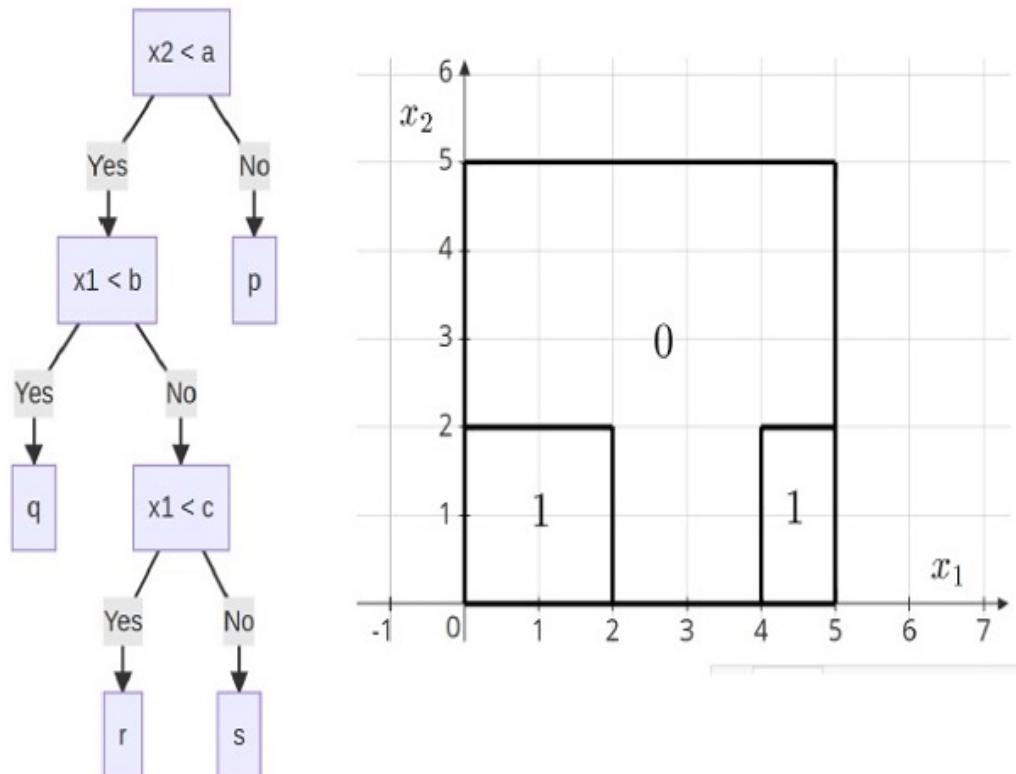
Consider a binary classification problem in \mathbb{R}^2 . The features for this problem lie in a square:

$$0 \leq x_1 \leq 5$$

$$0 \leq x_2 \leq 5$$

A decision tree is trained on some training dataset for this problem. The tree and the decision regions corresponding to it are given below:

x_2 is the same as x_2
 x_1 is the same as x_1



- a, b, c are values associated with the question nodes and are positive integers.
- p, q, r, s are values associated with the leaves and belong to the set of labels, in this case $\{0, 1\}$.

There are three bounded decision regions, denoted by solid lines, two of which have label 1 and one which has label 0.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 47 Question Id : 640653455153 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1.5

Question Label : Short Answer Question

What is the value of a ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 48 Question Id : 640653455154 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1.5

Question Label : Short Answer Question

What is the value of b ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 49 Question Id : 640653455155 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1.5

Question Label : Short Answer Question

What is the value of c ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 50 **Question Id :** 640653455156 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 2.5

Question Label : Short Answer Question

What is the value of the following expression?

$$(1 + p + r)(q + s)$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Id : 640653455164 **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 : (51 to 53)

Question Label : Comprehension

Consider a single iteration of the AdaBoost algorithm that was run on three sample points, starting with uniform weights on the sample points. The labels are either +1 or -1. In the table below, some values have been omitted.

Data point	True label	Predicted label	Initial weight	Updated weight
x_1	?	1	$\frac{1}{3}$	$\frac{1}{2}$
x_2	-1	-1	$\frac{1}{3}$?
x_3	-1	?	$\frac{1}{3}$	$\frac{1}{4}$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 51 Question Id : 640653455165 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What will be the true label for point x_1 ? Enter 1 or -1 .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-1

Question Number : 52 Question Id : 640653455166 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What will be the updated weight for point x_2 ? Enter your answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.23 to 0.27

Question Number : 53 Question Id : 640653455167 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

How much training error will be incurred by the first estimator? The training examples consist of given three points. Enter your answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.31 to 0.35

Sub-Section Number : 13

Sub-Section Id : 64065365821

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455148 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 : (54 to 55)

Question Label : Comprehension

There are 8 points in a training dataset in \mathbb{R}^2 for a binary classification problem that is linearly separable. Use the following notation: $\mathbf{x} = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$ for a data-point and $\mathbf{w}^* = \begin{bmatrix} w_1 \\ w_2 \end{bmatrix}$ for the optimal weight vector of a hard-margin, linear-SVM.

x_1	x_2	y
0	1	1
0	2	1
1	1	1
2	0	1
0	-1	-1
-2	0	-1
-3	0	-1
-5	1	-1

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 54 Question Id : 640653455149 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

A hard-margin, linear-SVM is trained on this dataset. The optimal weight vector is $\begin{bmatrix} 0.5 \\ 1 \end{bmatrix}$. What is the maximum number of support vectors for this setup?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 55 Question Id : 640653455150 Question Type : MSQ Is Question

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

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

The point $\begin{bmatrix} 10 \\ 0 \end{bmatrix}$ with label 1 is added to the existing training dataset. We will now refer to these 9 points as the new dataset.

Options :

6406531513589. ❌ The new dataset is **not** linearly separable.

6406531513590. ✓ The new dataset is linearly separable.

If a hard-margin, linear-SVM is trained on the new dataset, the optimal weight vector will be $\begin{bmatrix} 0.5 \\ 1 \end{bmatrix}$

6406531513591. ✓

If a hard-margin, linear-SVM is trained on this new dataset with 9 points, the optimal weight vector will **not** be $\begin{bmatrix} 0.5 \\ 1 \end{bmatrix}$

6406531513592. ❌

AppDev1

Section Id : 64065329433

Section Number : 3

Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	28
Number of Questions to be attempted :	28
Section Marks :	100
Display Number Panel :	Yes
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 :	64065365822
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 56 Question Id : 640653455180 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 "DIPLOMA LEVEL: MODERN APPLICATION DEVELOPMENT 1"

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

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

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

Options :

6406531513651. ✓ YES

6406531513652. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	64065365823
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 57 Question Id : 640653455185 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the following HTML document with script which is running at the URL

<http://127.0.0.1:8000>, then choose the correct output of the JSON object.

```
<!DOCTYPE html>
<html>
  <body>

    <h2>Creating a JSON String</h2>

    <p id="demo"></p>

    <script>
      const txt = '{"name":"Balu", "age":30, "city":"New Delhi"}'
      const obj = JSON.parse(txt);
      document.getElementById("demo").innerHTML = "Hi\n" + obj.name +
      ",\t" + obj.city + "," + obj.age*2;
    </script>

  </body>
</html>
```

Options :

6406531513666. ❀

Creating a JSON String

Hi Balu, New Delhi,30

Creating a JSON String

Hi Balu, 30, New Delhi

6406531513667. ✘

Creating a JSON String

Hi Balu, New Delhi,90

6406531513668. ✘

Creating a JSON String

Hi Balu, New Delhi, 60

6406531513669. ✓

Question Number : 58 Question Id : 640653455187 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

If the given python program is executed using pytest, then identify the status of the test code.

File name: test1.py

```
def dec(x):
    return x-1

def test_answer():
    assert dec(3) == 2
```

Options :

6406531513674. ✘ passed test1.py test_answer - assert 2 == 3

6406531513675. ✘ 2 Failed

6406531513676. ✓ 1 passed

6406531513677. ✘ Failed test1.py test_answer - assert 2 == 3

Question Number : 59 Question Id : 640653455189 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following lines can be used in a template to inherit another **base.html** template that provides a basic, uniform layout?

Options :

6406531513682. ✘ { % expand 'base.html' %}

6406531513683. ✘ { % include 'base.html' %}

6406531513684. ✓ { % extends 'base.html' %}

6406531513685. ✘ { % inherits 'base.html' %}

Question Number : 60 Question Id : 640653455191 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following routes binds the **index()** function to the application's root URL and renders the **index.html** template?

Options :

```
@app.route('/')
def index():
    return render_template('index')
```

6406531513690. ✘

```
@app.route('/')
def index():
    return render_template('index.html')
```

6406531513691. ✓

```
@app.route('/')
def index():
    return render_template(index.html)
```

6406531513692. ✘

```
@app.route('index.html')
def index():
    return render_template('/')
```

6406531513693. ✘

Question Number : 61 Question Id : 640653455194 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

In which of the following options, **url_for()** function calls will produce URL

http://localhost:5000/home?

Options :

```
@app.route('/home')
def index():
    return "This is Homepage content"

@app.route('/')
def homepage():
    return redirect(url_for(index))
```

6406531513702. ✘

6406531513703. ✓

```
@app.route('/home')
def index():
    return "This is Homepage content"

@app.route('/')
def homepage():
    return redirect(url_for('index'))
```

```
@app.route('/home')
def index():
    return "This is Homepage content"

@app.route('/')
def homepage():
    return redirect(url_for('/home'))
```

6406531513704. *

```
@app.route('/home')
def index():
    return "This is Homepage content"

@app.route('/')
def homepage():
    return redirect(url_for('home'))
```

6406531513705. *

Question Number : 62 Question Id : 640653455213 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Read the following statements carefully and mark the correct answer:

Statement 1: Continuous integration is the practice of automating the integration of code changes from multiple contributors into a single software project

Statement 2: Continuous Delivery refers to automated delivery of “release package” on each

successful test

Options :

6406531513762. ✓ Both statements 1 and 2 are correct

6406531513763. ✗ Both statements 1 and 2 are incorrect.

6406531513764. ✗ Statement 1 is correct, but statement 2 is incorrect.

6406531513765. ✗ Statement 2 is correct, but statement 1 is incorrect.

Sub-Section Number : 3

Sub-Section Id : 64065365824

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 63 Question Id : 640653455182 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Compute the octal representation of the binary number $(01000101)_2$.

Note: The answer must be an integer. For ex: If the octal representation is $(39)_8$, then you must write 39 only

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

105

Sub-Section Number : 4

Sub-Section Id : 64065365825

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 64 Question Id : 640653455181 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the URL given below.

<https://onlinedegree.com/academics?course=appdev1#week2>

Which of the following options correctly describes each component of the URL given above?

URL Component	Name
1. https	A. Domain Name
2. onlinedegree.com	B. Query String
3. /academics	C. Protocol
4. ?course=appdev1	D. Fragment
5. #week2	E. Path

Options :

6406531513653. ✘ 1-C, 2-A, 3-D, 4-B, 5-E

6406531513654. ✓ 1-C, 2-A, 3-E, 4-B, 5-D

6406531513655. ✘ 1-A, 2-C, 3-D, 4-B, 5-E

6406531513656. ✘ 1-C, 2-A, 3-B, 4-E, 5-D

Question Number : 65 Question Id : 640653455186 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following flask python snippet with all preliminary conditions.

```
class User(UserMixin, db.Model):
    id = db.Column(db.Integer, primary_key = True)
    name = db.Column(db.String(30))
    def __init__(self, id, name):
        self.id = id
        self.name = name
@login_manager.user_loader
def firstuser(id):
    return User.query.get(int(id))
@app.route('/')

def index():
    u1 = User.query.filter_by(id = 112).first()
    login_user(u1)
    return current_user.name + 'logged in'
@app.route('/logout')
@login_required
def logout():
    logout_user()
    return 'logged out'
@app.route('/home')
@login_required
def home():
    return "current user is " + current_user.name

def init_db():
    db.create_all()
    new_user = User(112, 'Rose')
    new_user2 = User(113, 'lily')
    db.session.add(new_user)
    db.session.add(new_user2)
    db.session.commit()
if __name__ == '__main__':
    init_db()
    app.run(debug = True)
```

If the above program is running in the URL "<http://127.0.0.1:8000>" then what will be the output for the given URLs in sequence

- <http://127.0.0.1:8000>

[• http://127.0.0.1:8000/logout](http://127.0.0.1:8000/logout)

[• http://127.0.0.1:8000/home](http://127.0.0.1:8000/home)

Options :

6406531513670. ❌ current user is lily

logged out

Unauthorized user

6406531513671. ✓ Rose logged in

logged out

Unauthorized user

6406531513672. ❌ Rose logged in

current user is Rose

logged out

6406531513673. ❌ lily logged in

current user is lily

logged out

Question Number : 66 Question Id : 640653455188 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following is the correct order of precedence to reflect the effect of style in HTML documents?

Options :

6406531513678. ❌ internal > inline > external

6406531513679. ✓ inline > internal > external

6406531513680. ❌ inline > external > internal

6406531513681. ❌ external > internal > inline

Question Number : 67 Question Id : 640653455190 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following Jinja templates correctly implements a simple **if-else** statement?

Options :

```
{% if name %}
    <h1>Hello, {{user_name}}</h1>
{% else %}
    <h1> What is your name?</h1>
```

6406531513686. ✘

```
{% if name %}
    <h1>Hello, {{name}}!</h1>
{% else %}
    <h1>What is your name?</h1>
{% end %}
```

6406531513687. ✘

```
{% if name %}
    <h1>Hello, {{name}}!</h1>
{% else %}
    <h1>What is your name?</h1>
{% endif %}
```

6406531513688. ✓

```
{{ if name }}
    <h1>Hello, {{name}}!</h1>
{{ else }}
    <h1>What is your name?</h1>
{{ endif }}
```

6406531513689. ✘

Question Number : 68 Question Id : 640653455192 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

A template named **userinfo.html** contains the following line inside the body tag:

```
<h1> Hello {{user_name}}! </h1>
```

Which of the following code snippets will utilize the template to display **Hello Ram** when **http://localhost:5000/user/Ram** is visited on the browser?

Options :

6406531513694. ❌

```
@app.route('/user/<name>')
def user():
    return render_template('userinfo.html',user_name=name)
```

6406531513695. ✓

```
@app.route('/user/<name>')
def user(name):
    return render_template('userinfo.html',user_name=name)
```

6406531513696. ❌

```
@app.route('/user/<user_name>')
def user(name):
    return render_template('userinfo.html',user_name = name)
```

6406531513697. ❌

```
@app.route('/user/<name>')
def user(name):
    return render_template('templates/userinfo',user_name=name)
```

Question Number : 69 Question Id : 640653455193 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which line of code correctly adds the below **Hello** class as a resource to a Flask application to get data using "<http://localhost:5000/hello>" URL?

```
from flask_restful import Api  
api = Api(app)  
Class Hello(Resource):  
    def get(self):  
        return {'User':'Abhishek'}
```

Options :

6406531513698. ✓ `api.add_resource(Hello, '/hello')`

6406531513699. ✗ `api.add_argument(Hello, '/hello')`

6406531513700. ✗ `api.resource(Hello, '/hello')`

6406531513701. ✗ `api.put_resource(Hello, '/hello')`

Question Number : 70 Question Id : 640653455196 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

A server using the inbuilt http module of Python, is running for a directory **My_app** whose file structure and content of each file is given below.

Folder: My_app

```
My_app
|_ home.html
|_ first.html
|_ main.html
```

File: home.html

```
<h1>Hello from Home!</h1>
```

File: first.html

```
<h1>Hello from First!</h1>
```

File: main.html

```
<h1>Hello from Main!</h1>
```

What will be rendered by the browser for the URL: <http://localhost:8000/first.html> assuming that 8000 is the port of connection?

Options :

Directory listing for /

-
- [first.html](#)
 - [home.html](#)
 - [main.html](#)

6406531513710. ✘

6406531513711. ✓ Hello from First!

6406531513712. ✘ Hello from Home!

6406531513713. ✘ Hello from Main!

Question Number : 71 Question Id : 640653455214 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Match the following:

A. API	1. Servers do not assume anything about the client's state; they only serve responses.
B. MVC	2. An action is assigned to each uniform resource locator.
C. Routing	3. A standard way defined between two applications for them to communicate.
D. Stateless	4. A design pattern that emphasizes the separation of concerns.

Which of the following is the correct?

Options :

6406531513766. ✘ A-1, B-2, C-3, D-4

6406531513767. ✘ A-2, B-4, C-1, D-3

6406531513768. ✓ A-3, B-4, C-2, D-1

6406531513769. ✘ A-4, B-3, C-1, D-2

Sub-Section Number : 5

Sub-Section Id : 64065365826

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 72 Question Id : 640653455183 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are false regarding Git?

Options :

6406531513658. ✓ Git is an example of a centralized version control system.

6406531513659. ✗ A file can stay in both working directory and staging area at a given time, while working with Git.

6406531513660. ✓ Git and GitLab/GitHub are essentially the same.

6406531513661. ✗ The command "git checkout -b <branch_name>" will create the new branch and switches to the new branch created.

Question Number : 73 Question Id : 640653455184 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are true regarding database migrations?

Options :

6406531513662. ✗ Flask does not provide support for migrations, as of December 2022.

6406531513663. ✓ The database migration allows a developer to make schema changes without losing the data

6406531513664. ✗ One of the disadvantages of migration is that a developer can only upgrade the database, and it does not allow rollbacks.

6406531513665. ✓ The migration is useful when a business wants to move from an on-premise database to a cloud based database.

Question Number : 74 Question Id : 640653455195 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Consider the following Model for User.

```
class User(db.Model):
    id = db.Column(db.Integer, primary_key=True)
    email = db.Column(db.String(100), unique=True, index=True)
    name = db.Column(db.String(100))
    password = db.Column(db.String(100))
```

Which of the following methods from the Flask-sqlalchemy package will behave the same as SQL query `select * from User where name='Ram'`?

Options :

6406531513706. ✓ `User.query.filter(User.name = 'Ram').all()`

6406531513707. ✗ `User.query.get(name = 'Ram').all()`

6406531513708. ✗ `User.query.filter_by('Ram').all()`

6406531513709. ✓ `User.query.filter_by(name = 'Ram').all()`

Sub-Section Number : 6

Sub-Section Id : 64065365827

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 75 Question Id : 640653455215 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following constraints for the “student” table:

Column Name	Datatype	Constraints
RollNo	Integer	Primary Key
Name	String	Not Null
Section	Integer	Not Null
Department	String	Not Null

In most cases, the query executed in the student table looks like the one below.

```
SELECT RollNo, Name, AadhaarNo FROM student WHERE Section = 'B';
```

For the above student table, which of the following columns would be the most appropriate for the indexing?

Options :

6406531513770. ❌ RollNo

6406531513771. ❌ Name

6406531513772. ✓ Section

6406531513773. ❌ Department

Sub-Section Number : 7

Sub-Section Id : 64065365828

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 76 Question Id : 640653455200 Question Type : MSQ Is Question

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

Correct Marks : 4.5 Selectable Option : 0

Question Label : Multiple Select Question

Consider the following Python code snippet:

Filename: module_0.py

```
import sys

arguments = sys.argv

courses = {'MAD 1': '1002', 'MAD-2': '2003', 'BDM': '205', 'SysCom': '304'}

def operate():
    arg_1 = arguments[1]
    arg_2 = courses[arg_1]

    return f"The function output is: {len(arg_1 + arg_2)}"

print(operate())
```

The above file will yield the output as “The function output is: 9”, for which of the following command line inputs?

Options :

6406531513722. ✘ python module_0.py MAD 1

6406531513723. ✓ python module_0.py MAD-2

6406531513724. ✘ python module_0.py BDM

6406531513725. ✓ python module_0.py SysCom

Question Number : 77 Question Id : 640653455211 Question Type : MSQ Is Question

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

Correct Marks : 4.5 Selectable Option : 0

Question Label : Multiple Select Question

Consider two software packages A and B spend exactly $T_A(N) = 2N^2 + 9$ and $T_B(N) = N^3$ milliseconds to process N data items. Analyze the software packages and select the correct statement(s).

Options :

6406531513754. ✓ Software package A is slower than Software package B for inputs in the range $N \in [0,3]$
6406531513755. ✗ Software package B is slower than Software package A for inputs in the range $N \in [0,3]$
6406531513756. ✗ Software package B is faster than Software package A for all $N > 3$.
6406531513757. ✓ Time taken by both the software packages A and B is the same when $N = 3$.

Question Number : 78 Question Id : 640653455212 Question Type : MSQ Is Question

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

Correct Marks : 4.5 Selectable Option : 0

Question Label : Multiple Select Question

Consider the following Python code snippet.

```

from flask import Flask, abort, redirect, url_for, render_template
app = Flask(__name__)

data_science = ['ML-techniques', 'ML-foundations', 'PDSA']
programming = ['Java', 'MAD-I', 'System-Commands', 'ML-practices']

@app.route('/courses/<course>')
def find_course(course):
    if course in data_science:
        return f"<h2>Data Science course found, {course}!</h2>"
    elif course in programming:
        return f"<h2>Programming course found, {course}!</h2>"
    else:
        abort(401)

@app.errorhandler(401)
def page_not_found(error):
    return "<h2>No course found!</h2>"

app.run()

```

If the above application is running locally on URL: <http://127.0.0.1:5000>, select the correct statement(s).

Options :

For the URL, “<http://localhost:5000/courses/PDSA>”, the browser will render:

6406531513758. ✘ **Programming course found, ML-techniques!**

For the URL, “<http://localhost:5000/courses/ML-practices>”, the browser will render:

6406531513759. ✘ **Data Science course found, ML-practices!**

For the URL, “<http://localhost:5000/courses/MAD-2>”, the browser will render:

6406531513760. ✓ **No course found!**

For the URL, “<http://localhost:5000/courses/Java>”, the browser will render:

Programming course found, Java!

6406531513761. ✓

Question Number : 79 Question Id : 640653455216 Question Type : MSQ Is Question

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

Correct Marks : 4.5 Selectable Option : 0

Question Label : Multiple Select Question

Consider the following two tables, user1 and logstable:

user1:

userid	username	password
U1	Mack	UabZa
U2	Jack	ZeFad
U3	Shaun	UsTZb

logstable:

logid	userid	logname
1	U1	Playing
2	U2	Studying
3	U3	Swimming
4	U1	Running
5	U3	Studying
6	U2	Dancing

Which of the following query/ queries will return the log ID and log name, which are created by user 'Shaun'?

Options :

6406531513774. ✓ `select logid, logstable.logname from user1 inner join logstable on user1.userid = logstable.userid where user1.username = 'Shaun'`

6406531513775. ✓ `select logid, logstable.logname from user1 natural join logstable where user1.username = 'Shaun'`

6406531513776. ❌ `select logid, logstable.logname from user1 inner join logstable on user1.username = logstable.logname where user1.username = 'Shaun'`

6406531513777. ❌

```
select logid, logstable.logname from user1, logstable WHERE  
user1.username = 'Shaun'
```

Sub-Section Number :	8
Sub-Section Id :	64065365829
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653455197 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 : (80 to 81)

Question Label : Comprehension

Consider the following jinja2 template, and answer the given subquestions.

```
from jinja2 import Template  
  
temp = """  
Data science combines {{a}} abilities and competence in  
{{b}}, {{c}} to draw important insights from data.  
"""  
  
to_render = Template(temp)  
  
out = to_render.render(data)  
print(out)
```

Sub questions

Question Number : 80 Question Id : 640653455198 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

What will be the output on the terminal for:

```
data = {'a': 'programming', 'b': 'mathematics', 'd': 'statistics'}
```

Options :

Data science combines programming abilities and competence in mathematics, statistics to draw important insights from data.

6406531513714. ❌

Data science combines programming abilities and competence in mathematics and statistics to draw important insights from data.

6406531513715. ❌

Data science combines programming abilities and competence in Mathematics, to draw important insights from data.

6406531513716. ✓

6406531513717. ❌ KeyError: 'c'

Question Number : 81 Question Id : 640653455199 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

What will be the output on the terminal for:

```
data = { 'b': 'mathematics', 'c': 'statistics', 'd': 'programming'}
```

Options :

Data science combines {{a}} abilities and competence in mathematics, statistics to draw important insights from data.

6406531513718. ❌

Data science combines programming abilities and competence in mathematics, statistics to draw important insights from data.

6406531513719. ❌

Data science combines abilities and competence in mathematics, statistics to draw important insights from data.

6406531513720. ✓

6406531513721. ❌ KeyError: 'a'

Sub-Section Number : 9

Sub-Section Id : 64065365830

Question Shuffling Allowed : No

Is Section Default? : null

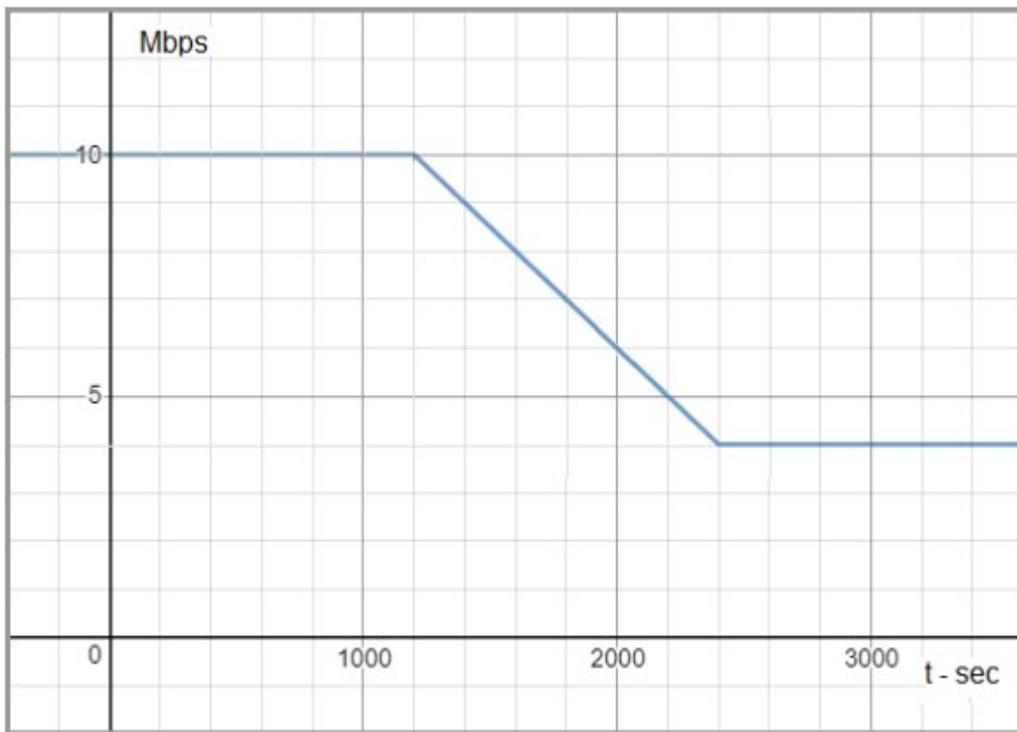
Question Id : 640653455208 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (82 to 83)

Question Label : Comprehension

Consider the below graph, and answer the given subquestions.

The bandwidth vs. time graph for a period of one hour between 12 noon to 1 p.m in the afternoon is shown below. [Use relations: 1 Byte = 8 bits, 1 GB = 1000 MB and so on.]



Sub questions

Question Number : 82 Question Id : 640653455209 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

What is the network bandwidth (in Mbps) of the network at exactly 12:30 pm?

Options :

6406531513746. ✘ 5

6406531513747. ✘ 6

6406531513748. ✓ 7

6406531513749. ✘ 8

Question Number : 83 Question Id : 640653455210 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

What is the total amount of data (in GigaBytes) consumed by the only user connected to the network between 12:15 pm to 12:30 pm? [Assuming that the user is using the entire bandwidth from 12:15 p.m to 12:30 p.m]

Options :

6406531513750. ✘ 81

6406531513751. ✘ 8.1

6406531513752. ✓ 1.0125

6406531513753. ✘ 10.125

Sub-Section Number : 10

Sub-Section Id : 64065365831

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455201 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 : (84 to 85)

Question Label : Comprehension

Consider the below model definitions, and answer the given subquestions.

Consider the following model classes “Movies” and “Producers” corresponding to tables “movies” and “producers”, respectively, in the SQLite database.

```

class Movies(db.Model):
    id = db.Column(db.Integer(), primary_key = True)
    movie_name = db.Column(db.String(50), nullable = False, unique = True)
    movie_year = db.Column(db.Integer, nullable = False)
    producers = db.relationship('Producer', backref = 'movie', secondary = 'groups')

class Producer(db.Model):
    id = db.Column(db.Integer(), primary_key = True)
    producer_name = db.Column(db.String(50), nullable = False, unique = True)
    productions = db.Column(db.Integer())

class Groups(db.Model):
    movie_id = db.Column(db.Integer(),db.ForeignKey('movies.id'), primary_key = True)
    prod_id = db.Column(db.Integer(),db.ForeignKey('producer.id'), primary_key = True)

```

Sub questions

Question Number : 84 Question Id : 640653455202 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

The tables “movies” and “producers” are related to each other by which of the following relationships

Options :

6406531513726. ❌ One-to-one

6406531513727. ❌ One-to-many

6406531513728. ✓ Many-to-Many

6406531513729. ❌ Many-to-One

Question Number : 85 Question Id : 640653455203 Question Type : MSQ Is Question

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

Correct Marks : 4.5 Selectable Option : 0

Question Label : Multiple Select Question

If an object "p1" that represents an existing record in the table "producer" is defined as `p1 = Producer.query.get(2)`,

The correct way to create a new record in the "movies" table that is produced by the producer represented by object 'p1' using terminal is.

Options :

```
>>> mov = Movies(movie_name = 'The movie', movie_year = 2001)
>>> p1.movie.append(mov)
>>> db.session.commit()
```

6406531513730. ✓

```
>>> mov = Movies(movie_name = 'The movie', movie_year = 2001)
>>> mov.producers.append(p1)
>>> db.session.commit()
```

6406531513731. ✓

```
>>> mov = Movies(movie_name = 'The movie', movie_year = 2001,
producers = p1)
>>> db.session.add(mov)
>>> db.session.commit()
```

6406531513732. ✘

```
>>> mov = Movies(movie_name = 'The movie', movie_year = 2001)
>>> p1.producers.append(mov)
>>> db.session.commit()
```

6406531513733. ✘

Sub-Section Number :

11

Sub-Section Id :

64065365832

Question Shuffling Allowed :

No

Is Section Default? :

null

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 : (86 to 88)

Question Label : Comprehension

Consider the below program, and answer the given subquestions, if the application is running locally on URL: <http://127.0.0.1:5000>.

Consider the following resource created with help of flask-restful.

```
parser = reqparse.RequestParser()
parser.add_argument('employee_id')
parser.add_argument('employee_name')

r_fields = {"Name":fields.String(attribute = 'employee_name')}

class TestAPI(Resource):

# =====
#           GET-FUNCTION
# =====
# =====
#           POST-FUNCTION
# =====

    @marshal_with(r_fields)
    def put(self):
        this_emp = parser.parse_args()
        return this_emp

api.add_resource(TestAPI, "/api/v1", "/api/v1/<employee_id>")
```

Sub questions

Question Number : 86 Question Id : 640653455205 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

If the curl request shown below.

```
curl http://127.0.0.1:5000/api/v1/5001 -X GET
```

retrieves the employee_id only with status 200 OK, what will come in place of GET-FUNCTION in the code?

Options :

```
def get(self):  
    return {'employee_Id': employee_id}
```

6406531513734. ✘

```
def get(self, employee_id):  
    return {'employee_Id': employee_id}
```

6406531513735. ✓

```
def get(self):  
    args = parser.parse_args()  
    return {'Id_no.': args['employee_id']}
```

6406531513736. ✘

```
def get(self):  
    args = parser.parse_args()  
    return args
```

6406531513737. ✘

Question Number : 87 Question Id : 640653455206 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

If the curl request shown below.

```
curl http://127.0.0.1:5000/api/v1 -X POST -d "{\"employee_id\" : \"2003\",\n\"employee_name\": \"Suresh\"}" -H "Content-Type: application/json"
```

retrieves the employee_id only with status 200 OK, what will come in place of POST-FUNCTION in the code?

Options :

```
def post(self):\n    return {'employee_Id': employee_id}
```

6406531513738. *

```
def post(self, employee_id):\n    return {'employee_Id': employee_id}
```

6406531513739. *

```
def post(self):\n    args = parser.parse_args()\n    return {'Id_no.': args['employee_id']}
```

6406531513740. ✓

```
def post(self):\n    args = parser.parse_args()\n    return args
```

6406531513741. *

Question Number : 88 Question Id : 640653455207 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

What will be the response from the server for the request:

```
curl http://127.0.0.1:5000/api/v1 -X PUT -d "{\"employee_id\": \"2003\",\n\"employee_name\": \"Suresh\"}" -H "Content-Type: application/json"
```

Options :

```
{\n    "employee_id": "2003",\n    "employee_name": "Suresh"\n}
```

6406531513742. ✘

```
{\n    "employee_name": "Suresh"\n}
```

6406531513743. ✘

```
{\n    "employee_id": "2003"\n}
```

6406531513744. ✘

6406531513745. ✓ None of these

TDS

Section Id : 64065329434

Section Number : 4

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 47

Number of Questions to be attempted : 47

Section Marks : 50

Display Number Panel :	Yes
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 :	64065365833
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 89 Question Id : 640653455217 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 "DIPLOMA LEVEL:TOOLS IN DATA SCIENCE"

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

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

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

Options :

6406531513778. ✓ Yes

6406531513779. ✗ No

Sub-Section Number :	2
Sub-Section Id :	64065365834
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 90 Question Id : 640653455218 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

The analysis metric slope can be observed through which of the following ways?

Options :

6406531513780. ❌ Trend Line in Line Chart

6406531513781. ❌ SLOPE function

6406531513782. ✓ Both Trend Line in Line Chart and SLOPE function

6406531513783. ❌ None of these

Question Number : 91 Question Id : 640653455219 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Quill provides the option to turn on/off, for displaying the individual comments from the narrative generation process?

Options :

6406531513784. ✓ TRUE

6406531513785. ❌ FALSE

Question Number : 92 Question Id : 640653455220 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

We are analyzing how much the use of fertilizers affects the agricultural yield of the farmers.

Which Excel function would you use as a starting point in this analysis?

Options :

6406531513786. ❌ STDEV.P()

6406531513787. ✘ STDEV.S()

6406531513788. ✓ SLOPE()

6406531513789. ✘ EXACT()

Question Number : 93 Question Id : 640653455221 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Subjectivity score in TextBlob ranges from _____.

Options :

6406531513790. ✓ 0 to 1

6406531513791. ✘ -1 to +1

6406531513792. ✘ -inf to +inf

6406531513793. ✘ 0 to inf

6406531513794. ✘ 0 to 10

Question Number : 94 Question Id : 640653455222 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Flourish cannot be used to create animated bar charts.

Options :

6406531513795. ✘ TRUE

6406531513796. ✓ FALSE

Question Number : 95 Question Id : 640653455225 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

A very large Matrix **A** has a lot of zero entries in it.Which function from the *scipy* library is useful in efficient storage of such a matrix **A**?

Options :

6406531513805. ✓ `csr_matrix`

6406531513806. ✗ `interpolate`

6406531513807. ✗ `compressed_mat`

6406531513808. ✗ `zip_mat`

Question Number : 96 Question Id : 640653455226 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Kumu is a tool that allows you to (select the most appropriate answer):

Options :

6406531513809. ✓ Visualize complex network data

6406531513810. ✗ create stunning dashboards for large projects

6406531513811. ✗ merge Comicgen characters into a comic

6406531513812. ✗ Narrate data stories

Question Number : 97 Question Id : 640653455227 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following Python libraries has functions and tools that are useful in the analysis of large graphs?

Options :

6406531513813. ✓ `scikit-network`

6406531513814. ✘ pandas-network

6406531513815. ✘ numpy-network

6406531513816. ✘ pd-network

Question Number : 98 Question Id : 640653455228 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following Python libraries has functions extensively written to perform numerical operations?

Options :

6406531513817. ✘ csr_matrix

6406531513818. ✓ numpy

6406531513819. ✘ seaborn

6406531513820. ✘ itertools

Question Number : 99 Question Id : 640653455229 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

You decided to perform analysis of the IPL teams year on year. You downloaded the teams standings table which got downloaded as a PDF. You wish to convert to a csv file for further analysis in Excel. The following method in 'tabula' can be used for the same:

Options :

6406531513821. ✓ convert_into

6406531513822. ✘ convert_file

6406531513823. ✘ convert_all

6406531513824. ✘ convert_csv

Question Number : 100 Question Id : 640653455230 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

You decided to perform analysis of the IPL teams year on year. You downloaded the teams standings table which got downloaded as a PDF. You wish to convert to a csv file for further analysis in Excel, you realize that the team 'Delhi Daredevil' has changed its name to 'Delhi Capital'. Using excel, you wish to replace the old name with a new name. It can be done in Excel using

Options :

6406531513825. ✓ Find and Replace

6406531513826. ✗ Finding and Replacing

6406531513827. ✗ Replace and Find

6406531513828. ✗ Search and Replace

Question Number : 101 Question Id : 640653455231 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

You developed a sudden interest in English Premier League. Post the TDS course, you wanted to perform an analysis on all teams which played EPL from the year 1992. You performed PDF scraping using 'tabula' and appended every year standings of teams one below the other and saved as a single csv file. For looking at aggregating at various levels (viz Year wise, Team wise) the following can be used in Excel:

Options :

6406531513829. ✗ Pilot Table

6406531513830. ✓ Pivot Table

6406531513831. ✗ Pivol Table

6406531513832. ✗ None of these

Question Number : 102 Question Id : 640653455232 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Assume you have data with a column “Direction” which takes the values “Left”, “Right”. If you had used one hot encoding, the new columns added would be:

Options :

6406531513833. ✓ Direction_Left, Direction_Right

6406531513834. ✗ Left_Direction, Right_Direction

6406531513835. ✗ Left-Direction, Right-Direction

6406531513836. ✗ Direction-Left, Right-Direction

Question Number : 103 Question Id : 640653455233 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

One of quick ways to generate a descriptive stats file for variables along with correlation is to use

Options :

6406531513837. ✓ pandas_profiling

6406531513838. ✗ profiling_pandas

6406531513839. ✗ describe_dataset

6406531513840. ✗ Dataframe_profile

Question Number : 104 Question Id : 640653455234 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

You decide to use keras to classify images into one of the following categories: cat, dog, bull.

Which of the following loss functions from Keras would you pick for the task?

Options :

- 6406531513841. ❌ binary_crossentropy
- 6406531513842. ✓ categorical_crossentropy
- 6406531513843. ❌ mean_squared_error
- 6406531513844. ❌ mean_absolute_error

Question Number : 105 Question Id : 640653455235 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Logical calculations in tableau helps to determine if a certain condition is true or false. Is the following expression valid?

```
IF [Profit] > 0 THEN 'Profitable' ELSEIF [Profit] = 0 THEN  
'BreakEven' ELSE 'Loss' END
```

Options :

- 6406531513845. ✓ TRUE
- 6406531513846. ❌ FALSE

Question Number : 106 Question Id : 640653455236 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Identify which of the following statements is/are TRUE

1. A story contains a single view along with shelves, cards, legends, and the Data and Analytics panes in its side bar.
2. A worksheet contains a sequence of stories that work together to convey information

3. A dashboard is a collection of views from multiple worksheets

Options :

6406531513847. ✘ 1 Only

6406531513848. ✓ 3 Only

6406531513849. ✘ 2 & 3 Only

6406531513850. ✘ 1 & 2 Only

Question Number : 107 Question Id : 640653455237 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

The dataset consists of geographic, demographic information about countries and their respective GDPs. You would like to visualize this data and study the relationship between the location of countries and their GDPs. You decide to use Tableau to visualize the dataset. But you would also like to generate a summary of the data. Choose the most suitable answer among the given options.

Options :

6406531513851. ✓ The summary can be generated using Quill and this is possible because Quill can be used as an extension in Tableau.

6406531513852. ✘ Tableau can be used for visualization. But Quill is incompatible with Tableau.

6406531513853. ✘ Quill does not support generation of summary. Therefore using other visualization tools such as Tableau would work.

6406531513854. ✘ None of the options are appropriate for the generation of summary for the given question.

Question Number : 108 Question Id : 640653455238 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

What are the two outputs provided by the Excel Azure Machine Learning plugin?

Options :

6406531513855. ❌ Percentage, Labels

6406531513856. ❌ Sentiment, Percentage

6406531513857. ✓ Sentiment, Score

6406531513858. ❌ Score, Labels

Question Number : 109 Question Id : 640653455241 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

The final output from the BBC Weather Location Service API is in CSV format:

Options :

6406531513867. ❌ TRUE

6406531513868. ✓ FALSE

Question Number : 110 Question Id : 640653455242 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Which among the following properties are returned by the sentiment function of the TextBlob library?

Options :

6406531513869. ❌ Score, Polarity

6406531513870. ❌ Polarity, Negativity

6406531513871. ❌ Median, Subjectivity

6406531513872. ✓ Polarity, Subjectivity

Question Number : 111 Question Id : 640653455243 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Subjectivity score ranges between -1 to +1.

Options :

6406531513873. ✘ TRUE

6406531513874. ✓ FALSE

Question Number : 112 Question Id : 640653455244 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

A subjectivity score of 0.4 means that the text statement:

Options :

6406531513875. ✘ has a positive sentiment

6406531513876. ✘ has a negative sentiment

6406531513877. ✘ is more of an opinion statement

6406531513878. ✓ is more of a factual statement

Question Number : 113 Question Id : 640653455245 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

A *polarity* score of 0.1 means that the text statement:

Options :

6406531513879. ✓ has a positive sentiment

6406531513880. ✘ has a negative sentiment

6406531513881. ✘ is more of an opinion statement

6406531513882. ✘ is more of a factual statement

Question Number : 114 Question Id : 640653455247 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

We are interested in analyzing the effect of money spent on TV advertising on the sales volume of a product. Which Excel function would you use as a starting point in this analysis?

Options :

6406531513885. ✘ STDEV.P()

6406531513886. ✘ STDEV.S()

6406531513887. ✓ SLOPE()

6406531513888. ✘ EXACT()

Question Number : 115 Question Id : 640653455248 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

We have predictions (y_{hat}) on a train dataset of 100 records. Let y be the true value. We are interested in calculating $\text{median}(|y_1 - y_{\text{hat}}_1|, |y_2 - y_{\text{hat}}_2|, \dots, |y_{100} - y_{\text{hat}}_{100}|)$. Which of the following functions will help you in achieving this easily?

Options :

6406531513889. ✘ from sklearn.metrics import mean_absolute_error

6406531513890. ✓ from sklearn.metrics import median_absolute_error

6406531513891. ✘ from sklearn.metrics import median_absolute_percentage_error

6406531513892. ✘ from sklearn.metrics import average_absolute_percentage_error

Question Number : 116 Question Id : 640653455249 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

You are working on a piece of code that classifies different vehicles into its respective class (car, LCV, truck, earth movers). Which of the following loss functions from *Keras* would you pick for the task?

Options :

6406531513893. ❌ binary_crossentropy

6406531513894. ✓ categorical_crossentropy

6406531513895. ❌ mean_squared_error

6406531513896. ❌ Mean_absolute_error

Question Number : 117 Question Id : 640653455250 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Tableau automatically divides the data fields into two categories. What are they..?

Options :

6406531513897. ❌ Measures and categories

6406531513898. ✓ Dimensions and Measures

6406531513899. ❌ Columns and rows

6406531513900. ❌ Matrices and columns

Question Number : 118 Question Id : 640653455251 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Which Extension in Tableau transforms visualizations into narratives.?

Options :

6406531513901. ✘ Narrator

6406531513902. ✘ Navigator

6406531513903. ✓ Quill

6406531513904. ✘ Quora

Question Number : 119 Question Id : 640653455252 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

If you want to create comical characters while building business stories, which tool would be helpful.?

Options :

6406531513905. ✘ Cartoongen

6406531513906. ✘ Image size

6406531513907. ✓ Comicgen

6406531513908. ✘ Gentoon

Question Number : 120 Question Id : 640653455253 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following is used to build and host web applications?

Options :

6406531513909. ✓ Streamlit for building web applications, Heroku for hosting web applications

6406531513910. ✘ Heroku for building web applications, Streamlit for hosting web applications

6406531513911. ✘ Streamlit for building web applications, Streamlit for hosting web applications

6406531513912. ✘ Heroku for building web applications, Heroku for hosting web applications

Question Number : 121 Question Id : 640653455254 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Which among the following excel charts is the most suitable for detecting outliers in the data?

Options :

6406531513913. ❌ Bar chart

6406531513914. ❌ Line chart

6406531513915. ✓ Box and Whisker chart

6406531513916. ❌ Histogram

Question Number : 122 Question Id : 640653455255 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following libraries is used to construct API urls?

Options :

6406531513917. ✓ Urllib

6406531513918. ❌ BeautifulSoup

6406531513919. ❌ Requests

6406531513920. ❌ Pandas

Question Number : 123 Question Id : 640653455256 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following tabs is used to identify API calls in the Inspect element in any browser?

Options :

6406531513921. ✓ Network

6406531513922. ✗ Elements

6406531513923. ✗ Console

6406531513924. ✗ Sources

Question Number : 124 Question Id : 640653455257 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Google Studio is a tool that allows you to

Options :

6406531513925. ✗ merge Comicgen characters into a comic

6406531513926. ✗ visualize complex network data

6406531513927. ✓ create dashboards for small scale projects

6406531513928. ✗ Edit photographs and videos

Question Number : 125 Question Id : 640653455259 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

csr_matrix from the scipy library:

Options :

6406531513933. ✗ always helps reduce matrix space

6406531513934. ✓ helps reduce matrix space when there are a lot of zero entries in the matrix

6406531513935. ✗ helps reduce matrix space when there are a lot of negative entries in the matrix

6406531513936. ✗ makes matrix multiplication more meaningful and powerful

Question Number : 126 Question Id : 640653455260 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

classification_report function from the sklearn.metrics module

Options :

6406531513937. ❌ builds a decision tree classifier and prints the accuracy of the classifier

6406531513938. ❌ reports the root mean square error of the model

6406531513939. ❌ runs different classification models and compares the results

6406531513940. ✓ builds a text report displaying the main classification metrics

Question Number : 127 Question Id : 640653455261 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

pycaret is a

Options :

6406531513941. ❌ Visualization tool

6406531513942. ❌ Dashboard helper

6406531513943. ✓ low-code machine learning library

6406531513944. ❌ Data cleaning solution

Question Number : 128 Question Id : 640653455262 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

We are interested in fitting an ARIMA model to our time series data. Specifically, we are interested

in a moving average model of 0, setting a lag value of 4 for autoregression, and a difference order of 1. Which of the following gives you such a model?

Options :

6406531513945. ❌ ARIMA(..., trend = (4,1,0))

6406531513946. ✓ ARIMA(..., order = (4,1,0))

6406531513947. ❌ ARIMA(..., order = (0,4,1))

6406531513948. ❌ ARIMA(..., trend = (0,4,1))

Question Number : 129 Question Id : 640653455263 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Scikit-learn has a DecisionTreeClassifier module that is useful in building decision tree classifiers.

Suppose, our dataset is imbalanced in class. Which feature in the DecisionTreeClassifier() will help us tackle this problem?

Options :

6406531513949. ❌ random_state

6406531513950. ❌ min_sample_split

6406531513951. ❌ class_balance

6406531513952. ✓ class_weight

Sub-Section Number : 3

Sub-Section Id : 64065365835

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 130 Question Id : 640653455223 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

The given piece of code extract details of all Bollywood movies that were released in Jan – March 2009 and later prints out only those rows where the respective movie was categorized only as a Drama. Identify which block of code executes without any errors.

Options :

```
import requests

import pandas as pd

from bs4 import BeautifulSoup

website_url=requests.get('https://web.archive.org/web/20220429040949/https://en.wikipedia.org/wiki/List_of_Hindi_films_of_2009').text

soup = BeautifulSoup(website_url,'html.parser')

required_table = soup.find_all('table')[3]

df = pd.read_html(str(required_table))

df=pd.DataFrame(df[0])

df[df['Genre'].isin(['Drama'])]
```

6406531513797. ✓

```
import requests

import pandas as pd

website_url=requests.get('https://web.archive.org/web/20220429040949/https://en.wikipedia.org/wiki/List_of_Hindi_films_of_2009').text

soup = BeautifulSoup(website_url,'html.parser')

required_table = soup.find_all('table', "January-March")

df = pd.read_html(str(required_table))

df=pd.DataFrame(df[0])

df[df['Genre'].isin(['Drama'])]
```

6406531513798. ✗

6406531513799. ✗

```
import requests
import pandas as pd
from bs4 import BeautifulSoup
soup = BeautifulSoup(website_url,'html.parser')
required_table = soup.find_all('table', id = "January-March")
df = pd.read_html(str(required_table))
df=pd.DataFrame(df[0])
df[df['Genre'].isin(['Drama'])]
```

```
import requests
import pandas as pd
from bs4 import BeautifulSoup
website_url=requests.get('https://web.archive.org/web/20220429040949/https://en.wikipedia.org/wiki/List_of_Hindi_films_of_2009').text
required_table = soup.find_all('table')[5]
df = pd.read_html(str(required_table))
df=pd.DataFrame(df[0])
df[df['Genre'].isin(['Drama'])]
```

6406531513800. *

Question Number : 131 Question Id : 640653455239 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Provided below is an incomplete code snippet that enables you to compute distance between two locations. Choose the most appropriate option that can be used in place of < missing line > to compute the distance. Assume the coordinates of location one is stored in the variable “loc1” and the coordinates of location 2 is stored in the variable “loc2”.

Code Snippet:

```
distances_km = []

for row in df.itertuples(index=False):
    distances_km.append(
        <missing line>
    )

df['Distance'] = distances_km
df.head(10)
```

Options :

- 6406531513859. ✘ geopy.distance(loc1, loc2).km
- 6406531513860. ✘ geopy.distance(loc1, loc2).km.km
- 6406531513861. ✓ geopy.distance.distance(loc1, loc2).km
- 6406531513862. ✘ geopy.distance.distance.distance(loc1_coord, loc2_coord).km

Question Number : 132 Question Id : 640653455240 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Provided below is a snippet of the code block of HTML tags from a website providing weather forecast. Your goal is to scrape the high and low values for the 10-day temperature forecast.

```

<div class="wr-day-temperaturehigh">
    <span class="wr-day-temperature__high-label wr-hide-visually">High</span>
        <span class="wr-day-temperature__high-value">
            <span class="wr-value--temperature ">
                <span class="wr-value--temperature--c">31°</span>
                <span class="wr-hide"> </span>
                <span class="wr-value--temperature--f">87°</span>
            </span>
        </span>
    </div>
<div class="wr-day-temperaturelow">
    <span class="wr-day-temperature__low-label wr-hide-visually">Low</span>
        <span class="wr-day-temperature__low-value">
            <span class="wr-value--temperature ">
                <span class="wr-value--temperature--c">21°</span>
                <span class="wr-hide"> </span>
                <span class="wr-value--temperature--f">71°</span>
            </span>
        </span>
    </div>

```

Also provided below, is the python code to extract values from the tags. But the tags represented as <A> and are missing. Choose the most appropriate tag that will get you the high and low values for the 14-day temperature forecast..

#Daily High Values

```
daily_high_values = soup.find_all('span', attrs={'class': '<A>'})
```

#Daily Low Values

```
daily_low_values = soup.find_all('span', attrs={'class': '<B>'})
```

Options :

<A> = wr-value--temperature--f

6406531513863. ✘ = wr-value--temperature--c

<A> = wr-day--temperature--c

6406531513864. ✘ = wr-day--temperature--f

<A> = wr-day-temperaturehigh

6406531513865. ✓ = wr-day-temperaturelow

<A> = low-label wr-hide-visually

6406531513866. ✘ = high-label wr-hide-visually

Question Number : 133 Question Id : 640653455246 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Provided below is a snapshot of the dataset which consists of movie reviews and respective labels.

	A	B
1	sentiment	review
2	positive	One of the other reviewers has mentione
3	positive	A wonderful little production.
4	positive	I thought this was a wonderful way to spe
5	negative	Basically there's a family where a little bo
6	positive	Petter Mattei's "Love in the Time of Mone
7	positive	Probably my all-time favorite movie, a sto
8	negative	This show was an amazing, fresh & innova
9	negative	Encouraged by the positive comments abo
10	positive	If you like original gut wrenching laughter
11	negative	Phil the Alien is one of those quirky films

To compute the sentiment scores the Azure Machine Learning add-in requires input and output values. In the figure provided below the input and output cells need to be populated with appropriate values to obtain sentiment scores.

2. PREDICT

Input: input1

Type range or click button to select 

My data has headers

Use sample data 

Output: output1

Enter output cell (e.g. A20)

Include headers

Choose the most appropriate option that enables you to predict sentiment scores using the Excel Azure Machine Learning add-in.

Options :

6406531513883.  Input: Sheet1!A1:A11
Output: Sheet1!C1

6406531513884.  Input: Sheet1! B1:B11
Output: Sheet1!C1

Sub-Section Number : 4

Sub-Section Id : 64065365836

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 134 Question Id : 640653455224 Question Type : MSQ Is Question

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

Correct Marks : 1 Selectable Option : 0

Question Label : Multiple Select Question

Comicgen is a useful tool in narrating data stories using comics. Which of the following are

capabilities of comicgen?

Options :

6406531513801. ✓ Comicgen can create comic characters

6406531513802. ✓ Comicgen provides options to custom create different comic characters and their emotions and pose

6406531513803. ✓ Comicgen can be easily integrated into Google sheets or Excel to narrate your data stories

6406531513804. ✗ You can type in your data story into comicgen to get your comic in return

Question Number : 135 Question Id : 640653455258 Question Type : MSQ Is Question

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

Correct Marks : 1 Selectable Option : 0

Question Label : Multiple Select Question

scikit-network package contains functions for (pick all correct sentences):

Options :

6406531513929. ✓ analysis of faults in a computer network

6406531513930. ✗ social network analysis

6406531513931. ✓ analysis of large graphs

6406531513932. ✗ enhancing one's social network

BDM

Section Id : 64065329435

Section Number : 5

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 21

Number of Questions to be attempted : 21

Section Marks : 40

Display Number Panel :	Yes
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 :	64065365837
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 136 Question Id : 640653455264 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 "DIPLOMA LEVEL: BUSINESS DATA MANAGEMENT"

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

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

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

Options :

6406531513953. ✓ Yes

6406531513954. ✗ No

Sub-Section Number :	2
Sub-Section Id :	64065365838
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 137 Question Id : 640653455265 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

What does marginal utility measure?

Options :

6406531513955. ❌ Satisfaction divided by the quantity of the good

6406531513956. ✓ Added satisfaction from having one more unit of the good

6406531513957. ❌ Satisfaction divided by the price of the good

6406531513958. ❌ All of these

6406531513959. ❌ None of these

Question Number : 138 Question Id : 640653455266 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following statements is always true?

Options :

6406531513960. ❌ Current ratio < Quick ratio

6406531513961. ❌ Current ratio < 0

6406531513962. ✓ Current ratio \geq Quick ratio

6406531513963. ❌ Current ratio = Quick ratio

Question Number : 139 Question Id : 640653455268 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

When computing price elasticity, the slope of the demand curve depends on

Options :

6406531513968. ❌ The units used to measure quantity but not the units used to measure price
6406531513969. ❌ The units used to measure price but not the units used to measure quantity
6406531513970. ✓ Neither the units used to measure quantity nor the units used to measure price
6406531513971. ❌ The units used to measure the quantity and the units used to measure price

Question Number : 140 Question Id : 640653455271 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

What category of SKUs should be kept closer to the processing area?

Options :

6406531513980. ❌ Low demand / slow moving items - to avoid clutter or congestion near the processing area
6406531513981. ✓ High Demand / Fast Moving items - Saves time and effort. Helps in quicker access
6406531513982. ❌ Expensive Items - To increase security, the items are kept at a visible distance, enabling constant surveillance
6406531513983. ❌ Inexpensive Items - To avoid significant losses caused by thefts.

Question Number : 141 Question Id : 640653455289 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Internal Pool Sourcing is_____

Options :

6406531514029. ❌ pooling employees together to form a team
6406531514030. ✓ filling a vacant position from within the organisation

6406531514031. ✘ transferring an employee to the bench once the project is completed

6406531514032. ✘ firing an employee from the project

Sub-Section Number : 3

Sub-Section Id : 64065365839

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 142 Question Id : 640653455267 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following is not a source of survey data? (select all that is applicable)

Options :

6406531513964. ✘ Market research data

6406531513965. ✓ Stock market data

6406531513966. ✓ Rainfall data

6406531513967. ✘ Consumer pyramid data

Question Number : 143 Question Id : 640653455278 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

What does a high Average Days of Inventory signify?

Options :

6406531514002. ✓ Warehouse / Firm has inventory that is difficult to sell

6406531514003. ✘ It is a high-demand product - with a heavy flow of sales volume

6406531514004. ✓ The replenishment of that product from the Mother Distribution Center is not keeping up with the sales observed by the recipient DC.

6406531514005. ❌ Too many return orders.

Question Number : 144 Question Id : 640653455281 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

If the sales (volume) of the laptops increase in a particular period, which of the following item(s) also increase(s)? Choose all that apply

Options :

6406531514015. ❌ Profit

6406531514016. ✓ Cost of Goods Sold

6406531514017. ❌ Closing Inventory

6406531514018. ❌ Fixed Cost

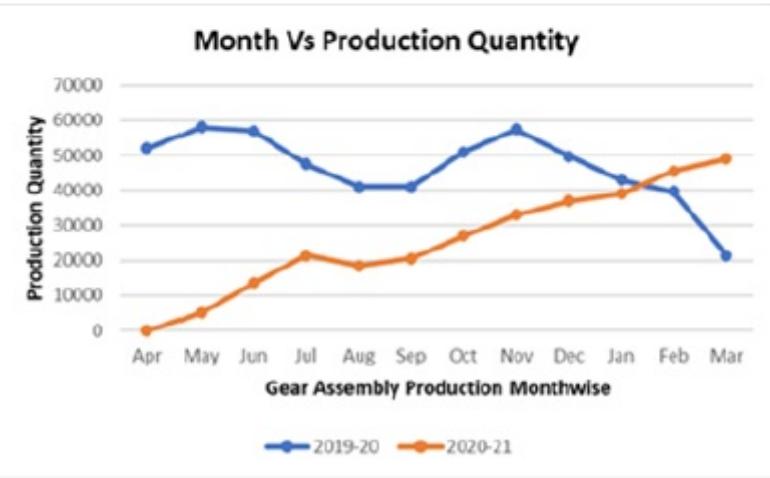
Question Number : 145 Question Id : 640653455290 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

The graphs below indicate which of the following? Choose all that apply



Options :

- 6406531514033. ❌ Production Quantity is similar between two fiscal years (2019-20 and 2020-21)
- 6406531514034. ✓ Difference between the Sales and Production shows an increase in December 2019-20 from the previous month
- 6406531514035. ✓ Production Quantity is likely to be influenced by Sales
- 6406531514036. ❌ No meaningful conclusion can be derived from the graph.

Sub-Section Number : 4

Sub-Section Id : 64065365840

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 146 Question Id : 640653455269 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

If the current ratio is 2:1 and the Quick ratio is 1.5:1, then which of the following is/are true? (Select all that are applicable)

Options :

6406531513972. ✓ Current assets are 2 times the liability

6406531513973. ✗ Liability is 2 times the current assets

6406531513974. ✓ Stocks is 0.5 times the liability

6406531513975. ✗ Liability is 0.5 times Stocks

6406531513976. ✓ Current assets are greater than stocks

6406531513977. ✗ Stocks are greater than current assets

6406531513978. ✗ None of these

Sub-Section Number : 5

Sub-Section Id : 64065365841

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 147 Question Id : 640653455270 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

The decrease in price of a product from INR 10 to INR 8 raised the demand by 30%. What is the elasticity of demand for the product?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1.5

Question Number : 148 Question Id : 640653455276 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

From the table, calculate the revenue growth on 11. April 2021 with respect to 10. April 2021.

Date	Revenue
01 April 2021	₹ 28,52,404
02 April 2021	₹ 27,08,802
03 April 2021	₹ 27,43,849
04 April 2021	₹ 31,12,277
05 April 2021	₹ 31,57,606
06 April 2021	₹ 30,43,087
07 April 2021	₹ 29,56,175
08 April 2021	₹ 27,30,834
09 April 2021	₹ 28,05,271
10 April 2021	₹ 26,08,451
11 April 2021	₹ 29,63,639
12 April 2021	₹ 29,44,822
13 April 2021	₹ 28,12,689
14 April 2021	₹ 27,44,763
15 April 2021	₹ 27,89,945

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

13.4 to 14.8

Sub-Section Number : 6

Sub-Section Id : 64065365842

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 149 Question Id : 640653455272 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Match the following

A. Pareto Principle	1. A metric to calculate the rate at which customers stop doing business with a company over a given period of time.
B. A/B Testing	2. Helps companies to make careful changes to their user experiences while collecting data on the results.
C. Churn Rate	3. A software/website that facilitates the smooth transfer of funds between customers and online businesses
D. Nudge Theory	4. Most things in business (revenue, sales volume, etc) are not distributed evenly – some contribute more than others.
	5. A way of offering small clues that support decision-making

Options :

6406531513984. ✓ A - 4,B - 2,C - 1,D - 5

6406531513985. ✗ A - 5,B - 4,C - 1,D - 3

6406531513986. ✗ A - 3,B - 4,C - 2,D - 5

6406531513987. ✗ A - 1,B - 4,C - 2,D - 5

Question Number : 150 Question Id : 640653455277 Question Type : MCQ Is Question

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

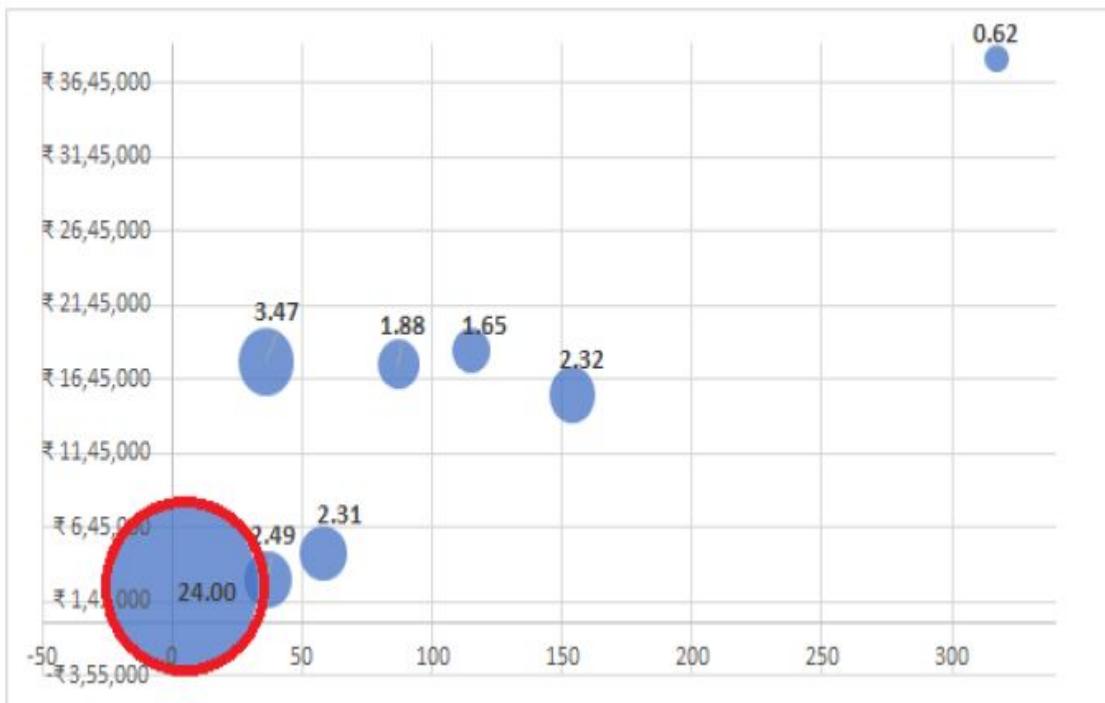
Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

The figure represents a bubble chart for mobiles, where X-axis represents the Volumes, Y-axis represents the Revenues, and the size of the bubble represents the average days of inventory.

Select the option/s that is/are wrong:



Options :

6406531513998. ✓ Reduce the inventory for the SKU with 24 as average days of inventory
6406531513999. ✗ Increase the inventory for the SKU with 24 as average days of inventory
6406531514000. ✗ SKU with 24 is an Outlier and hence remove it from analysis.
6406531514001. ✗ Both Reduce the inventory for the SKU with 24 as average days of inventory & SKU with 24 is an Outlier and hence remove it from analysis.

Question Number : 151 Question Id : 640653455292 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Arrange the following steps while working with unstructured data in a ranking modeling:

- I. Normalizing
- II. Preprocessing
- III. Ranking
- IV. Composite score

Options :

6406531514041. ✗ I -> II -> III -> IV
6406531514042. ✓ II -> I -> IV -> III

6406531514043. ✘ I -> II -> IV -> III

6406531514044. ✘ II -> I -> III -> IV

Sub-Section Number : 7

Sub-Section Id : 64065365843

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 152 Question Id : 640653455291 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the dataset.

Candidates	F1: Year of experience	F2: Count Skill	F3: Count_key_projects	F4: When will be available to join (months)
Partha	5.0	2	2	2
Siva	5.0	1	1	2
Akanksha	5.5	1	2	2
Lavanya	6.0	1	1	3

Here the factors F1 ..F3 are “higher the better”, but, F4 is “lower the better”. Rank the above candidates and choose the correct ranking from the below options.

Options :

6406531514037. ✓ Partha > Akanksha > Siva > Lavanya

6406531514038. ✘ Akanksha > Lavanya > Siva> Partha

6406531514039. ✘ Partha < Akanksha < Lavanya < Siva

6406531514040. ✘ Akanksha < Lavanya < Siva< Partha

Sub-Section Number : 8

Sub-Section Id : 64065365844

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 153 Question Id : 640653455279 Question Type : MSQ Is Question

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

Correct Marks : 1 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following are the functions of a Payment Merchant like G-Pay or Paytm?

Options :

6406531514006. ❌ Targets users with low bank balances and provides them with surplus money

6406531514007. ✓ Acts as the mediator between the merchant and the financial institutions involved

6406531514008. ❌ Acts as a distributor for products and services

6406531514009. ✓ Provides multiple payment options

Question Number : 154 Question Id : 640653455280 Question Type : MSQ Is Question

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

Correct Marks : 1 Selectable Option : 0

Question Label : Multiple Select Question

Increase in which of the following will increase the Net Margin? Choose all that apply

Options :

6406531514010. ❌ Revenue

6406531514011. ❌ Direct Material Cost

6406531514012. ❌ Direct Labour Cost

6406531514013. ❌ Shipping Cost

6406531514014. ✓ Insufficient Information

Sub-Section Number : 9

Sub-Section Id : 64065365845

Question Shuffling Allowed : No

Is Section Default? :

null

Question Id : 640653455273 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 : (155 to 156)

Question Label : Comprehension

Analyze the following data set and answer the given sub questions

S. No	Customer ID	Merchant Segment	Device	Test / Control Group	Old Engagement Segment	New Engagement Segment
1	441280	Electronics	UPI	T	Low	Medium
2	441265	Travel	PayLater	T	Medium	Low
3	441250	Electronics	Debit Card	T	Medium	Low
4	441285	Travel	Credit Card	T	Medium	Low
5	441285	Grocery	UPI	T	Low	Medium
6	441283	Travel	Debit Card	C	About to churn	High
7	441251	Grocery	UPI	C	Low	High
8	441269	Electronics	Credit Card	C	About to churn	High
9	441420	Fashion	UPI	C	Medium	Low
10	441777	Fashion	UPI	C	Medium	High

Sub questions

Question Number : 155 Question Id : 640653455274 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

What can we infer from this A/B Testing?

Options :

6406531513988. ✗ People who buy Groceries avoid the usage of Credit Card

6406531513989. ✓ The test group did not respond well to the new features or nudges.

6406531513990. ✗ The nudge worked.

6406531513991. ✗ It is not possible for a previously Medium level engagement customer to drop

down to an 'About to Churn' Level

Question Number : 156 Question Id : 640653455275 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

If a FinTech company wants to cut down losses, which of the following should they do?

Options :

6406531513992. ✓ Increase approval cutoff of credit score

6406531513993. ✗ Decrease approval cutoff of credit score

6406531513994. ✗ Increase interest rate

6406531513995. ✗ Increase approval limit for loans

6406531513996. ✗ Give more loans

Sub-Section Number : 10

Sub-Section Id : 64065365846

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455282 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 : (157 to 162)

Question Label : Comprehension

Answer the given subquestions on the Overall Equipment Effectiveness of fasteners manufacturing.

Hint:

Just in case you forgot the formula

Availability = Run Time / Planned Production Time

Run Time = Planned Production Time – Lost Time

Performance = (Total Count / Run Time) / Ideal Run Rate

Quality = Good Count / Total Count

OEE = Availability × Performance × Quality

Sub questions

Question Number : 157 Question Id : 640653455283 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

A nut manufacturing process had scheduled maintenance of two shifts in a particular week. Which components(s) of Overall Equipment Effectiveness (OEE) will certainly be affected in that week?

- a) availability
- b) performance
- c) quality

Options :

6406531514019. ❌ only b

6406531514020. ✓ only a

6406531514021. ❌ b and c

6406531514022. ❌ All of these

6406531514023. ❌ None of these

Question Number : 158 Question Id : 640653455284 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Calculate the following of the Gear Manufacturing Equipment for a particular week

Parameters	Week 1
No. of Shifts/ Day (No Holiday on any day of the week)	3
No. of Hours/Shift	8
Lost Time in Hours	24
Designed production speed of gears per Hour	60
Total Product Output	6740
Scrap (S)	122

Availability - _____%

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

85 to 86

Question Number : 159 Question Id : 640653455285 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Calculate the following of the Gear Manufacturing Equipment for a particular week

Parameters	Week 1
No. of Shifts/ Day (No Holiday on any day of the week)	3
No. of Hours/Shift	8
Lost Time in Hours	24
Designed production speed of gears per Hour	60
Total Product Output	6740
Scrap (S)	122

Performance _____ %

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

77.5 to 78.5

Question Number : 160 Question Id : 640653455286 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Calculate the following of the Gear Manufacturing Equipment for a particular week

Parameters	Week 1
No. of Shifts/ Day (No Holiday on any day of the week)	3
No. of Hours/Shift	8
Lost Time in Hours	24
Designed production speed of gears per Hour	60
Total Product Output	6740
Scrap (S)	122

Quality _____ %

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

97.5 to 98.5

Question Number : 161 Question Id : 640653455287 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Calculate the following of the Gear Manufacturing Equipment for a particular week

Parameters	Week 1
No. of Shifts/ Day (No Holiday on any day of the week)	3
No. of Hours/Shift	8
Lost Time in Hours	24
Designed production speed of gears per Hour	60
Total Product Output	6740
Scrap (S)	122

OEE _____ (Enter a number from 0 to 1 up to 3 decimal places)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.640 to 0.670

Question Number : 162 Question Id : 640653455288 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

An 8-hour shift of clamp manufacturing process (with no downtime) has an OEE of 0.90 performing at its designed speed and produces a total scrap of 45 units. What is the total number of units produced in the shift?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

450

System Commands

Section Id :	64065329436
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	100
Display Number Panel :	Yes
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 :	64065365847
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 163 **Question Id :** 640653455293 **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 "DIPLOMA LEVEL: SYSTEM COMMANDS"

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 :

6406531514045. ✓ YES

6406531514046. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065365848

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 164 Question Id : 640653455294 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

```
$ help echo
echo: echo [-neE] [arg ...]
      Write arguments to the standard output.

      Display the ARGs, separated by a single space character and followed
      by a newline, on the standard output.

Options:
  -n    do not append a newline
  -e    enable interpretation of the following backslash escapes
  -E    explicitly suppress interpretation of backslash escapes

`echo` interprets the following backslash-escaped characters:
.....
\n    new line
.....
```

What will be the output of the below script?

```
echo -n '*' # There is a space after *
echo -n '*\n*\n*' # There is a space after the last *
echo -n '*' # There is a space after *
```

Options :

*
* * *
*

6406531514047. ❌

* * * * *

6406531514048. ❌

* *\n*\n* *

6406531514049. ✓

* *
*
*

6406531514050. ❌

Question Number : 165 Question Id : 640653455295 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

A college student uses a pen drive to store files. The pen drive is always mounted on his system at `/mount` as a separate file system. His pen drive contains lots of files and directories. He wants to create a link to the directory `/mount/bio/phase-2/project-312` inside his home directory. What link can the student use?

Options :

6406531514051. ✓ soft link

6406531514052. ✗ hard link

6406531514053. ✗ either soft link or hard link

6406531514054. ✗ links will not work this requirement

Question Number : 166 Question Id : 640653455298 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

What does the key sequence `G$vgg0yGp` do in vi editor?

Hint:

v to enter into visual mode

p to paste next

y to copy selected

or

What does the key sequence `<M->><C-SPACE><M-<><C-w><C-y>` do in Emacs?

Hint:

`<C-SPACE>` to set a mark

`<C-W>` copy text from mark to current cursor position

`<C-y>` to paste text

Options :

6406531514063. ✗ Cut the paragraph and paste at the end of the document.

6406531514064. ✗ Copy the paragraph and paste at the end of the document.

6406531514065. ✗ Cut and paste the entire document (finally one copy of initial document).

6406531514066. ✓ Copy and paste the entire document (finally two copies of initial document).

Question Number : 167 Question Id : 640653455301 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

Select the correct statement(s) based on the below script. Assume that `file1` is not empty.

Hint: `tee` command takes the stdin and prints it to the terminal and also writes to the file given as argument.

```
while read line; do
    echo $line 1>&2
done < file1 > file2 | tee file3
```

Options :

6406531514072. ❌ `file2` will **NOT** be empty at the end of execution

6406531514073. ❌ `file3` will **NOT** be empty at the end of execution

6406531514074. ✓ The contents of `file1` will be displayed in the terminal

6406531514075. ❌ `file3` contains the contents of `file1`

Question Number : 168 Question Id : 640653455302 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

Choose the regular expression to match with a string that contains at least a character repeated three times consecutively. Assume the regular expression is using Extended Regular Expression Engine (ERE).

Options :

6406531514076. ❌ ...

6406531514077. ❌ ..*.*.*

6406531514078. ✓ (.)\1\1

6406531514079. ❌ (.)..*\1..\1

Question Number : 169 Question Id : 640653455304 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

What does the given sed script do? N command in sed appends the next line to the pattern space(current line) with a newline character \n being the separator.

```
N  
N  
N  
s/\n//g
```

Options :

6406531514089. ✘ Merge every two consecutive lines to a single line

6406531514090. ✘ Merge every three consecutive lines to a single line

6406531514091. ✓ Merge every four consecutive lines to a single line

6406531514092. ✘ The input remains unaltered

Question Number : 170 Question Id : 640653455307 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

What will the output from the below command represent?

```
awk '  
{  
    arr[$0]++  
}  
arr[$0] == 3 {  
    print  
}  
' data
```

Options :

6406531514098. ✘ The lines that are distinct

6406531514099. ✘ The lines that are repeated exactly thrice

6406531514100. ✓ The lines that are repeated thrice or more

6406531514101. ✘ The lines that are repeated more than thrice

Sub-Section Number : 3

Sub-Section Id : 64065365849

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 171 Question Id : 640653455296 Question Type : MCQ Is Question

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

Correct Marks : 7

Question Label : Multiple Choice Question

Complete the script to rename all the files in the current directory to include the time of creation in the name itself as given in the example below. Assume all the files have creation times.

Example: The filename `myfile` should be renamed to `myfile_2022-10-20T14:52:58`

```
for file in *; do
    creation_time=$(stat -c '%w' $file)
    # Sample output from `stat -c %w`
    # "2022-10-20 14:52:58.738413991 +0530"
    # *****
    # * COMPLETE THE SCRIPT *
    # *****
done
```

Options :

6406531514055. ✘ `mv $file ${creation_time/_/T}`

6406531514056. ✘ `mv $file $creation_time`

```
temp="${creation_time%%.*}"
temp="${temp/_/T}"
mv "$file" "${file}_${temp}"
```

6406531514057. ✓

```
temp="${creation_time%.*}"  
temp="${temp/ /T}"  
mv "$file" "$temp"
```

6406531514058. *

Question Number : 172 Question Id : 640653455297 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 7

Question Label : Multiple Choice Question

Which of the following command will run the script

/home/bill/autoscript/backup.sh at 9:00 pm every day-of-week from Monday through Friday in every month from January through June and at 10:00 pm every day-of-week from Monday through Friday in every month from July through December.

Hint: Below is the description of the sequence in the cron job command.

*	*	*	*	*	<Command(s) with argument>
					Command or Script to Execute
			Day of the Week(0-6)		
		Month of the Year(1-12)			
	Day of the Month(1-31)				
Hour(0-23)					
Min(0-59)					

Options :

```
0 22 * 1-6 1-5 /home/bill/autoscript/backup.sh  
0 21 * 7-12 1-5 /home/bill/autoscript/backup.sh
```

6406531514059. *

```
0 10 * 1-6 1-5 /home/bill/autoscript/backup.sh  
0 9 * 7-12 1-5 /home/bill/autoscript/backup.sh
```

6406531514060. *

```
0 9 * 1-5 1-6 /home/bill/autoscript/backup.sh  
0 10 * 1-5 7-12 /home/bill/autoscript/backup.sh
```

6406531514061. ✘

```
0 21 * 1-6 1-5 /home/bill/autoscript/backup.sh  
0 22 * 7-12 1-5 /home/bill/autoscript/backup.sh
```

6406531514062. ✓

Sub-Section Number : 4

Sub-Section Id : 64065365850

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 173 Question Id : 640653455299 Question Type : MSQ Is Question

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

Correct Marks : 8 Selectable Option : 0

Question Label : Multiple Select Question

A student named Varsha has a lot of configuration files in her Linux system. Somehow she lost all the data but fortunately she backed up her configuration files in a specific way such that the back up directory named `backup_config` contains all the configuration files along with one file named `files`.

The file `files` contains the absolute paths to the config files, one path per line for each config file. Choose the script that restores all the files to their location. Assume the `backup` directory contains only files not directories.

The current working directory where the scripts are run is `backup_config` directory.

Options :

```
for file in `cat files`; do  
    cp "${file%/*}" "${file##*:}"  
done
```

6406531514067. ✘

```
while read file; do  
    cp "./${file##*/}" "$file"  
done < files
```

6406531514068. ✓

```
while read file; do  
    cp "./${file///*\//}" "$file"  
done < files
```

6406531514069. ✓

```
for file in `cat files`; do  
    cp "$file" "./${file##*/}"  
done
```

6406531514070. ❌

Question Number : 174 Question Id : 640653455303 Question Type : MSQ Is Question

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

Correct Marks : 8 Selectable Option : 0

Question Label : Multiple Select Question

Choose the matching line(s) for any of the following regular expressions. Assume that the regular expression is using Extended Regular Expression Engine (ERE).

```
^$  
^([[[:digit:]]){{3,}}$  
^[^.]+$
```

Options :

6406531514081. ✓ An empty line

6406531514082. ❌ A line having a number with only one decimal place (Ex: 10.1)

6406531514083. ❌ A line without a space

6406531514084. ❌ A line with three spaces

6406531514085. ❌ A line starts with two consecutive numbers

6406531514086. ✓ A line containing only four consecutive numbers

6406531514087. ✓ A line without a dot

6406531514088. ❌ A line with one or more dot characters

Question Number : 175 Question Id : 640653455306 Question Type : MSQ Is Question

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

Correct Marks : 8 Selectable Option : 0

Question Label : Multiple Select Question

Consider a file named `data` containing some text located in the current working directory. Select the correct statement(s) for the output printed by the below script.

```
count=0
while read line; do
    # -o in grep will print only the matches not the entire line,
    # and prints one match per line
    for i in `echo "$line" | grep -o '~ITER~'`; do
        ((count++))
        line="${line/~ITER~/${count}}" # ~ITER~ is replaced with $count
    done
    echo "$line"
done < data
```

Options :

6406531514094. ✘ Only the first occurrence of `~ITER~` in every line of the file `data` is replaced

6406531514095. ✘ The value replaced with `~ITER~` is constant across the lines

The value of `count` at the end of execution and total number of occurrences of `~ITER~` in the file `data` are equal
6406531514096. ✓

The same result can be achieved within file `data` with the following script

```
# -q in grep gives only the exit status, not output
c=0; while $(grep -q "~ITER~"); do
    ((c++)); sed "s/~ITER~/$c/"
```

6406531514097. ✓ done

Sub-Section Number : 5

Sub-Section Id : 64065365851

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 176 Question Id : 640653455300 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Short Answer Question

How many lines will be printed after executing the below script?

```
for i in {1..10}; do
    f=1
    if ((i%3==0)); then
        f=0
        continue
    fi
    if [[ $f -eq 1 && $i -gt 5 ]]; then
        continue
    fi
    echo '***'
done
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 177 Question Id : 640653455305 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Short Answer Question

The input file to the below sed script named `data` contains 100 characters, among them 47 are numbers `[0-9]`. How many characters will be in the output after executing the below script? Assume that sed is using Extended Regular Expression Engine (ERE).

```
s/([0-9])/\1\1/g
s/([0-9])\1/\1\1/g
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Sub-Section Number :	6
Sub-Section Id :	64065365852
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 178 Question Id : 640653455308 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 8

Question Label : Short Answer Question

What will be the output from the below script?

```
awk '
{
    x[NR] = $1; y[NR] = $2
    x_+ += $1; y_+ += $2
}
END {
    x_ = x_ / NR; y_ = y_ / NR
    denx_2 = 0; deny_2 = 0
    for (i in x) {
        num += (x[i] - x_)*(y[i] - y_)
        denx_2 += (x[i] - x_)^2
        deny_2 += (y[i] - y_)^2
    }
    print num / (denx_2^0.5 * deny_2^0.5)
}
' << EOF
5 6
3 4
1 2
7 8
EOF
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

MLP

Section Id :	64065329437
Section Number :	7
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	38
Number of Questions to be attempted :	38
Section Marks :	100
Display Number Panel :	Yes
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 :	64065365853
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 179 Question Id : 640653455309 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 "DIPLOMA LEVEL: MACHINE LEARNING PRACTICE"

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 :

6406531514103. ✓ YES

6406531514104. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065365854

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 180 Question Id : 640653455311 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

What will be the shape of X and y?

```
from sklearn.datasets import make_classification
X, y = make_classification(n_features=90, n_informative=10, n_redundant = 1,
n_classes=2, n_clusters_per_class=1, random_state=20, n_samples=120)
```

Options :

6406531514109. ✓ (120,90) and (120,)

6406531514110. ✗ (120,10) and (120,)

6406531514111. ✗ (90,120) and (90,)

6406531514112. ✗ (90,10) and (90,)

Question Number : 181 Question Id : 640653455315 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

What will be the shape of the feature matrix (X.shape) and the label vector (y.shape) for the

following block of code?

```
import numpy as np
num_samples = 500
X = 2 * np.random.rand(num_samples, 1)
y = 4 + 3 * X + np.random.randn(num_samples, 1)
```

Options :

6406531514127. ❌ (699, 1) and (599, 1)

6406531514128. ✓ (500, 1) and (500, 1)

6406531514129. ❌ (1, 500) and (1,500)

6406531514130. ❌ (599, 1) and (699, 1)

Question Number : 182 Question Id : 640653455321 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

What will be the output of the following code?

```
from sklearn.datasets import load_wine
one = load_wine()
two = load_wine(return_X_y = False)
three = load_wine(as_frame = False)
four = load_wine(as_frame = False, return_X_y = False)

print(type(one))
print(type(two))
print(type(three))
print(type(four))
```

Options :

6406531514145. ❌ Bunch, Tuple, DataFrame, DataFrame

6406531514146. ❌ Bunch, Tuple, DataFrame, Tuple

6406531514147. ✓ Bunch, Bunch, Bunch, Bunch

6406531514148. ❌ DataFrame, DataFrame, DataFrame, DataFrame

6406531514149. ❌ Bunch, Ndarray, Bunch, Ndarray

6406531514150. ❌ It will result into an error.

Question Number : 183 Question Id : 640653455327 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Consider following code snippet:

```
from sklearn.linear_model import SGDClassifier  
clf = SGDClassifier(loss='perceptron')
```

Above classifier uses:

Options :

6406531514166. ❌ hinge but quadratically penalized.

6406531514167. ❌ logistic regression.

6406531514168. ✓ linear SVM.

6406531514169. ❌ None of these.

6406531514170. ❌ perceptron.

Question Number : 184 Question Id : 640653455329 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following Naive Bayes algorithms can be applied if the data has discrete features that are categorically distributed?

Options :

6406531514175. ❌ GaussianNB

6406531514176. ✓ CategoricalNB

6406531514177. ❌ ComplementNB

6406531514178. ✘ None of these

Question Number : 185 Question Id : 640653455332 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following options represents the correct output of the following block of code?

```
X = [[0], [1], [2], [3]]  
y = [0, 0, 2, 2]  
from sklearn.neighbors import KNeighborsClassifier  
neigh = KNeighborsClassifier(n_neighbors=2)  
neigh.fit(X, y)  
print(neigh.predict([[2.1]]))
```

Options :

6406531514187. ✘ [0]

6406531514188. ✓ [2]

6406531514189. ✘ [1.5]

6406531514190. ✘ [1]

Question Number : 186 Question Id : 640653455333 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following estimators implement partial_fit method in Regression?

Options :

6406531514191. ✘ Ridge Regression

6406531514192. ✓ SGDRegressor

6406531514193. ✘ Linear Regression

6406531514194. ✘ Polynomial Regression

Question Number : 187 Question Id : 640653455334 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Mention which of the following statement(s) is / are correct?

Statement 1: Incremental learning is a dynamic technique which is applied when training data becomes available gradually over time or its size is out of system memory limits.

Statement 2: Sklearn can not process large data in batches.

Options :

6406531514195. ✓ Statement 1 is correct but statement 2 is incorrect.

6406531514196. ✗ Statement 1 is incorrect but statement 2 is correct.

6406531514197. ✗ Statement 1 and statement 2 both are incorrect.

6406531514198. ✗ Statement 1 and statement 2 both are correct.

Question Number : 188 Question Id : 640653455335 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following options represents the correct value of gamma for **SVC_classifier = SVC(gamma = 'auto')**?

Options :

6406531514199. ✗ $\frac{1}{(n_features*X.var())}$

6406531514200. ✗ $\frac{1}{(n_features/X.var())}$

6406531514201. ✓ $\frac{1}{n_features}$

6406531514202. ✘ None of these

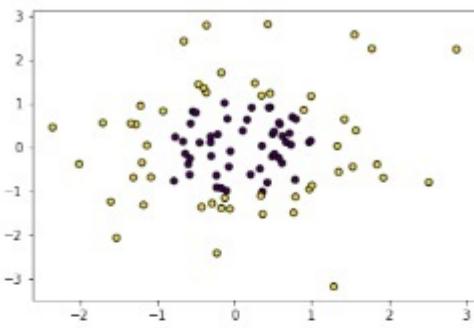
Question Number : 189 Question Id : 640653455339 Question Type : MCQ Is Question

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

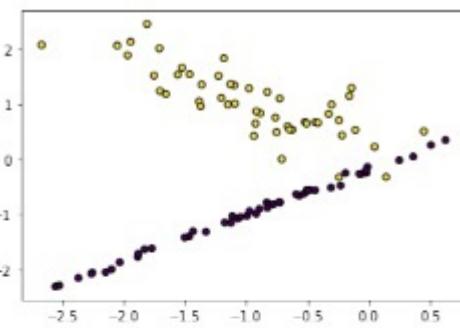
Correct Marks : 2

Question Label : Multiple Choice Question

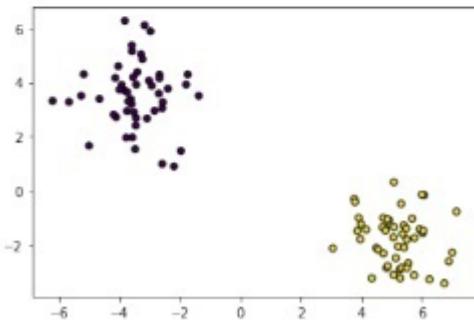
Consider the following scatter plots of four different input datasets:



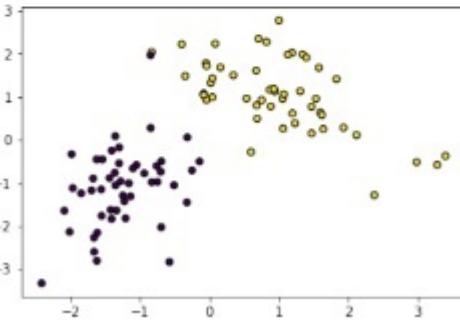
Data 1



Data 2



Data 3



Data 4

Which data will be classified better using gaussian rbf kernel?

Options :

6406531514212. ✓ Data 1

6406531514213. ✘ Data 3

6406531514214. ✘ Data 4

6406531514215. ✘ Data 2

Question Number : 190 Question Id : 640653455341 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

When a node is split further in a decision tree:

Options :

6406531514222. ✓ It creates only two new children nodes always.

6406531514223. ✗ It can create two or more new children nodes always.

6406531514224. ✗ It depends on the cardinality of the categorical feature.

6406531514225. ✗ It depends on the scale of the numerical feature.

Question Number : 191 Question Id : 640653455345 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following is/are Correct for K-means algorithm.

Options :

6406531514240. ✗ The algorithm is sensitive to outliers.

6406531514241. ✗ It terminates at a local optimum if SSE is used.

6406531514242. ✗ k-means is considered to be a linear algorithm.

6406531514243. ✓ All of these

Question Number : 192 Question Id : 640653455346 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Hierarchical Clustering can also be called:

Options :

- 6406531514244. ❌ Centroid Based Clustering
- 6406531514245. ❌ Distribution-based Clustering
- 6406531514246. ❌ Density-based Clustering
- 6406531514247. ✓ Connectivity-Based Clustering

Sub-Section Number : 3

Sub-Section Id : 64065365855

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 193 Question Id : 640653455331 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following options represents the major difference between HashingVectorizer and CountVectorizer?

Options :

- 6406531514183. ❌ CountVectorizer does not store vocabulary, its object takes less space compared to HashingVectorizer

- 6406531514184. ❌ HashingVectorizer does not store vocabulary, its object takes less space compared to CountVectorizer

- 6406531514185. ✓ CountVectorizer alleviates any dependence with function calls performed on the previous chunk of data in case of incremental learning

- 6406531514186. ✓ HashingVectorizer alleviates any dependence with function calls performed on the previous chunk of data in case of incremental learning

Question Number : 194 Question Id : 640653455336 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements correctly set L1 penalty to 0.2 and L2 Penalty to 0.8 in LogisticRegression?

Options :

6406531514203. ✓ `from sklearn.linear_model import LogisticRegression
clf_lr = LogisticRegression(l1_ratio=0.2)`

6406531514204. ✗ `from sklearn.linear_model import LogisticRegression
clf_lr = LogisticRegression(l2_ratio=0.8)`

6406531514205. ✗ `from sklearn.linear_model import LogisticRegression
clf_lr = LogisticRegression(l2_ratio=20)`

6406531514206. ✗ `from sklearn.linear_model import LogisticRegression
clf_lr = LogisticRegression(l1_ratio=80)`

Question Number : 195 Question Id : 640653455342 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following are hyper parameters in a decision tree?

Options :

6406531514226. ✗ Number of features

6406531514227. ✓ Number of minimum samples to split

6406531514228. ✓ Height of the tree

6406531514229. ✗ Diameter of the tree

Sub-Section Number : 4

Sub-Section Id : 64065365856

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 196 Question Id : 640653455314 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements are incorrect about the AUC?

Options :

6406531514122. ✓ The ROC curve plots sensitivity (recall) on the x-axis against specificity on the y-axis

6406531514123. ✗ A completely effective classifier is a diagonal line, and it will have an AUC of 0.5.

6406531514124. ✓ The larger the value of AUC, the less effective the classifier.

6406531514125. ✗ An AUC of 1 indicates a perfect classifier, which means it gets all the 1s correctly classified, and doesn't misclassify any 0s as 1s.

6406531514126. ✗ None of these

Sub-Section Number : 5

Sub-Section Id : 64065365857

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 197 Question Id : 640653455316 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

The output of the following block of code will be:

```
import numpy as np
from sklearn.model_selection import cross_validate
from sklearn.model_selection import ShuffleSplit
rs = ShuffleSplit(n_splits=4, random_state=8)
rs.get_n_splits(X)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 198 Question Id : 640653455322 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Refer the dataframe(df) given below and enter the correct output (up to 2 decimal points) for the following block of code:

	Name	Assignment-1	Assignment-2	Assignment-3
0	juli	22	84	78
1	nick	51	76	61
2	tom	41	76	81
3	Abhi	56	67	82
4	Krish	51	72	84

Figure 2: Sample dataframe

```
import pandas as pd
import numpy as np
df['total'] = df['Assignment-1']+df['Assignment-2']+df['Assignment-3']
print(df['total'].max()-df["total"].min())
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

22.95 to 23.05

Question Number : 199 Question Id : 640653455325 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Enter the output (up to 2 decimal points) for the following block of code.

```
import numpy as np
from sklearn.dummy import DummyClassifier
X = np.array([-2, 2, 3, 3])
y = np.array([0, 2, 2, 2])
dummy_clf = DummyClassifier(strategy="most_frequent")
dummy_clf.fit(X, y)
dummy_clf.score(X, y)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.75

Question Number : 200 Question Id : 640653455338 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What is the correct output of the following block of code?

[Note: LinearSVC implements “one-vs-the-rest” multi-class strategy]

```
from sklearn import svm
X = [[10], [11], [12], [13]]
Y = [0, 1, 2, 3]
lin_clf = svm.LinearSVC()
lin_clf.fit(X, Y)
dec = lin_clf.decision_function([[1]])
dec.shape[1]
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number : 6

Sub-Section Id : 64065365858

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 201 **Question Id :** 640653455310 **Question Type :** MCQ **Is Question**

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following options represents all the correct precision, Recall, and accuracy values for the confusion matrix shown in Figure 1? [Note: All 3 values should be correct in the same option]

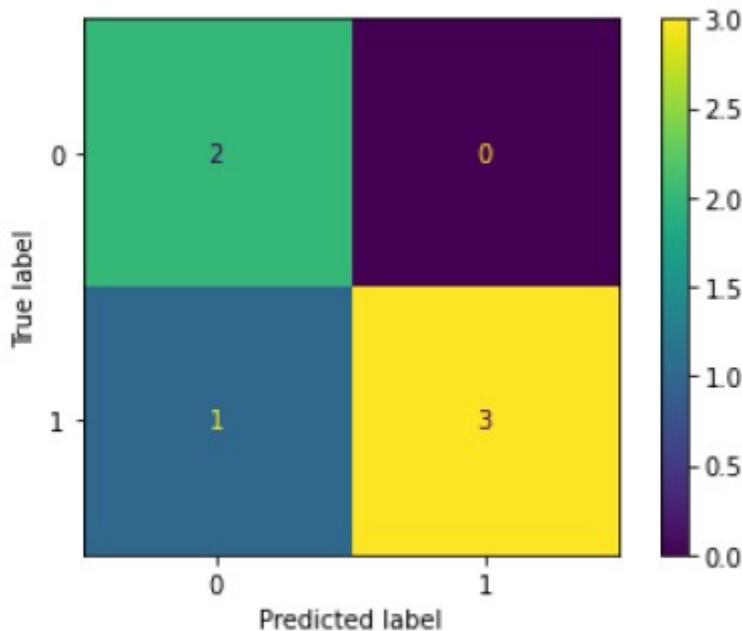


Figure 1: Confusion matrix

Options :

6406531514105. ✓ Precision: 0.833 , Recall: 0.875, Accuracy: 0.833

6406531514106. ✗ Precision: 0.875, Recall: 0.833, Accuracy: 0.833

6406531514107. ✗ Precision: 0.9783, Recall: 0.9281, Accuracy: 0.909

6406531514108. ✗ None of these

Question Number : 202 Question Id : 640653455312 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following code snippet:

```
import numpy as np
data=np.array([ 2, 1, 2, 1])
from sklearn.preprocessing import PolynomialFeatures
poly= PolynomialFeatures(degree=2, interaction_only=False)
data = data.reshape(2,2)
poly.fit_transform(data)
```

which of the following could be the correct output?

Options :

6406531514113. ✓ array([[1., 2., 1., 4., 2., 1.], [1., 2., 1., 4., 2., 1.]])

6406531514114. ✗ array([[1., 2., 1., 4., 2., 1., 4., 4., 2., 1.], [1., 2., 1., 4., 2., 1., 4., 4., 2., 1.]])

6406531514115. ✗ array([[1., 2., 1., 2.], [1., 2., 1., 2.]])

6406531514116. ✗ array([[1., 2., 1., 4., 2., 1., 8., 4., 2., 1.], [1., 2., 1., 4., 2., 1., 8., 4., 2., 1.]])

Question Number : 203 Question Id : 640653455313 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following is likely to be the correct output of the code given below?

```
from sklearn import linear_model
clf = linear_model.Lasso(alpha=0.1)
clf.fit([[2,4], [3, 2], [1, 2]], [2,3,1])
linear_model.Lasso(alpha=0.1,max_iter=1000, tol=0.0001,
warm_start=True,fit_intercept=False)
print(clf.coef_)
```

Options :

6406531514117. ✓ [0.95238095, 0.]

6406531514118. ✗ [0.85,0.1,0.05]

6406531514119. ✗ [2,3,1]

6406531514120. ✗ [0.85,0]

6406531514121. ✗ There are some mistakes in the 3rd /4th line of code, hence it will produce error.

Question Number : 204 Question Id : 640653455317 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following is likely to be the correct output of the code given below?

```
from sklearn import linear_model
clf = linear_model.Ridge(alpha=1)
X= [[2,1], [2, 3], [3, 2]]
y= [5, 10, 5]
clf.fit(X, y)
linear_model.Ridge(alpha=1,max_iter=1000, tol=0.0001,fit_intercept=True)
clf.score(X,y)
```

Options :

6406531514132. ✘ 5

6406531514133. ✘ 99

6406531514134. ✘ Given code will produce an error

6406531514135. ✓ 0.82

Question Number : 205 Question Id : 640653455323 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Mention whether the following statements are TRUE or FALSE .

Statement 1 : 'In order to extend ROC curve and ROC area to multi-label classification, it is necessary to binarize the output.'

Statement 2: In SGDClassifier, setting warm_start=True does not retain the weight values of the model after max_iter and hence does not produce different results for each execution.'

Options :

6406531514152. ✓ Statement 1 is correct but statement 2 is incorrect.

6406531514153. ✘ Statement 1 is incorrect but statement 2 is correct.

6406531514154. ✘ Statement 1 and statement 2 both are incorrect.

6406531514155. ✘ Statement 1 and statement 2 both are correct.

Question Number : 206 Question Id : 640653455326 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following options represents the correct option to set the regularization rate in RidgeClassifier?

Options :

6406531514162. ✗ logit_classifier = LogisticRegression(penalty='l2')

6406531514163. ✗ SGDClassifier(loss="perceptron", eta0=1, learning_rate="constant",
penalty=None)

```
if solver == 'auto':  
    if return_intercept:  
        solver = "sag"  
    elif not sparse.issparse(X):  
        solver = "cholesky"  
    else:  
        solver = "sparse_cg"
```

6406531514164. ✗

6406531514165. ✓
from sklearn.linear_model import RidgeClassifier
ridge_classifier = RidgeClassifier(alpha=0.001)

Question Number : 207 Question Id : 640653455328 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following options represents the correct output for the following block of code?

```
text_data=['A metaverse is a network of 3D virtual worlds focused on connection.']
from sklearn.feature_extraction.text import CountVectorizer
c_vectorizer = CountVectorizer()
X_c = c_vectorizer.fit_transform(text_data)
print(X_c.shape)
```

Options :

6406531514171. ✘ (11, 1)

6406531514172. ✓ (1, 10)

6406531514173. ✘ (1, 11)

6406531514174. ✘ (10, 1)

Question Number : 208 Question Id : 640653455330 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following options represents the correct output for the following block of code?

```
from sklearn.feature_extraction.text import TfidfVectorizer
corpus = [ 'The name is Bond, James Bond!' ]
vectorizer = TfidfVectorizer()
X = vectorizer.fit_transform(corpus)
vectorizer.get_feature_names_out()
```

Options :

6406531514179. ✘ array(['is', 'name', 'the'], dtype=object)

6406531514180. ✘ array(['bond', 'is', 'james', 'name', 'the', '!'], dtype=object)

6406531514181. ✘ array(['bond', 'bond', 'is', 'james', 'name', 'the'], dtype=object)

6406531514182. ✓ array(['bond', 'is', 'james', 'name', 'the'], dtype=object)

Question Number : 209 Question Id : 640653455337 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following options represents the correct output of the following block of code?

```
from sklearn import svm
X = [[10, 10], [11, 11]]
y = [0, 2]
clf = svm.SVC()
clf.fit(X, y)
clf.predict([[0.5, 0.5]])
```

Options :

6406531514207. ✓ array([2])

6406531514208. ✗ array([1.5])

6406531514209. ✗ array([1])

6406531514210. ✗ array([0])

Question Number : 210 Question Id : 640653455340 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider following statements regarding a decision tree model?

1. It is a parametric model.
2. It has a tendency to overfit if allowed to grow unconditionally.
3. It can be used for regression, classification and clustering problems.
4. It is one of the easiest machine learning models to interpret.
5. For classification problems, decision tree's loss function is same as evaluation metric.

Choose the option with all the correct statements:

Options :

6406531514216. ✓ 2, 3

6406531514217. ✗ 1, 3, 5

6406531514218. ✗ 3, 5

6406531514219. ✗ 2, 4

6406531514220. ✗ 1, 3, 4

6406531514221. ✗ 1, 2, 4

Question Number : 211 Question Id : 640653455344 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Lata wants to train a bagging regressor with following specifications:

1. Base estimator as linear regressor with default parameter values.
2. 80% of the data is used to create a bag of samples.
3. Create subsets of training set without replacement.
4. Take half the features when creating subsets of data.
5. Train the model on training set.
6. Print score on test set.

Which of the following code blocks will correctly execute Lata's task?

[Note: Assume necessary imports and variables for training and test sets.]

Options :

6406531514235. ✓

```
bagging = BaggingRegressor(LinearRegression(), max_samples = 0.8,
                           bootstrap = False, max_features = 0.5)
bagging.fit(X_train, y_train)
print(bagging.score(X_test, y_test))
```

6406531514236. ✗

```
bagging = BaggingRegressor(LinearRegression(), max_samples = 80,
                           bootstrap = True, max_features = 'all')
bagging.fit(X_train, y_train)
print(bagging.score(X_test, y_test))
```

6406531514237. ✗

```
bagging = BaggingRegressor(LinearRegression(), max_samples = 0.8,
                           bootstrap = True, max_features = 'all')
bagging.fit(X_train, y_train)
print(bagging.score(X_test, y_test))
```

6406531514238. ✗

```
bagging = BaggingRegressor(LinearRegression(), max_samples = 80,
                           bootstrap = False, max_features = 'all')
bagging.fit(X_train, y_train)
print(bagging.score(X_test, y_test))
```

```
bagging = BaggingRegressor(LinearRegression(), bag_size = 0.8,
                           bootstrap = True, all_features = True)
bagging.fit(X_train, y_train)
6406531514239. ✘ print(bagging.score(X_test, y_test))
```

Question Number : 212 Question Id : 640653455347 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

You have a binary classification problem to solve with following information:

1. All features are numerical.
2. The dataset has size of 80 GB.
3. The data has to be preprocessed.
4. After data preprocessing, train the model with gradient descent or its variations.

Which of the following will perform the above task?

Options :

6406531514248. ✘ Perform one hot encoding followed by training with LogisticRegression model (sklearn.linear_model).

6406531514249. ✘ Perform standard scaling followed by a sklearn.neighbors.KNeighborsClassifier model.

6406531514250. ✘ Perform min-max scaling followed by a sklearn.tree.DecisionTreeClassifier model.

6406531514251. ✓ Perform max-absolute scaling followed by a sklearn.linear_model.SGDClassifier model.

Question Number : 213 Question Id : 640653455348 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Let data-set X has 784 features and the trained using the following code:

```
mlp_clf = MLPClassifier(hidden_layer_sizes=(100,),  
                        alpha=1e-4,  
                        solver="sgd",  
                        learning_rate_init=0.2,  
                        max_iter=50,  
                        random_state=1)  
  
mlp_clf.fit(X, y)
```

What will be the output of following code:

```
w = mlp_clf.coefs_  
w = np.array(w[0])  
w.shape
```

Options :

6406531514252. ✓ (784, 100)

6406531514253. ✗ (784, 1)

6406531514254. ✗ (1, 784)

6406531514255. ✗ (100, 784)

Sub-Section Number :

7

Sub-Section Id :

64065365859

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 214 Question Id : 640653455324 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 options represents the correct output of the following block of code?

```
from sklearn.metrics import log_loss
loss=log_loss(["spam", "ham"], [[.04,.16], [.16, .04]],eps=1e-15,
normalize=True, sample_weight=None, labels=None)
print(loss)
```

Options :

6406531514156. ✘ 1

6406531514157. ✘ 0

6406531514158. ✘ 0.110

6406531514159. ✓ 0.223

6406531514160. ✘ 0.533

Question Number : 215 Question Id : 640653455343 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

Brajesh wants to tune hyper parameters of an AdaBoost model for a classification problem with following specifications:

1. Base estimator as Decision trees classifier with max_depth=1.
2. Number of estimators range from 30 to 40 (both inclusive) at the interval of 1.
3. Cross validation = 5.
4. Learning rate must vary between 0.2 to 2.0 (both inclusive) at the intervals of 0.2.
5. Train the best model on the entire training set.
6. Print score on test set.

Which of the following code blocks will correctly execute Brajesh's task?

[Note: Assume necessary imports and variables for training and test sets.]

Options :

6406531514230. ✓

```
params = {'n_estimators':list(range(30,41)),
          'learning_rate': np.linspace(0.1,1.0, 10)}

ada = AdaBoostClassifier()
gs_ada = GridSearchCV(ada, cv = 5, refit = True, param_grid=params)
gs_ada.fit(X_train, y_train)

print(gs_ada.best_estimator_.score(X_test, y_test))

params = {'n_estimators':list(range(30,51,2)),
          'learning_rate': np.linspace(0.1,1.0, 10)}

ada = AdaBoostClassifier()
gs_ada = GridSearchCV(ada, cv = 5, refit=True, param_grid =params )
gs_ada.fit(X_train, y_train)

print(gs_ada.best_estimator_.score(X_test, y_test))

6406531514231. ✘ print(gs_ada.best_estimator_.score(X_test, y_test))

params = {'n_estimators':list(range(10,21,2)),
          'learning_rate': np.linspace(0.1,1.0, 10)}

ada = AdaBoostClassifier()
gs_ada = GridSearchCV(ada, cv = 5, fit_best=True, parameters =params )
gs_ada.fit(X_train, y_train)

print(gs_ada.best_estimator_.score(X_test, y_test))

6406531514232. ✘ print(gs_ada.best_estimator_.score(X_test, y_test))

params = {'n_estimators':list(range(10,21,2)),
          'learning_rate': np.linspace(0.1,1.0, 10)}

ada = AdaBoostClassifier()
gs_ada = GridSearchCV(base_estimator = ada,
                      cross_validation = 5, fit_best=True,
                      parameters =params)
gs_ada.fit(X_test, y_test)

print(gs_ada.best_estimator_.score(X_train, y_train))

6406531514233. ✘

6406531514234. ✘
```

```
params = {'n_estimators':list(range(10,21,2)),
          'learning_rate': np.linspace(0.1,1.0, 10)}

ada = AdaBoostClassifier()
gs_ada = GridSearchCV(base_estimator = ada,
                      cross_validation = 5,
                      parameters =params)

best_model = gs_ada.get_best_model().fit(X_train, y_train)

print(gs_ada.best_estimator_.score(X_test, y_test))
```

Sub-Section Number : 8

Sub-Section Id : 64065365860

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455318 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 : (216 to 217)

Question Label : Comprehension

Go through the code snippet given below and answer the subquestions.

```
from sklearn.preprocessing import PolynomialFeatures
from sklearn.pipeline import Pipeline
from sklearn.preprocessing import StandardScaler
from sklearn.linear_model import RidgeCV
from sklearn.datasets import load_diabetes
dataset = load_diabetes(as_frame=True)
X=dataset.data
y=dataset.target

lf= np.arange(0.005, 1, 0.05)

ridge_reg_pipeline = Pipeline([
    ("poly", PolynomialFeatures(degree=2)),
    ("feature_scaling", StandardScaler())
])

ridge= RidgeCV(alphas=lf,scoring="neg_mean_squared_error")
results = ridge.fit(X,y)
```

Sub questions

Question Number : 216 Question Id : 640653455319 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Based on the given code,Select all option Which will be considered as input alpha value for our RidgeCV estimator.

Options :

6406531514136. ✓ 0.055

6406531514137. ✗ 0.05

6406531514138. ✓ 0.905

6406531514139. ✗ 0.1

6406531514140. ✗ 1

Question Number : 217 Question Id : 640653455320 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following could be the possible output of print(results.best_score_)?

Options :

6406531514141. ✘ 1

6406531514142. ✓ -2999.79

6406531514143. ✘ 0.528

6406531514144. ✘ 0.681

PDSA

Section Id :	64065329438
Section Number :	8
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	30
Number of Questions to be attempted :	30
Section Marks :	100
Display Number Panel :	Yes
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 :	64065365861
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 218 Question Id : 640653455349 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 "DIPLOMA LEVEL: PROGRAMMING DATA STRUCTURES AND ALGORITHMS USING PYTHON"

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 :

6406531514256. ✓ YES

6406531514257. ✘ NO

Sub-Section Number : 2

Sub-Section Id : 64065365862

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 219 Question Id : 640653455350 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following functions:

$$f(n) = 2^{\log n} \log n$$

$$g(n) = n \log \log n$$

$$h(n) = n(\log n)^2$$

Which of the following options is correct?

Options :

$$f(n) = O(g(n))$$

$$g(n) = O(h(n))$$

6406531514258. ✘

$$f(n) = \Omega(g(n))$$

6406531514259. ✓ $g(n) = O(h(n))$

$$g(n) = O(f(n))$$

6406531514260. ✘ $h(n) = O(f(n))$

$$h(n) = O(g(n))$$

6406531514261. ✘ $g(n) = \Omega(f(n))$

Question Number : 220 Question Id : 640653455351 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

```
1 def fun(n):
2     i = n
3     s = 1
4     while i >= 1:
5         s = s + 1
6         i = i//3
7     return s
```

Let $T(n)$ denote the time complexity for given function `fun(n)` where `n` is a positive integer.

Which of the following options is correct ?

Options :

6406531514262. ✘ $T(n) = O(n)$

6406531514263. ✘ $T(n) = O(n^{1/3})$

6406531514264. ✘ $T(n) = O(n^3)$

6406531514265. ✓ $T(n) = O(\log n)$

Question Number : 221 Question Id : 640653455357 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

A BFS traversal from a source node s in an unweighted, connected and undirected graph results in a BFS tree T . The tree T is a data structure for computing__

Options :

6406531514284. ✗ the shortest path between every pair of vertices.

6406531514285. ✗ the shortest path from S to only those nodes that are leaves of T .

6406531514286. ✓ the shortest path from S to every vertex in the graph.

6406531514287. ✗ the longest path from S to every vertex in the graph.

Question Number : 222 Question Id : 640653455358 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose, in a depth-first traversal of an undirected graph G with 15 vertices, 9 edges are marked as tree edges. The number of connected components in G is __.

Options :

6406531514288. ✗ 3

6406531514289. ✗ 4

6406531514290. ✗ 5

6406531514291. ✓ 6

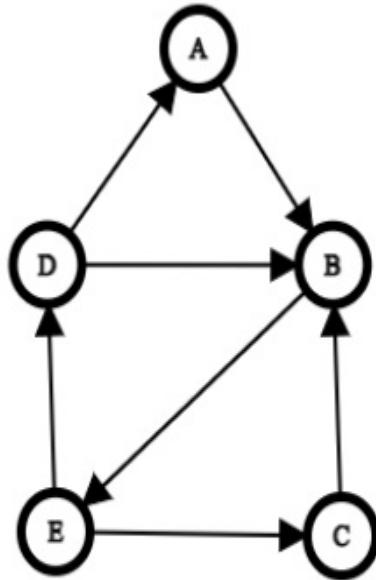
Question Number : 223 Question Id : 640653455359 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following directed graph G .



Suppose depth-first traversal is performed on the given graph G with the start vertex as E .

Suppose the number of tree edges is E_t , the number of back edges is E_b and the number of cross edges is E_c . Which of the following options is correct?

Note:- Assume that whenever there is a choice, the vertex earlier in the alphabetical order is to be chosen.

Options :

6406531514292. ✘ $E_b = 2, E_c = 1$ and $E_t = 4$

6406531514293. ✘ $E_b = 2, E_c = 2$ and $E_t = 3$

6406531514294. ✓ $E_b = 1, E_c = 2$ and $E_t = 4$

6406531514295. ✘ $E_b = 1, E_c = 3$ and $E_t = 3$

Question Number : 224 Question Id : 640653455361 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which one of the following algorithm design techniques is used in Huffman Encoding algorithm ?

Options :

6406531514300. ✓ Greedy

6406531514301. ✗ Dynamic programming

6406531514302. ✗ Divide and conquer

6406531514303. ✗ None of these

Question Number : 225 Question Id : 640653455362 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Let $G = (V, E)$ be an undirected graph having distinct positive edge weights. Let V be partitioned into two non-empty sets X and Y . Let $e = (s, t)$ be the minimum cost edge, with s belonging to X and t belonging to Y . Which of the following statement(s) is/are true?

1. There must be only one unique spanning tree with minimum weight for G .
2. The edge e must definitely belong to minimum cost spanning tree of G

Options :

6406531514304. ✗ Only 1

6406531514305. ✗ Only 2

6406531514306. ✓ Both 1 and 2

6406531514307. ✗ Neither 1 nor 2

Question Number : 226 Question Id : 640653455364 Question Type : MCQ Is Question

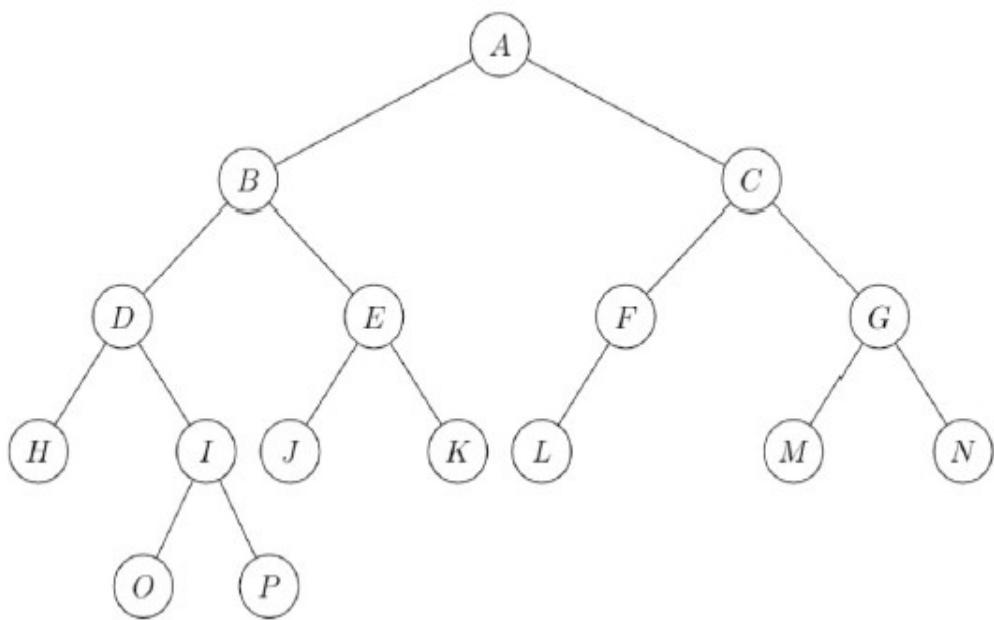
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following binary search tree. The letters indicate the names of the nodes, not the values that are stored.



Which of the following nodes is 3rd smallest node (in terms of value) in the given binary search tree?

Options :

6406531514312. ✘ B

6406531514313. ✘ I

6406531514314. ✓ O

6406531514315. ✘ P

Question Number : 227 Question Id : 640653455365 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

The maximum and the minimum number of nodes possible in a binary search tree of height 5 are ___. Consider that the height of the empty tree is 0.

Options :

6406531514316. ✘ 32 and 5, respectively

6406531514317. ✘ 32 and 4, respectively

6406531514318. ✓ 31 and 5, respectively

6406531514319. ✘ 31 and 4, respectively

Question Number : 228 Question Id : 640653455377 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following combinations of input text `T` and pattern `P` will exhibit the worst case running time behavior for the Boyer-Moore skipping heuristic?

Options :

6406531514348. ✘ `T = 'baabaabaabaab' and P = 'abba'`

6406531514349. ✓ `T = 'aaaaaaaaaaaaa' and P = 'baaa'`

6406531514350. ✘ `T = 'aaaaaaaaaaaaa' and P = 'abbb'`

6406531514351. ✘ `T = 'aaaaaaaaaaaaa' and P = 'bbba'`

Question Number : 229 Question Id : 640653455378 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

What can be the maximum depth of the Trie data structure with n strings and m as the maximum string length among all strings? Consider that root is at depth 1 and ignore terminal node `$` for depth.

Options :

6406531514352. ✘ $\log n$

6406531514353. ✘ $\log m$

6406531514354. ✘ n

6406531514355. ✓ m

Question Number : 230 Question Id : 640653455380 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following statements are true ?

1. If a $NP - hard$ problem **A**, can be polynomial time reducible to another problem **B** then **B** is a NP class problem.
2. If a $NP - hard$ problem **A**, can be polynomial time reducible to another problem **B** then **B** is a $NP - complete$ class problem.
3. There exists polynomial time checking algorithm for all P class problems.

Options :

6406531514362. ✘ Only statement 1

6406531514363. ✘ Only statement 2

6406531514364. ✓ Only statement 3

6406531514365. ✘ Statement 2 and Statement 3

6406531514366. ✘ Statement 1 and Statement 2

Sub-Section Number : 3

Sub-Section Id : 64065365863

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 231 Question Id : 640653455352 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

A list of $\log n$ sorted strings, each of length $n / \log n$, is merged together such that the lexicographic order is maintained in the final merged string. If we use the merge-sort algorithm then what is the worst case running time ?

Options :

6406531514266. ✘ $O(n)$

6406531514267. ✘ $O(n / \log n)$

6406531514268. ✘ $O(n \log n)$

6406531514269. ✓ $O(n \log \log n)$

Question Number : 232 Question Id : 640653455354 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

```
1 class Node:  
2     def __init__(self,data):  
3         self.data = data  
4         self.next = None
```

Suppose each node of the linked list is an object of class Node, `head` is the first node of the linked list and the list has the following elements:

10, 5, 7, 20, 15, 25, 30, 14, 17

```
1 def operation(head):  
2     ptr0 = head  
3     ptr1 = head  
4     ptr2 = head  
5     while (ptr2 != None and ptr2.next!= None):  
6         ptr0 = ptr1  
7         ptr1 = ptr1.next  
8         ptr2 = ptr2.next.next  
9     ptr0.next = ptr1.next
```

Which of the following element will be removed from the given linked list after calling function `operation(head)` ?

Options :

6406531514275. ✓ 15

6406531514276. ✘ 25

6406531514277. ✘ 20

6406531514278. ✘ 17

Question Number : 233 Question Id : 640653455363 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

Suppose we have a max heap `H` (implemented using list) of seven integers and we are trying to sort them using the following heapsort algorithm:

```
1 def heapsort(H):
2     n = len(H)
3     for i in range(n-1,-1,-1):
4         H[0],H[i] = H[i],H[0]
5         max_heapify(H,i,0) #convert H into max heap again
```

We have just completed some iterations of the for loop in `heapsort(H)` and the underlying list now looks like this:-

[26, 24, 25, 20, 22, 37, 39].

How many times have `max_heapify` operation been performed on root of the heap?

Options :

6406531514308. ✘ 1

6406531514309. ✓ 2

6406531514310. ✘ 3

6406531514311. ✘ 4

Question Number : 234 Question Id : 640653455373 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

An algorithm to find the length of the longest strictly increasing sequence of numbers in list $A_{0 \dots n-1}$ is given below.

1. $n = \text{length}(A)$
2. Initialize list $L_{0 \dots n-1} = 0$
3. $L_0 = 1$
4. For all i , start from index 1 to $n - 1$:
5. **Inductive structure**
6. $\text{return } \max(L)$

Note: L_j is the length of the longest strictly increasing sequences ending at A_j , where $0 \leq j \leq n - 1$

Which of the following is the correct **inductive structure** to fill at step 5 to return the correct result?

Options :

$$L_i = \begin{cases} 1 + L_{i+1}, & \text{if } A_i > A_{i+1} \\ 1, & \text{Otherwise} \end{cases}$$

6406531514338. *

$$L_i = \begin{cases} 1 + L_{i-1}, & \text{if } A_i > A_{i-1} \\ 1, & \text{Otherwise} \end{cases}$$

6406531514339. ✓

$$L_i = \begin{cases} 1 + L_{i-1}, & \text{if } A_i < A_{i-1} \\ 1, & \text{Otherwise} \end{cases}$$

6406531514340. *

$$L_i = \begin{cases} 1 + L_{i-1}, & \text{if } A_i \geq A_{i-1} \\ 1, & \text{Otherwise} \end{cases}$$

6406531514341. *

Question Number : 235 Question Id : 640653455376 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 options represents the fail function (or prefix function) for pattern '**ABABAABA**' in the Knuth-Morris-Pratt (KMP) algorithm?**Options :**

6406531514344. * [0, 1, 1, 2, 0, 1, 2, 3]

6406531514345. * [0, 0, 1, 2, 3, 0, 1, 2]

6406531514346. * [0, 1, 1, 2, 3, 1, 2, 3]

6406531514347. ✓ [0, 0, 1, 2, 3, 1, 2, 3]

Sub-Section Number : 4

Sub-Section Id : 64065365864

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 236 Question Id : 640653455353 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Suppose we are sorting a list of eight integers using quicksort, and we have just finished the first partitioning and the list looks like this:

[36, 44, 71, 12, 55, 101, 112, 183]

Suppose the first element in the list is selected as the pivot for partitioning each time. Which of the following could have been the pivot for the first partitioning?

Options :

6406531514270. ✘ 44

6406531514271. ✘ 12

6406531514272. ✘ 55

6406531514273. ✓ 101

6406531514274. ✓ 112

Question Number : 237 Question Id : 640653455356 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements is/are true about adjacency list representation and adjacency matrix representation of a graph?

Options :

6406531514280. ✓ Adjacency list representation uses less space when the graph is sparse(graph with few edges).

6406531514281. ✗ DFS and BFS can be done in $O(V+E)$ time using adjacency matrix. Here V and E are number of vertices and edges respectively.

6406531514282. ✓ Finding `outdegree` of a vertex using adjacency list is faster than using adjacency matrix.

6406531514283. ✗ Finding `indegree` of a vertex using adjacency list is faster than using adjacency matrix.

Question Number : 238 Question Id : 640653455360 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements is **true** about Dijkstra's algorithm to find the shortest path?

Options :

6406531514296. ✗ The shortest path returned by Dijkstra's algorithm always passes through the least number of vertices.

6406531514297. ✓ To decide which node to visit next, Dijkstra's algorithm selects the node with smallest known distance.

6406531514298. ✓ Dijkstra's algorithm may fail for graphs with negative weights because it does not reconsider a node once it marks it as visited even if a shorter path exists than the previous one.

6406531514299. ✗ It returns the shortest path between all pairs of nodes.

Question Number : 239 Question Id : 640653455367 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following is/are **true** about AVL Tree? Assume that the height of the empty tree is 0.

Options :

Let $s(h)$ denote the minimum number of nodes in an AVL tree of height h then:-

6406531514321. ✓ $s(h) = s(h-1) + s(h-2) + 1$, where $s(0) = 0$ and $s(1) = 1$.

In AVL tree, the absolute difference between the height of the left subtree and the height of
6406531514322. ✓ the right subtree of any node can't be more than 1.

6406531514323. ✗ If the height of an AVL tree is h , the maximum number of nodes in it will be $2^h + 1$.

6406531514324. ✗ The complexity of both insertion and deletion of a node in AVL tree is $O(n)$.

Question Number : 240 Question Id : 640653455368 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements is/are **true** about Huffman coding algorithm?

Options :

6406531514325. ✓ In an optimal Huffman tree, if leaf labelled x is at depth smaller than leaf labelled y , then **frequency(x) >= frequency(y)**

6406531514326. ✗ In an optimal Huffman tree, if leaf labelled x is at depth smaller than leaf labelled y , then **frequency(x) <= frequency(y)**

6406531514327. ✓ Huffman coding algorithm always generates prefix code.

6406531514328. ✓ Huffman coding algorithm is based on a greedy approach.

Sub-Section Number :

5

Sub-Section Id :

64065365865

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 241 Question Id : 640653455355 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

A hash table of size 15 (with index 0 to 14) using open addressing with linear probing and hash function is $h(k) = (k) \bmod 15$, where k is the key value. Initially, the table is empty. Following keys are inserted into table in given order.

36, 23, 72, 12, 45

If we insert a new key value 42 after inserting the above elements then at which index of the hash table will it get inserted?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

14

Question Number : 242 Question Id : 640653455366 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider the following tasks T1, T2, .. T9.

Task	T1	T2	T3	T4	T5	T6	T7	T8	T9
Profit	25	30	50	28	28	20	33	26	35
Deadline	7	2	5	3	4	5	2	7	3

The execution of each task requires one unit of time. We can execute one task at a time. Each task T_i has profit P_i and a deadline D_i . Profit P_i is earned if completion time of $T_i \leq \text{deadline } D_i$.

What is the maximum profit that can be made considering the above data ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

227

Question Number : 243 **Question Id :** 640653455374 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 4

Question Label : Short Answer Question

Consider the following two strings:-

`s1 = "pqrqspq"`

`s2 = "qsrpqp"`

Let `a` be the length of the longest common subsequence between `s1` and `s2` and let `b` be the number of such unique longest common subsequences between `s1` and `s2`. Then `5a + b =`_____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

23

Question Number : 244 Question Id : 640653455375 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider four matrices M_1 , M_2 , M_3 and M_4 of dimensions 10×100 , 100×20 , 20×5 , and 5×80 respectively. The minimum number of scalar multiplications required to find the product $M_1 \times M_2 \times M_3 \times M_4$ using the basic matrix multiplication method is __

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

19000

Sub-Section Number : 6

Sub-Section Id : 64065365866

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 245 Question Id : 640653455369 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Let L be an integer list of length n . The number of **inversions** is the number of the different pairs (i, j) where:

- $0 \leq i < j < n$
- $L[i] > L[j]$

The total number of inversions for $L = [12, 7, 4, 15, 2, 20]$ is __.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Sub-Section Number : 7

Sub-Section Id : 64065365867

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 246 **Question Id :** 640653455379 **Question Type :** MSQ **Is Question**

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

Correct Marks : 4 **Selectable Option :** 0

Question Label : Multiple Select Question

A manufacturing company produces two types of products: A and B. Market tests and available resources indicate that the combined production level should not exceed 1200 products per week and the demand for the product B is at most half of that for product A. Further, the production level of product A can exceed three times the production of product B by at most 600 units. The company makes profit of Rs 12 and Rs 16 per product respectively on product A and B .

The above problem is to be formulated as a linear programming problem. Let x and y be the number of product A and product B, respectively. Objective function to maximize the number of products $z = 12x + 16y$.

Which of the following are **valid** constraints for the given problem?

Options :

6406531514356. ✓ $x + y \leq 1200$

6406531514357. ✗ $2x - y \geq 0$

6406531514358. ✘ $3x - y \leq 600$

6406531514359. ✓ $x - 2y \geq 0$

6406531514360. ✓ $x - 3y \leq 600$

6406531514361. ✓ $x, y \geq 0$

Sub-Section Number : 8

Sub-Section Id : 64065365868

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455370 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 : (247 to 248)

Question Label : Comprehension

Let `A` be a non empty list of `n` integers. The function `findMaxMin(start_index, last_index,`

A) returns maximum `maxA` and minimum `minA` in list A.

```
1 def findMaxMin(start_index, last_index, A):
2     # initially start_index = 0, last_index = n-1
3     if (start_index == last_index):
4         maxA = minA = A[start_index]
5     elif (start_index == last_index - 1):
6         if (A[start_index] < A[last_index]):
7             maxA, minA = A[last_index], A[start_index]
8         else:
9             maxA, minA = A[start_index], A[last_index]
10    else:
11        mid = (start_index + last_index) // 2
12        maxL, minL = findMaxMin(start_index, mid, A)
13        maxR, minR = findMaxMin(mid + 1, last_index, A)
14        maxA = max(maxL, maxR)
15        minA = min(minL, minR)
16    return maxA, minA
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 247 Question Id : 640653455371 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

This function `findMaxMin` is an example of__

Options :

6406531514330. ✘ A greedy algorithm

6406531514331. ✘ A dynamic programming algorithm

6406531514332. ✓ A divide and conquer algorithm

6406531514333. ✘ None of these

Question Number : 248 Question Id : 640653455372 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Let $T(n)$ denote the worst case running time

for function `findMaxMin`. Which of the

following is a valid recurrence for $T(n)$?

Options :

$$T(1) = T(2) = 1$$

$$\text{For } n > 2, T(n) = 2T(n/2) + O(1)$$

6406531514334. ✓

$$T(1) = T(2) = 1$$

$$\text{For } n > 2, T(n) = 2T(n/2) + O(n)$$

6406531514335. ✗

$$T(1) = T(2) = 1$$

$$\text{For } n > 2, T(n) = T(n/2) + O(1)$$

6406531514336. ✗

$$T(1) = T(2) = 1$$

$$\text{For } n > 2, T(n) = T(n/2) + O(n)$$

6406531514337. ✗

DBMS

Section Id : 64065329439

Section Number : 9

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 25

Number of Questions to be attempted : 25

Section Marks : 50

Display Number Panel : Yes

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 :	64065365869
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 249 Question Id : 640653455381 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 "DIPLOMA LEVEL: DATABASE MANAGEMENT SYSTEMS"

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

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

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

Options :

6406531514367. ✓ Yes

6406531514368. ✗ No

Sub-Section Number :	2
Sub-Section Id :	64065365870
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 250 Question Id : 640653455382 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

The RAID-1 is implemented using four disks. How much space is being utilized effectively?

[Note: Each disk has a size of 1 Terabyte]

Options :

6406531514369. ❌ 25%

6406531514370. ✓ 50%

6406531514371. ❌ 75%

6406531514372. ❌ 100%

Question Number : 251 Question Id : 640653455384 Question Type : MCQ Is Question

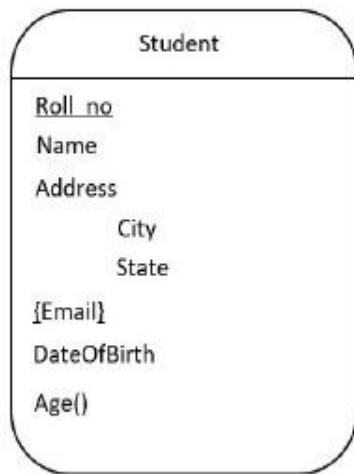
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

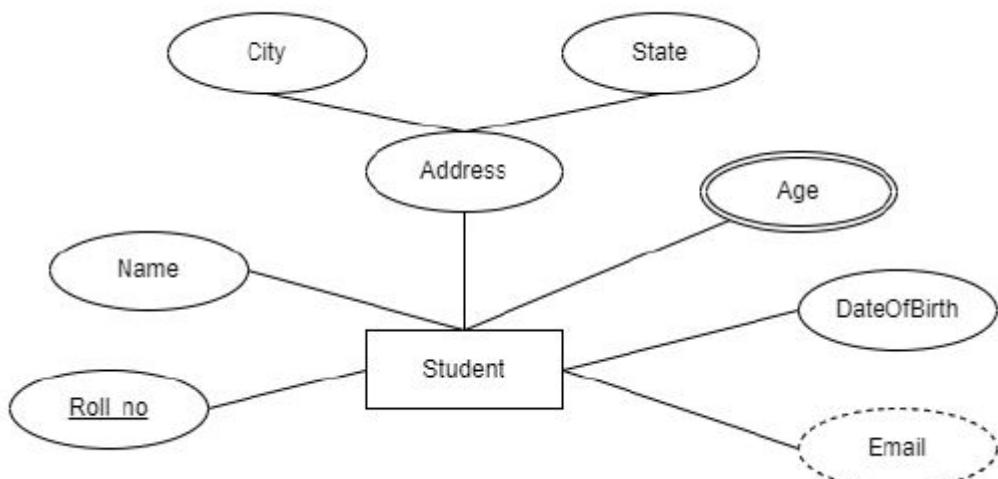
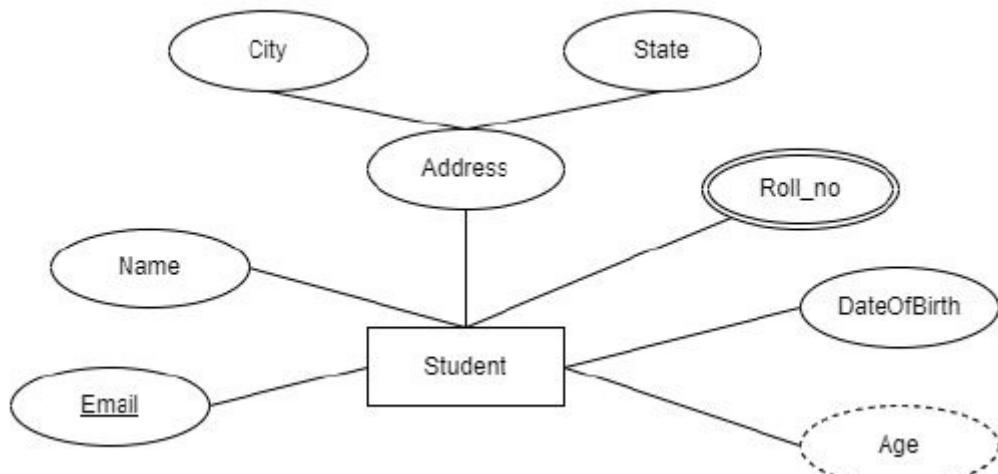
Consider the following entity relationship notation with complex attributes .



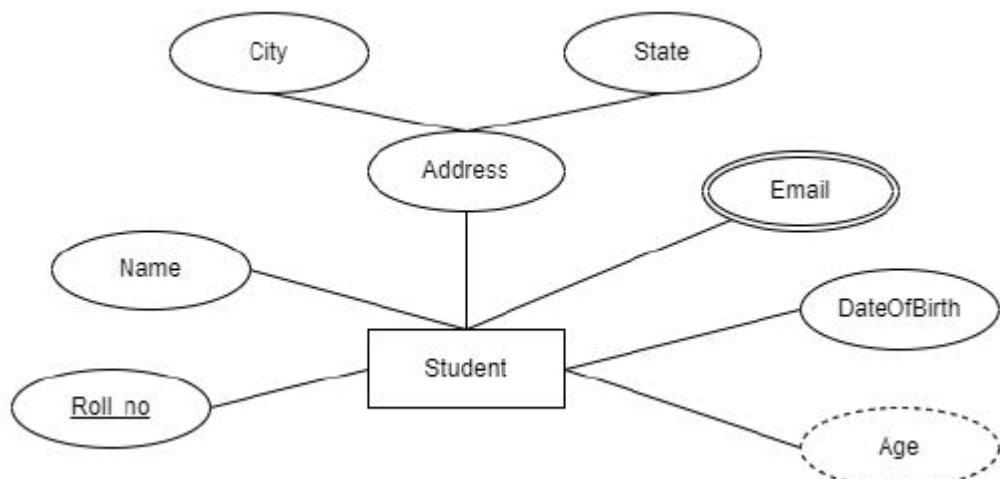
Which of the following entity relationship diagrams is correct?

Options :

6406531514377. ❌

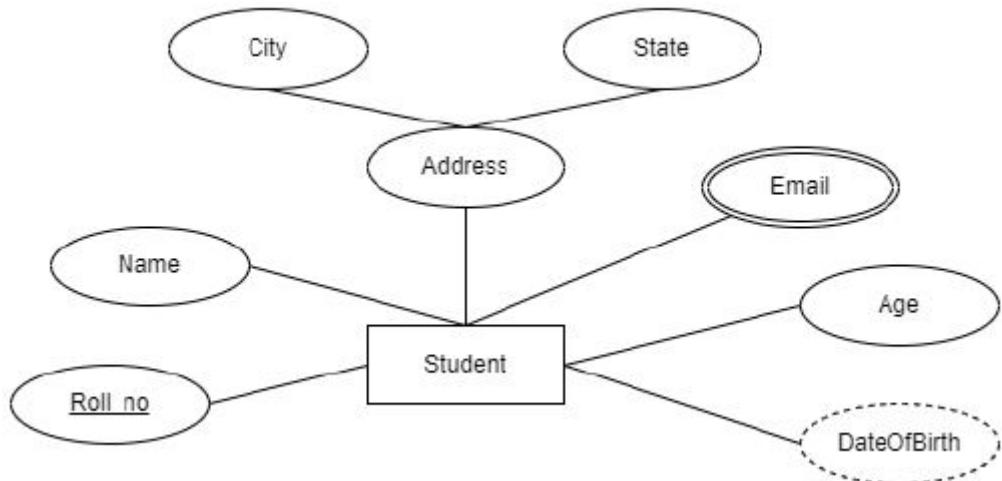


6406531514378. ✘



6406531514379. ✓

6406531514380. ✘



Question Number : 252 Question Id : 640653455394 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

In RAID, what is A and I stands for?

Options :

6406531514410. ❌ A: Allocation, I: Independent

6406531514411. ❌ A: Allocation, I: Isolation

6406531514412. ✓ A: Array, I: Independent

6406531514413. ❌ A: Array, I: Isolation

Question Number : 253 Question Id : 640653455396 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Consider the relational algebra expression given below:

$$\Pi_{id}(\Pi_{id, name}(\Pi_{id, dept_name, name}(instructor)))$$

Choose the equivalent relational algebra expression.

Options :

6406531514418. ✘ $\Pi_{name}(\Pi_{dept_name}(\Pi_{name}(instructor)))$

6406531514419. ✘ $\Pi_{dept_name}(instructor)$

6406531514420. ✓ $\Pi_{id}(instructor)$

6406531514421. ✘ $\Pi_{name}(instructor)$

Question Number : 254 Question Id : 640653455406 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Consider a transaction in which 100 is debited from account **A** and credited to account **B**. Which among the following ACID properties ensure that the database executes the transaction completely or if a crash occurs in between it does not execute at all?

Options :

6406531514452. ✓ Atomicity

6406531514453. ✘ Consistency

6406531514454. ✘ Isolation

6406531514455. ✘ Durability

Sub-Section Number : 3

Sub-Section Id : 64065365871

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 255 Question Id : 640653455383 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Execute the following SQL statements in the given order.

1. CREATE TABLE employee(eid int primary key, ename varchar(8) NOT NULL, department varchar(20) CHECK(department in('CSE', 'CE', 'EE', 'IT')))
2. INSERT INTO employee VALUES ('1', 'Ebram', 'CE'), ('3', 'Alice', 'IT')
3. INSERT INTO employee (department, ename, eid) VALUES ('CSE', 'Jaye', 4)
4. INSERT INTO employee (eid, ename) VALUES ('5', 'Peekay')
5. INSERT INTO employee (eid, department) VALUES (6, 'IT')
6. INSERT INTO employee VALUES (7, 'Katherine', 'CSE')
7. INSERT INTO employee VALUES (8, 'Maria', 'ECE')
8. INSERT INTO employee VALUES (2, 'Kaine', 'EE')

What will be the output of the below SQL query?

```
SELECT ename FROM employee WHERE ename IS NOT NULL;
```

Options :

ename
Jaye
Peekay
Kaine

6406531514373. *

ename
Ebram
Jaye
Peekay
Maria
Kaine

6406531514374. *

ename
Ebram
Alice
Jaye
Peekay
Kaine

6406531514375. ✓

ename
Ebram
Alice
Jaye
Peekay
Katherine
Maria
Kaine

6406531514376. *

Question Number : 256 Question Id : 640653455399 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the following schedule S as given below:

$$S : R2(A), W2(A), W1(B), W2(C), W1(A), W3(A)$$

According to the timestamp protocol, if the timestamps for transactions T1, T2 and T3 are 12, 2, and 7 respectively, then choose the correct option.

Options :

6406531514427. * No transaction needs Roll Back.

6406531514428. ✓ Transaction T3 needs to Roll Back.

6406531514429. * Transaction T2 needs to Roll Back.

6406531514430. * Transaction T1 needs to Roll Back.

Question Number : 257 Question Id : 640653455405 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Consider a disk with a sector size of 512 bytes, 1000 tracks per surface, 60 sectors per track and 4 double-sided platters. Find out the capacity of one surface of the platter.

[Note: 1KB = 1024 bytes]

Options :

6406531514448. ✘ 3,07,20,000 KB

6406531514449. ✘ 30 KB

6406531514450. ✓ 30,000 KB

6406531514451. ✘ 90,000 KB

Question Number : 258 Question Id : 640653455407 Question Type : MCQ Is Question**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction****Time : 0****Correct Marks : 2**

Question Label : Multiple Choice Question

Consider the table Student as shown in figure 3.

roll_no	sname	department
1	Stevie	Mechanical
2	Rohn	Civil Engg
3	Tania	Physics
4	Henry	Zoology
5	Steward	Mathematics

Figure 3: Table Student

Which among the following SQL statements will result in the output shown below?

roll_no	sname	department
1	Stevie	Mechanical
3	Tania	Physics
4	Henry	Geography
5	Steward	Mathematics

Options :

6406531514456. ✘

```
SQL> SAVEPOINT SP1
SQL> UPDATE Student SET department = 'Geography' WHERE roll_no = 4
SQL> SAVEPOINT SP2
SQL> DELETE FROM Student WHERE roll_no = 3
SQL> SAVEPOINT SP3
SQL> DELETE FROM Student WHERE roll_no = 4
SQL> ROLLBACK SP1
```

```
SQL> SAVEPOINT SP1
SQL> UPDATE Student SET department = 'Geography' WHERE roll_no = 4
SQL> SAVEPOINT SP2
SQL> DELETE FROM Student WHERE roll_no = 3
SQL> SAVEPOINT SP3
SQL> DELETE FROM Student WHERE roll_no = 2
SQL> ROLLBACK SP2
```

6406531514457. ❌

```
SQL> SAVEPOINT SP1
SQL> UPDATE Student SET department = 'Geography' WHERE roll_no = 4
SQL> SAVEPOINT SP2
SQL> DELETE FROM Student WHERE roll_no = 2
SQL> SAVEPOINT SP3
SQL> DELETE FROM Student WHERE roll_no = 3
SQL> ROLLBACK SP3
```

6406531514458. ✓

```
SQL> SAVEPOINT SP1
SQL> UPDATE Student SET department = 'Geography' WHERE roll_no = 4
SQL> SAVEPOINT SP2
SQL> DELETE FROM Student WHERE roll_no = 2
SQL> ROLLBACK SP2
```

6406531514459. ❌

Sub-Section Number :

4

Sub-Section Id :

64065365872

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 259 Question Id : 640653455385 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Insert the key values in the following order into an empty 3 order B tree: 50, 21, 92, 52, 27, 63, 97, 9, 76, 4. The resultant B tree must contain which of the following key values for non-leaf nodes?

Options :

6406531514381. ✘ 21, 50, 63

6406531514382. ✓ 21, 50, 63, 89

6406531514383. ✘ 4, 21, 50, 63

6406531514384. ✘ 4, 9, 27, 52, 76, 92, 97

Question Number : 260 Question Id : 640653455401 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the relational schema $R(A, B, C, D, E)$ and the following set of functional dependencies.

$$\mathcal{F} = \{B \rightarrow A, AB \rightarrow C, D \rightarrow BC, DE \rightarrow AB\}$$

Which of the following functional dependency sets is equivalent to the given set of functional dependencies?

Options :

6406531514432. ✘ $\mathcal{F} = \{B \rightarrow A, B \rightarrow C, D \rightarrow A\}$

6406531514433. ✘ $\mathcal{F} = \{B \rightarrow A, B \rightarrow C, D \rightarrow A, E \rightarrow A\}$

6406531514434. ✘ $\mathcal{F} = \{B \rightarrow A, D \rightarrow C, DE \rightarrow C\}$

6406531514435. ✓ $\mathcal{F} = \{B \rightarrow A, B \rightarrow C, D \rightarrow B, DE \rightarrow A\}$

Question Number : 261 Question Id : 640653455402 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following relational schemas.

customer(cid, *cname*, *age*)

product(pid, *pname*, *price*)

order(oid, cid, pid)

1. Find the age of the customer who have ordered the product whose price is more than 10000.
2. Find the name of the customer and the order id of the order placed by the customers having age more than 25 and have ordered the product named as 'Cereals'.

TRC and DRC expressions

- a. $\{p \mid \exists c \in \text{customer} \exists p \in \text{product} \exists o \in \text{order}(p.\text{price} > 10000 \wedge c.\text{cid} = o.\text{cid} \wedge p.\text{pid} = o.\text{pid})\}$
- b. $\{\langle c \rangle \mid \exists a, b, c(\langle a, b, c \rangle \in \text{customer}) \wedge \exists d, e, f(\langle d, e, f \rangle \in \text{product} \wedge f > 10000) \wedge \exists g, h, i(\langle g, h, i \rangle \in \text{order} \wedge a = h \wedge d = i)\}$
- c. $\{t \mid \exists c \in \text{customer} \exists p \in \text{product} \exists o \in \text{order}(c.\text{age} > 25 \wedge p.\text{pname} = \text{'Cereals'} \wedge c.\text{cid} = o.\text{cid} \wedge p.\text{pid} = o.\text{pid})\}$
- d. $\{t \mid \exists c \in \text{customer} \exists p \in \text{product} \exists o \in \text{order}(t.\text{cname} = c.\text{cname} \wedge t.\text{oid} = o.\text{oid} \wedge c.\text{age} > 25 \wedge p.\text{pname} = \text{'Cereals'} \wedge c.\text{cid} = o.\text{cid} \wedge p.\text{pid} = o.\text{pid})\}$
- e. $\{\langle b, g \rangle \mid \exists a, b, c(\langle a, b, c \rangle \in \text{customer} \wedge c < 25) \wedge \exists d, e, f(\langle d, e, f \rangle \in \text{product} \vee e = \text{'Cereals'}) \wedge \exists g, h, i(\langle g, h, i \rangle \in \text{order} \wedge a = h \wedge d = i)\}$

Match the above statements with their equivalent TRC or DRC expressions.

Options :

6406531514436. ✘ 1-a, 2-c

6406531514437. ✘ 1-b, 2-c

6406531514438. ✘ 1-a, 2-e

6406531514439. ✓ 1-b, 2-d

Sub-Section Number :

5

Sub-Section Id :

64065365873

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 262 Question Id : 640653455386 Question Type : MSQ Is Question

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

Correct Marks : 1 Selectable Option : 0

Question Label : Multiple Select Question

Consider the following relation $\text{School}(\text{studentName}, \text{Class}, \text{classTeacher})$ with the following functional dependencies: (Note: Domain of the attributes are atomic.)

$$\begin{aligned}\mathcal{F} = \{ & \text{classTeacher} \rightarrow \text{class}, \\ & (\text{studentName}, \text{class}) \rightarrow \text{classTeacher} \\ \} \end{aligned}$$

Which of the following option(s) is/are correct about the relation **School**?

Options :

6406531514385. ✓ Relation is in 2NF as well as in 3NF.

6406531514386. ✗ Relation is in 2NF but not in 3NF.

6406531514387. ✗ Relation is in 3NF as well as in BCNF.

6406531514388. ✓ Relation is in 3NF but not in BCNF.

Question Number : 263 Question Id : 640653455403 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 1 Selectable Option : 0

Question Label : Multiple Select Question

Consider a relation $R(P, Q, R, S, T, U)$ with the following functional dependencies:

$$\mathcal{F} = \{PQ \rightarrow R, S \rightarrow P, RS \rightarrow T, PR \rightarrow UT, TS \rightarrow Q\}$$

Which among the following option(s) is/are the candidate key(s)?

Options :

6406531514440. ✓ RS

6406531514441. ✓ QS

6406531514442. ✗ PS

6406531514443. ✗ RU

Sub-Section Number :	6
Sub-Section Id :	64065365874
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 264 Question Id : 640653455395 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Consider a block nested-loop join for the two relation students and takes:

Relation	students	takes
Number of tuples(n)	3000	2500
Number of blocks(b)	600	800

Assuming the worst-case memory availability and considering **takes** as the outer relation,
Which of the following options is/are correct?

Options :

6406531514414. ❌ Number of block transfer require=420600

6406531514415. ✓ Number of block transfer require=480800

6406531514416. ❌ Number of seeks require=1200

6406531514417. ✓ Number of seeks require=1600

Question Number : 265 Question Id : 640653455404 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Consider the instance of the relation **customer** given in Figure 2.

c_no	cname	address	branch_name
204	Kendall	Austin	Austin ICICI bank
108	John	Seattle	Queens SBI bank
103	Joshua	Denver	California Axis bank
108	John	Boston	Stockholm ICICI bank
241	Andrew	Seattle	California Axis bank
294	Simon	Austin	Austin SBI bank
108	Amber	Boston	Stockholm ICICI bank
108	Amber	Seattle	Queens SBI bank

Figure 2: An instance of relation **customer**

Which among the following multivalued dependencies does this instance **customer** satisfy?

Options :

6406531514444. ❌ $cname \rightarrow\rightarrow address$

6406531514445. ✓ $c_no \rightarrow\rightarrow cname$

6406531514446. ❌ $c_no \rightarrow\rightarrow cname, branch_name$

6406531514447. ❌ $c_no \rightarrow\rightarrow cname, address$

Sub-Section Number : 7

Sub-Section Id : 64065365875

Question Shuffling Allowed : Yes

Is Section Default? : null

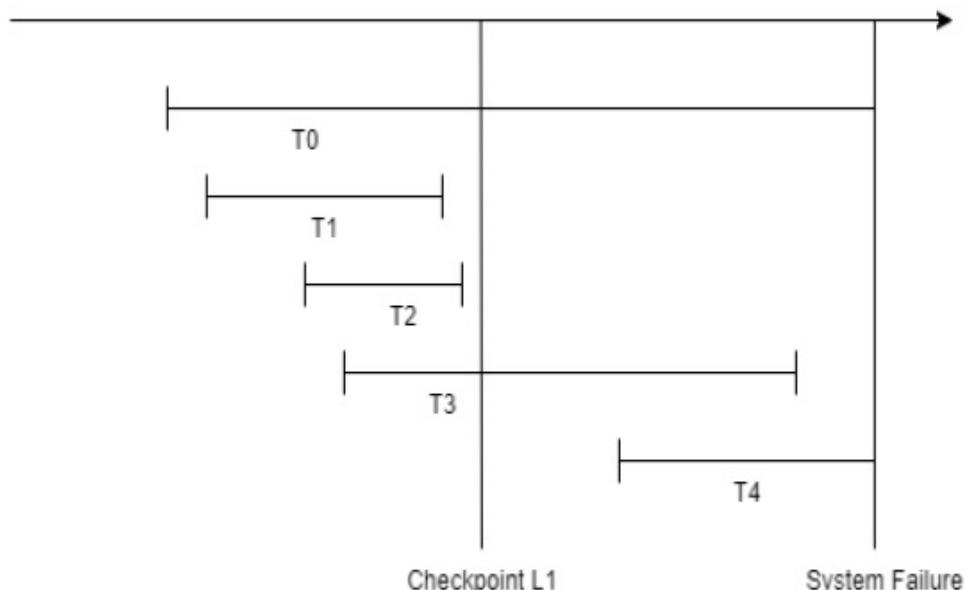
Question Number : 266 Question Id : 640653455387 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Consider the timeline of the transitions of the Immediate Database Modifications:



Which of the following option(s) is/ are correct?

Options :

6406531514389. ✓ T0 and T4 need to be undone.

6406531514390. ✓ T1 and T2 can be ignored.

6406531514391. ✗ T1, T2 and T3 can be ignored.

6406531514392. ✓ T3 need to be redone.

Question Number : 267 Question Id : 640653455392 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Consider the relational schema R as:

R(A, B, C, D, E, F, G, H), where the domains of all the attributes consist of atomic values. Consider the following FDs for the relation R.

- $A \rightarrow D$,
- $D \rightarrow EF$,
- $BH \rightarrow CG$,
- $G \rightarrow H$

The relation R is decomposed as follow:

R1(D, E, F), R2(A, D), R3(G, H), R4(B, C, G) and R5(.....)

Choose the correct relation that can be added as R5, so that decomposition of R must be lossless and in BCNF.

Options :

6406531514405. ✘ (A, C, G, H)

6406531514406. ✘ (A, B, C)

6406531514407. ✓ (A, B, G)

6406531514408. ✘ (A, B, G, H)

Question Number : 268 Question Id : 640653455397 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Consider the following schedules:

S1:W3(A), R2(A), W2(A), W3(B), W3(C), W1(C)
S2:W1(A), W3(A), W3(C), W2(A), W1(B), W3(B)

Which of the following options is/are correct?

Options :

6406531514422. ✓ Schedule S1 is conflict serializable.

6406531514423. ✓ Schedule S1 can be two phase lockable.

6406531514424. ✓ Schedule S2 is conflict serializable.

6406531514425. ✘ Schedule S2 can be two phase lockable.

Sub-Section Number :

Sub-Section Id : 64065365876

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 269 Question Id : 640653455393 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Consider the given backup schedule, and answer the question.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Incremental	Incremental	-----	Incremental	Incremental	Full	Incremental

Assume on Wednesday 'Incremental Backup' is done. In this scenario how many minimum backup sets have to be loaded for a complete recovery if the system failure occurs after Saturday's backup is completed?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 270 Question Id : 640653455398 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Consider a Binary Search Tree(BST) consists of 32 elements. What is the maximum possible height of the given BST?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

31

Question Number : 271 Question Id : 640653455400 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Consider a relation Books(*isbn_no, title, publication*). The attribute *publication* consists of 8 distinct values. A bitmap index is created on the attribute *publication*, the size of the bitmap index file is 800 bytes. Find the number of tuples in the Books relation.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

800

Sub-Section Number : 9

Sub-Section Id : 64065365877

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 272 Question Id : 640653455408 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Consider a multilevel index, where the outermost level must be kept in a single disk block. In each block, 10 entries can be accommodated. There are 2000 blocks at the innermost level (first-level index). How many blocks has to be accessed to access a record from the data file by searching the

multilevel index?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sub-Section Number : 10

Sub-Section Id : 64065365878

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455388 **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 : (273 to 275)

Question Label : Comprehension

Consider the relational schema as shown in figure 1 and answer the given subquestions

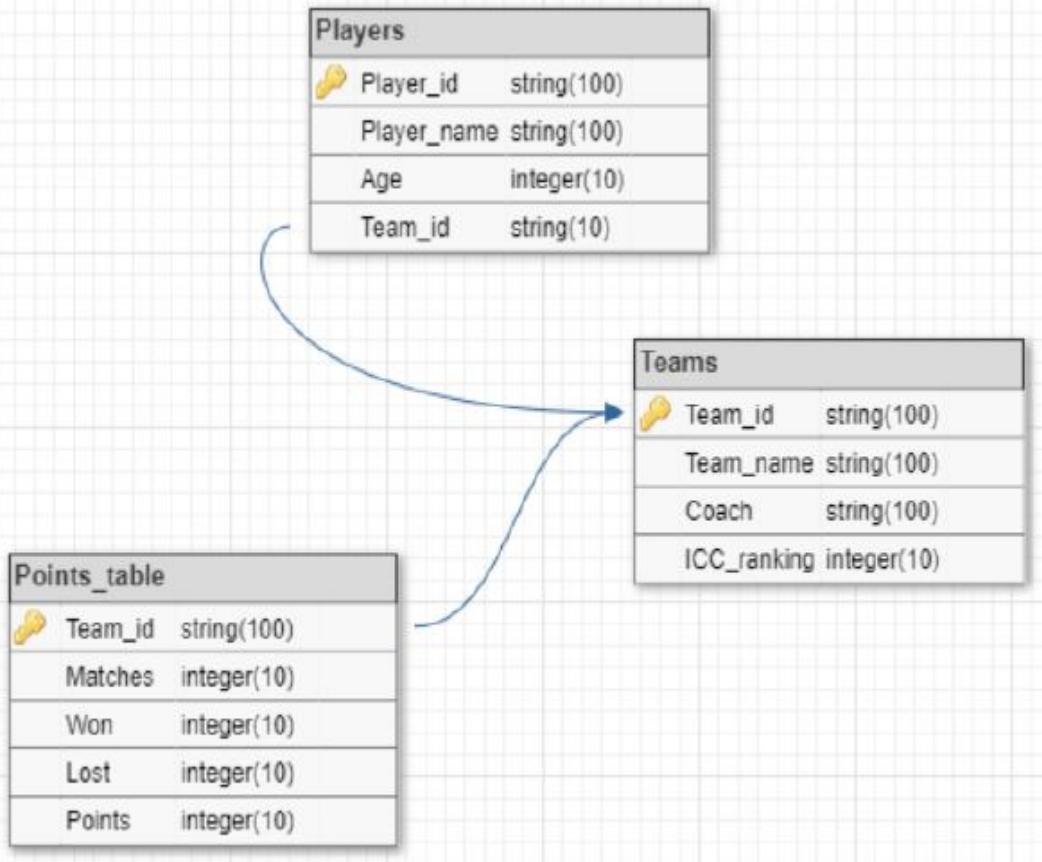


Figure 1: ICC T20 WC

Sub questions

Question Number : 273 Question Id : 640653455389 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

If Players table has 50 rows and Teams table has 10 rows, then what is the maximum number of rows returned by the following query?

(Note: All the attributes are having NOT NULL constraint)

```
Select DISTINCT(Player_id) from Players p
inner join Teams t on t.Team_id != p.Team_id
```

Choose the correct option.

Options :

6406531514393. ✓ 50

6406531514394. ✘ 500

6406531514395. ✘ 0

6406531514396. ✘ 10

Question Number : 274 Question Id : 640653455390 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Suppose the **ON DELETE CASCADE** constraint is not applied between the tables and we want to delete the record of team id 'T004' from **Teams**, then choose the correct sequence of SQL query shown below, to be executed in order to remove the records of Team id 'T004'.

- a . Delete from Teams where Team_id = 'T004'
- b . Delete from Players where Team_id = 'T004'
- c . Delete from Points_table where Team_id = 'T004'

Choose the correct option(s)

Options :

6406531514397. ✘ a → b → c

6406531514398. ✘ b → a → c

6406531514399. ✓ b → c → a

6406531514400. ✘ c → a → b

Question Number : 275 Question Id : 640653455391 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct SQL query to create a view **top_team** which contains *Team_id* and *Team_name* of the teams having more than 8 points.

Choose the correct option.

Options :

6406531514401. ✓
CREATE VIEW top_team AS
Select T.Team_id, T.Team_name from Points_table P Natural Join Teams T
where P.Points > 8

6406531514402. ✗
CREATE VIEW AS top_team
Select T.Team_id, T.Team_name from Points_table P Cross Join Teams T
where P.Points > 8

6406531514403. ✗
CREATE VIEW
Select T.Team_id, T.Team_name from Points_table P Natural Join Teams T
where P.Points > 8 as top_team

6406531514404. ✗
CREATE VIEW top_team AS
Select T.Team_id, T.Team_name from Points_table P Cross Join Teams T
where P.Points > 8

Business Analytics

Section Id :	64065329440
Section Number :	10
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No

Enable Mark as Answered Mark for Review and

Yes

Clear Response :

Maximum Instruction Time :

0

Sub-Section Number :

1

Sub-Section Id :

64065365879

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Number : 276 Question Id : 640653455409 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 "DIPLOMA LEVEL:BUSINESS ANALYTICS"

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

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

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

Options :

6406531514461. ✓ Yes

6406531514462. ✗ No

Sub-Section Number :

2

Sub-Section Id :

64065365880

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 277 Question Id : 640653455410 Question Type : MSQ Is Question

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

Correct Marks : 1 Selectable Option : 0

Question Label : Multiple Select Question

Select which of the following are continuous data?

Options :

6406531514463. ❌ Number of courses you are crediting in this IIT Madras BSc program

6406531514464. ✓ Average weight of your batch in this BSc program

6406531514465. ✓ Average marks in Business Analytics, of your batch in this BSc program

6406531514466. ❌ Number of people in your batch in this BSc program having body weight more than 50Kg.

Question Number : 278 Question Id : 640653455445 Question Type : MSQ Is Question

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

Correct Marks : 1 Selectable Option : 0

Question Label : Multiple Select Question

What is the meaning of a Price Elasticity of |-2|?

Options :

6406531514539. ❌ 20% reduction in price will yield a 10% increase in sales

6406531514540. ✓ 10% reduction in price will yield a 20% decrease in sales

6406531514541. ❌ 50% increase in price will yield 25% increase in sales

6406531514542. ✓ 25% increase in price will yield 50% decrease in sales

Sub-Section Number : 3

Sub-Section Id : 64065365881

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 279 Question Id : 640653455411 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

You are given a data of size 1000, which is centred at 50 and has a variance of 25. The median, mode, max and min values are 60, 22, 75 and 1 respectively. Then

Options :

6406531514467. ✘ The data is right-tailed

6406531514468. ✓ The data is left-tailed

6406531514469. ✘ The data is symmetric

6406531514470. ✘ Cannot say

Question Number : 280 Question Id : 640653455423 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Logistic Regression is an unsupervised learning technique.

Options :

6406531514493. ✘ TRUE

6406531514494. ✓ FALSE

Question Number : 281 Question Id : 640653455430 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

From the Table given below, what is the number of True Negatives for Class C?

		Predicted Class		
		A	B	C
Actual Class	A	100	0	10
	B	10	80	10
	C	30	0	70

Options :

6406531514500. ✓ 190

6406531514501. ✗ 90

6406531514502. ✗ 120

6406531514503. ✗ 210

Question Number : 282 Question Id : 640653455439 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

The object of the conjoint analysis problem will be _____?

Options :

6406531514525. ✗ Minimize the squared distance between the attribute combination for the ideal product and the customer preferences

6406531514526. ✓ Minimize the squared distance between the attribute combination for the ideal product and the attribute combination for each possible variant chosen by the customers

6406531514527. ✗ Minimize the distance between the possible customer preferences

6406531514528. ✗ Minimize the distance between the attribute combination for the ideal product and the customer preferences

Sub-Section Number : 4

Sub-Section Id : 64065365882

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455412 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 : (283 to 285)

Question Label : Comprehension

You are solving a regression problem with 4 explanatory variables. The data has 40 observations, and the R-square value was found to be 0.74. Then answer the given subquestions.

Sub questions

Question Number : 283 Question Id : 640653455413 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What is the value of adjusted R-square (Round off to two decimal values)?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.70 to 0.73

Question Number : 284 Question Id : 640653455414 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

You are adding a new explanatory variable to the dataset and the new R squared value is 0.742 and adjusted R squared value is 0.745. Is the new variable significant.?

Options :

6406531514472. ✘ Yes

6406531514473. ✘ No

6406531514474. ✓ Calculation error. Adj R Squared value cannot be greater than R squared

Question Number : 285 Question Id : 640653455415 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

You are removing a few explanatory variables from the dataset and the new adjusted R square value is -0.21. Is it possible?

Options :

6406531514475. ✓ Yes. Adjusted R squared value can be negative

6406531514476. ✗ No. Calculation error

6406531514477. ✗ None of these

Sub-Section Number : 5

Sub-Section Id : 64065365883

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455416 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 : (286 to 288)

Question Label : Comprehension

You are given the following contingency table based on a sample data of movie goers who either bought snacks or did not buy snacks and their movie genre preferences. You perform a chi-squared test of independence to make inferences about the population from this sample. Then answer the given subquestions

	Action	Comedy	Drama	Sci-Fi
Snacks	139	142	154	181
No Snacks	98	97	90	92

Sub questions

Question Number : 286 Question Id : 640653455417 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

From the given contingency table, find the expected frequency of people preferring Drama who did not buy snacks?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

89 to 95

Question Number : 287 **Question Id :** 640653455418 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 2

Question Label : Short Answer Question

What is the calculated value of chi-squared?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1.2 to 7

Question Number : 288 **Question Id :** 640653455419 **Question Type :** MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

At the significance level 0.01, chi-squared tabular value is 11.34. What do you conclude?

Options :

6406531514480. ❌ Reject the null hypothesis and conclude that the categorical variables are not independent

6406531514481. ❌ Fail to reject the null hypothesis and conclude that the categorical variables are not independent

6406531514482. ✓ Fail to reject the null hypothesis and conclude that the categorical variables are independent

6406531514483. ❌ Reject the null hypothesis and conclude that the categorical variables are independent

Question Id : 640653455440 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 : (289 to 291)

Question Label : Comprehension

The BSc Team wanted to see if the live sessions are getting a uniform response throughout any given term. Accordingly, the BA course was taken as a pilot and the total number of students who participated in the live sessions over the past three terms was obtained (data in table below).

Given this information, answer the subquestions

Term	Total Number of Participants across Live Sessions
Jan-2022	14
May-2022	14
Sep-2022	12

Sub questions

Question Number : 289 Question Id : 640653455441 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

What statistical test needs to be carried out to see if the attendance is uniform across the terms?

Options :

6406531514529. ✓ Chi-squared Goodness of Fit Test

6406531514530. ✎ Chi-Squared Test of Independence

6406531514531. ✎ Chi-Square Test of variance

6406531514532. ✎ Test of Means (Z or T tests)

Question Number : 290 Question Id : 640653455442 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What is the value of the computed test statistic (Round your answer to one decimal place)?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

13.0 to 13.2

Question Number : 291 Question Id : 640653455443 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

If the attendance is indeed uniformly distributed, then how many participants will you expect to see across live sessions in any given term? (round your answer to two decimal places)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

13.33 to 13.34

Sub-Section Number :	6
Sub-Section Id :	64065365884
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 292 Question Id : 640653455420 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Suppose a factory manufactures products on three machines A, B and C. Suppose 45% of total output comes from machine A, 40% of total output comes from machine B and 15% of total output comes from machine C. From the past data, it is known that 10% of products by machine A are defectives, 20% of products by machine B are defectives and 15% of products by machine C are defectives. What is the probability that the product has come from machine C given that it is a defective?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.12 to 0.18

Sub-Section Number :	7
Sub-Section Id :	64065365885
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 293 Question Id : 640653455421 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following data will you use to calculate price elasticity?

Options :

6406531514485. ❌ Protein-powder sales increases by 10% when the national income grows by 15%.

6406531514486. ❌ Tea sales increases by 10% when daily average working hours of employees goes up by 2 hrs .

6406531514487. ✓ Paneer (Indian Cottage Cheese) sales go down by 10% when price goes up from Rs.100 to Rs.120 per 200 gram.

6406531514488. ❌ All of these

Question Number : 294 Question Id : 640653455431 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

What is the productive efficiency frontier?

Options :

6406531514504. ❌ It is an aspect of economic efficiency focussing on maximizing the output under given constraints (without worrying about optimal allocation, or choice of products).

6406531514505. ❌ Effective usage of technology for allocating resources optimally

6406531514506. ✓ Consists of all combinations of outputs such that the production of one product cannot be increased without sacrificing the output of the other (without any change in technology)

Question Number : 295 Question Id : 640653455433 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

In DEA, for calculating the weights of efficiency (weighted outputs/weighted inputs), when can the

Linear Programming model can be used?

Options :

- 6406531514511. ❌ After converting the ratio into the linear objective function
- 6406531514512. ❌ After normalizing the denominator
- 6406531514513. ❌ By setting a constraint on the efficiency of all DMUs to be lesser than or equal to 1
- 6406531514514. ✓ All of these

Question Number : 296 Question Id : 640653455434 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Let Y_{jk} be the weight of the output O_{jk} and X_{jk} be the weight of the input I_{jk} . Which of the following is the correct objective function of the DEA if we solve it as LP?

Options :

- 6406531514515. ❌ $\text{Min } Y_{jk} * I_{jk}$
- 6406531514516. ✓ $\text{Max } Y_{jk} * O_{jk}$
- 6406531514517. ❌ $\text{Min } Y_{jk} * O_{jk}$
- 6406531514518. ❌ $\text{Max } - (Y_{jk} * I_{jk})$

Question Number : 297 Question Id : 640653455444 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

A hypothesis was tested at 5% significance level and $p\text{-value}$ turned out to be 0.054. What will be your correct decision?

Options :

- 6406531514535. ❌ Reject the null hypothesis
- 6406531514536. ✓ Fail to reject the null hypothesis

6406531514537. ✘ Sufficient evidence to accept the null hypothesis

6406531514538. ✘ both Fail to reject the null hypothesis and Sufficient evidence to accept the null hypothesis are correct

Sub-Section Number : 8

Sub-Section Id : 64065365886

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 298 Question Id : 640653455422 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

What is the meaning of an Elasticity of 2?

Options :

6406531514489. ✓ 10% reduction in price will yield a 20% increase in sales

6406531514490. ✘ 10% reduction in price will yield a 20% decrease in sales

6406531514491. ✘ 25% increase in price will yield 50% increase in sales

6406531514492. ✓ 25% increase in price will yield 50% decrease in sales

Question Number : 299 Question Id : 640653455432 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

There are 7 business units and you are using the DEA to compare them. You solve the LP for business unit 5. You find from the constraint expression that business unit 6 has obtained an efficiency of 1 and business unit 7 has obtained an efficiency of 1 with the optimal weights of business unit 5. Which of the following statements is correct?

Options :

6406531514507. ✘ Business unit 6 may be inefficient

6406531514508. ✓ Business unit 6 will be efficient

6406531514509. ✗ Business unit 7 may be inefficient

6406531514510. ✓ Business unit 7 will be efficient

Sub-Section Number : 9

Sub-Section Id : 64065365887

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455424 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 : (300 to 304)

Question Label : Comprehension

Using the data given in Table 1, answer the given subquestions

Table 1

Classification confusion matrix		
	Predicted Class	
Actual Class	1	0
1	187	19
0	63	31

Sub questions

Question Number : 300 Question Id : 640653455425 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What is the Precision for predicting 0's ? (enter your value in percentage without the percentage symbol, rounded to two decimal places. Eg: If your answer is 0.12345, enter the answer as "12.3")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.61 to 0.63

Question Number : 301 **Question Id :** 640653455426 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 2

Question Label : Short Answer Question

What is the Recall for predicting 0's ? (enter your value in percentage without the percentage symbol, rounded to two decimal places. Eg: If your answer is 0.12345, enter the answer as "12.3")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.31 to 0.35

Question Number : 302 **Question Id :** 640653455427 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 2

Question Label : Short Answer Question

What is the accuracy of the predictor? (enter your value in percentage without the percentage symbol, rounded to two decimal places. Eg: If your answer is 0.12345, enter the answer as "12.3"]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.71 to 0.74

Question Number : 303 **Question Id :** 640653455428 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 1

Question Label : Short Answer Question

How many False Positives is the model predicting?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

63

Question Number : 304 **Question Id :** 640653455429 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 1

Question Label : Short Answer Question

How many True Negatives is the model predicting?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

31

Sub-Section Id : 64065365888

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455435 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 : (305 to 307)

Question Label : Comprehension

A manufacturer is going to make a product, and he is exploring possible variants (V1, V2, V3, V4, V5) to it. The variants of the products are determined by 3 attributes (A1, A2, A3). The variant-wise attribute scores are presented in the Table 1. The pair-wise preferences data based on the consumer's evaluation is going to be collected. Using this information, answer the given subquestions.

Variant Attribute	V1	V2	V3	V4	V5
A1	2	1	3	5	6
A2	3	2	2	4	2
A3	2	4	5	4	3

Table-1

Sub questions

Question Number : 305 Question Id : 640653455436 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

What type of Conjoint Analysis is performed here?

Options :

6406531514519. ✓ Choice-Based Conjoint Analysis

6406531514520. ✗ Adaptive Conjoint Analysis

6406531514521. ✗ Full-profile Conjoint Analysis

Question Number : 306 Question Id : 640653455437 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

How many pairs (for comparisons) will be generated in this problem?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

15

Question Number : 307 Question Id : 640653455438 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Then what is the size of the set of options on which the preference judgements are made?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Section Id :	64065329441
Section Number :	11
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	29
Number of Questions to be attempted :	29
Section Marks :	100
Display Number Panel :	Yes
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 :	64065365889
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 308 Question Id : 640653455446 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 "DIPLOMA LEVEL: MODERN APPLICATION DEVELOPMENT 2"

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 :

6406531514543. ✓ Yes

6406531514544. ✘ No

Sub-Section Number :	2
Sub-Section Id :	64065365890
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 309 Question Id : 640653455454 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the below Vue component and Vuex store definition.

```
const store = new Vuex.Store({
  state : {
    stateA : 10,
    stateB : 20,
    stateC : 30,
  }
}

Vue.component('Vuex-demo', {
  template : `
    <div>
      state A : {{stateA}}
      state B : {{stateB}}
      state C : {{stateC}}
    </div>
  `,
  computed : code
})
```

Which of the following is the best suitable definition of the “code” placeholder in the above app (assuming the store is binded with the Vue app, and the mapState is imported appropriately)?

Options :

6406531514573. ✓ ...mapState(['state_1', 'state_2', 'state_3'])

6406531514574. ❌ mapState(['state_1', 'state_2', 'state_3'])

6406531514575. ❌ Both ...mapState(['state_1', 'state_2', 'state_3']) and mapState(['state_1', 'state_2', 'state_3'])

6406531514576. ❌ A Vue component cannot access Vuex store state.

Question Number : 310 Question Id : 640653455456 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Suppose you are writing an application to be used by lakhs of people, which will run a brute force algorithm and gives back the result to the user of the application when ready. Considering this context, arrange the below set of actions/operations to achieve a desirable and practical design.

I. Invoke the webhook

II. Relieve the worker

III. Dispatch a backend job

Options :

6406531514581. ❌ I, III, II

6406531514582. ✓ III, I, II

6406531514583. ❌ I, II, III

6406531514584. ❌ The polling will be a better design.

Question Number : 311 Question Id : 640653455457 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following statements is false regarding caching?

Options :

6406531514585. ✓ A shared cache is generally suitable for storing the personalized responses.

6406531514586. ✘ A private cache is usually tied to a specific client.

6406531514587. ✘ The caching helps in improving the performance of a web application.

6406531514588. ✘ Caching at browser level provides the least latency, if compared with proxy level.

Question Number : 312 Question Id : 640653455462 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Suppose you want to store some data on the client, which has to be sent back to the server with every subsequent request. Which of the following is the most suited for this purpose?

Options :

6406531514605. ✘ Local Storage

6406531514606. ✘ Session Storage

6406531514607. ✓ Cookie

6406531514608. ✘ Any of these can be used

Question Number : 313 Question Id : 640653455464 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Suppose an application is being loaded from the origin <http://origin2.com>. Which of the following origins the browser will allow while making a fetch call, by default?

Options :

6406531514613. ✓ <http://origin2.com>

6406531514614. ✘ <http://api.origin2.com>

6406531514615. ✘ <http://origin1.com/api/>

6406531514616. ✘ All of these

Sub-Section Id : 64065365891

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 314 Question Id : 640653455448 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following shows the correct output, if the below program is executed?

```
for (let i=1; i<4; i+=2)
  setTimeout(() => console.log(i), 0)
```

Options :

6406531514549. ✓ 1

3

6406531514550. ✗ 1

2

3

6406531514551. ✗ 5

5

6406531514552. ✗ 5

5

5

Question Number : 315 Question Id : 640653455451 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

If an application is entirely built on the client end using javascript (without a database). Which of

the following statements is true?

Options :

6406531514561. ❌ All the progress will always be lost on the force reload of the page.
6406531514562. ✓ All the progress may not necessarily be lost on the force reload of the page.
6406531514563. ❌ The application will not allow force reload of the page.
6406531514564. ❌ The progress made in a machine can be accessed on another machine.

Question Number : 316 Question Id : 640653455466 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose a particular user of an application hosted on <http://example1.com> has delete privilege and URL to delete resource with ID 1 is '<http://example1.com/delete?id=1>'. The user visits a malicious website having an image link with definition "<img src='<http://example1.com/delete?id=1>' />", and the user clicks on the link, which in turn leads to the deletion of the resource without the knowledge of the user. Which of the following correctly describes the above scenario?

Options :

6406531514621. ❌ Cross Site Scripting
6406531514622. ✓ Cross Site Request Forgery
6406531514623. ❌ Session Hijacking
6406531514624. ❌ None of these

Question Number : 317 Question Id : 640653455467 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following javascript program. What will be logged on to console after executing the program?

```
const promiseFactory = (data) => {
  return new Promise((resolve) => {
    resolve(data)
  })
}

result = []
p1 = promiseFactory('App Dev I')
p1.then((data) => {
  result.push(data)
  return promiseFactory('App Dev II')
}).then((data) => {
  result.push(data)
})
console.log(result)
```

Options :

6406531514625. ✓ []

6406531514626. ✗ ['App Dev I', 'App Dev II']

6406531514627. ✗ ['App Dev II', 'App Dev I']

6406531514628. ✗ ['App Dev I']

Question Number : 318 Question Id : 640653455468 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following javascript code. What will be logged on the console after executing this program?

```
const Person = function (name, city, pinCode) {  
    this.name = name  
    this.city = city  
    this.pin = pinCode  
}  
  
Person.prototype.getAddress = function () {  
    return `Name: ${this.name}, City: ${this.city}, ${this.pin}`  
}  
  
per1 = new Person('Mayank', 'Delhi', '110001')  
console.log(per1.getAddress())
```

Options :

6406531514629. ✘ Name: , City: , Pin:

6406531514630. ✘ Name: Mayank, City: Delhi, Pin: 110001

6406531514631. ✓ Name: Mayank, City: Delhi, 110001

6406531514632. ✘ None of these

Question Number : 319 Question Id : 640653455469 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following javascript program. What will be logged on to console after executing this program?

```

const promiseFactory = (isShopOpen) => {
  return new Promise((resolve, reject) => {
    setTimeout(() => {
      if (isShopOpen) {
        resolve('Making Coffee')
      } else {
        reject('Making Tea')
      }
    }, 1000)
  })
}

const bringTea = promiseFactory(false)
bringTea
  .then((data) => {
    console.log(data)
  })
  .catch((data) => {
    console.log(data)
  })
console.log('Boiling Water ....')

```

Options :

6406531514633. ✘ Boiling Water

6406531514634. ✘ Boiling Water

Making Coffee

6406531514635. ✓ Boiling Water

Making Tea

6406531514636. ✘ Making Coffee

Boiling Water

Question Number : 320 Question Id : 640653455473 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Vue application with markup “index.html” and javascript file “app.js”.

index.html:

```
<head>
  <style>
    .booked {
      background-color: green;
    }
  </style>
</head>
<body>
  <div id="app">
    <button :class="{booked:seat.isBooked}" v-for="seat in seats">
      {{seat.seatNo}}
    </button>
  </div>
  <script src="https://cdn.jsdelivr.net/npm/vue@2/dist/vue.js"></script>
  <script src="app.js"></script>
</body>
```

app.js:

```
new Vue({
  el: '#app',
  data: {
    seats: [
      { seatNo: 1, isBooked: true },
      { seatNo: 2, isBooked: false },
      { seatNo: 3, isBooked: true },
    ],
  },
})
```

Suppose the application is running on '<http://localhost:8080>'. What will be the background colour of seat with seatNo 1 and 2 respectively, when the user visits the home page of the application (Assume the default background colour of button to be white)?

Options :

6406531514645. ❌ Green, Green

6406531514646. ✓ Green, White

6406531514647. ❌ White, White

6406531514648. ❌ White, Green

Sub-Section Number :	4
Sub-Section Id :	64065365892
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 321 Question Id : 640653455450 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following javascript program, and predict the output, if executed in a REPL environment.

```
var a = 39
const obj1 = {
  'a' : 50,
  'func' : function () {
    let in_func = () => console.log("This :", this.a, ", Normal :", a)
    in_func();
  }
}

const obj2 = {
  'a' : 60,
  'func' : function () {
    let in_func = () => console.log("This :", this.a, ", Normal :", a)
    in_func();
  }
}

obj1.func.call()
```

Options :

6406531514557. ✓ This : 39 , Normal : 39

6406531514558. ✗ This : undefined , Normal : 39

6406531514559. ✗ This : undefined , Normal : 50

6406531514560. ✗ This : 39 , Normal : 50

Question Number : 322 Question Id : 640653455452 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the below javascript program, and predict the output, if executed. Also, what will be the minimum time taken by the program to execute?

```
exams = ['endterm', 'quiz2', 'quiz1']

new Promise((rej, res) => {
  let count = 2
  let a = setInterval(() => {
    count += 3;
    exams.pop();
    if (count % 2) {
      exams.push('quiz1')
    }
    if (count % 17 == 0) {
      clearInterval(a);
      rej();
    }
  }, 2000)
}).then(d => console.log("Rejected", exams))
.catch(e => console.log("Resolved", exams))
```

Options :

6406531514565. ✓ Rejected ['quiz1']

Minimum Time taken: 10 seconds

6406531514566. ✗ Rejected ['quiz1']

Minimum Time taken: 8 seconds

6406531514567. ✗ Resolved ['quiz1']

Minimum Time taken: 8 seconds

6406531514568. ✗ Resolved ['quiz1']

Minimum Time taken: 10 seconds

Question Number : 323 Question Id : 640653455453 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following Vue application with markup “index.html” and javascript file “app.js”.

index.html:

```
<div id = "app">
    <input v-model = "subject" @change = "compute_marks">
    <p> {{marks}} </p>
</div>
<script scr = "app.js"></script>
```

app.js:

```
new Vue({
    el : "#app",
    data : {
        subject : "AppDev",
        marks : 50,
    },
    mounted () {
        this.subject = "AppDev";
        this.marks = 50;

        if (localStorage.marks) {
            this.subject += "1";
            this.marks = localStorage.marks + 20;
        }
        else {
            this.subject += "2";
            this.marks += 20;
        }
    },
    methods : {
        compute_marks() {
            localStorage.setItem("subject", this.subject);
            localStorage.setItem("marks", this.marks + 10);
        }
    }
})
```

Suppose you open “index.html” file in a browser, and type the text “EndTermExam” in the text box

shown (after removing the previous text, if any), and hard refresh the page thrice, without clicking anywhere. What will be the value shown in the text box, and the “marks” placeholder, respectively?

Options :

6406531514569. ❌ AppDev1, 80

6406531514570. ❌ AppDev2, 80

6406531514571. ❌ AppDev1, 70

6406531514572. ✓ AppDev2, 70

Question Number : 324 Question Id : 640653455460 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following Vue application with markup “index.html” and javascript file “app.js”.

index.html:

```
<body>
  <div id="app">
    <h4 id="total">Total Run: {{total}}</h4>
    <h4 id="player">{{Player.name}}: {{Player.run}}</h4>
    <button @click="extra=true">Extra</button>
    <button @click="addRuns(4)">Run</button>
  </div>
  <script
src="https://cdn.jsdelivr.net/npm/vue@2.7.8/dist/vue.js"></script>
  <script src="app.js"></script>
</body>
```

app.js:

```
new Vue({
  el: '#app',
  data: {
    extra: false,
    total: 20,
    Player: { name: 'M.S. Dhoni', run: 10 }
  },
  methods: {
    addRuns(run) {
      if (this.extra === true) {
        this.Player.run += run
      }
      this.total += run
      this.extra = false
    },
  },
})
```

Suppose the application is running on '<http://localhost:8080>'. If the user clicks on the button with the text "Extra", and then clicks on the button with the text "Run" thrice. What will be rendered inside the element with ID "total" and "player", respectively?

Options :

6406531514597. ✓ Total Run: 32, M.S. Dhoni: 14

6406531514598. ✗ Total Run: 28, M.S. Dhoni: 14

6406531514599. ✖ Total Run: 32, M.S. Dhoni: 18

6406531514600. ✖ Total Run: 28, M.S. Dhoni: 18

Question Number : 325 Question Id : 640653455461 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following javascript program, and predict the output if executed.

```
new Promise((arg1, arg2) => {
    if (5 === "5") arg2(5)
    else arg1(5)
}).
then(d => {
    console.log("Checkpoint 3", d);
    throw new Error(20);
    return d * 5;
})
.then(d => {
    console.log("Checkpoint 1", d);
    return d;
})
.catch(e => {
    console.log("Checkpoint 4");
    return 5;
}).finally(d => {
    console.log("Checkpoint 6", d);
    return d * 5;
}).then(d => {
    console.log("Checkpoint 2", d);
    return d * 5;
})
```

Options :

6406531514601. ✖ Checkpoint 4 11

Checkpoint 6 undefined

Checkpoint 2 25

6406531514602. ✖ Checkpoint 4 11

Checkpoint 6 25

Checkpoint 2 125

6406531514603. ✓ Checkpoint 3 5

Checkpoint 4

Checkpoint 6 undefined

Checkpoint 2 5

6406531514604. ✗ Checkpoint 3 5

Checkpoint 4

Checkpoint 6 NaN

Checkpoint 2 5

Sub-Section Number : 5

Sub-Section Id : 64065365893

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 326 Question Id : 640653455455 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are false in the context of point-to-point communication and message broker?

Options :

6406531514577. ✓ In point-to-point communication, the number of connections grow with the order of O(nlogn).

6406531514578. ✓ If a central message broker is used, the number of connections grow with the order of O(logn).

6406531514579. ✗ If a central message broker is used, the number of connections grow with the order of O(n).

6406531514580. ✗ A message broker makes the network more scalable, if compared with point-to-point communication.

Question Number : 327 Question Id : 640653455459 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are false?

Options :

6406531514593. ❌ The CSRF protection is not enforced by the flask framework, by default.

6406531514594. ✓ The data stored in local storage is synchronized across the devices for a given user.

6406531514595. ✓ A flask application returns CORS headers for cross domain javascript requests, by default.

6406531514596. ❌ The flask application uses port number 5000, by default.

Question Number : 328 Question Id : 640653455465 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following is/are true regarding session cookies?

Options :

6406531514617. ✓ They get deleted once the user closes the browser.

6406531514618. ✓ They will be sent to the origin server with each request, by default.

6406531514619. ❌ They will not be sent to the origin server with each request, by default.

6406531514620. ❌ All of these

Sub-Section Number : 6

Sub-Section Id : 64065365894

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 329 Question Id : 640653455447 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are false regarding javascript language?

Options :

6406531514545. ❌ JavaScript is a high level programming language.

6406531514546. ✓ JavaScript moves the declaration of all the arrow functions to the top of their scope.

6406531514547. ✓ The language does not allow the global declaration of user defined functions.

6406531514548. ❌ A function can be invoked inside another function in the language.

Question Number : 330 Question Id : 640653455449 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Consider the below Vue class binding and select the incorrect option(s).

```
<div v-bind:class="[isClassA ? classA : '', classB]"></div>
```

Options :

6406531514553. ✓ The classes, namely “classA” and “classB” will always be applied to the div element.

6406531514554. ❌ The class, namely “classB” will always be applied to the div element.

6406531514555. ❌ The class, namely “classA” will only be applied to the div element, if the variable “isClassA” evaluates to true.

6406531514556. ✓ The class, namely “classB” will only be applied to the div element, if no variable with name “isClassA” exists.

Question Number : 331 Question Id : 640653455458 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are true in the context of scaling a web application?

Options :

6406531514589. ❌ Scaling out is always a preferred choice when the network traffic is growing.

6406531514590. ✓ The horizontal scaling will typically clone the application as many times as required, and add a load balancer to maintain uniform traffic across the servers.

6406531514591. ✓ The horizontal partitioning splits a given table into multiple tables, with each table having the same structure.

6406531514592. ❌ The diagonal scaling refers to cloning the application first, and then scaling up the different servers to meet the requirements.

Question Number : 332 Question Id : 640653455463 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are true?

Options :

6406531514609. ✓ A flask application runs in a threaded mode by default.

6406531514610. ✓ A fetch API call always returns a promise.

6406531514611. ❌ The promise returned by fetch API resolves to an HTTP response status 500, with the "ok" property of the response set to true.

6406531514612. ❌ A headless CMS aims to manage both the content and frontend via APIs.

Sub-Section Number : 7

Sub-Section Id : 64065365895

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455474 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 : (333 to 334)

Question Label : Comprehension

Consider the following application with markup “index.html” and javascript file “app.js”, and answer the given subquestions.

index.html:

```
<body>
  <div id="app">
    <book-slot :currentslot="slot" @book="book"></book-slot>
  </div>
  <script src="https://cdn.jsdelivr.net/npm/vue@2/dist/vue.js"></script>
  <script src="app.js"></script>
</body>
```

app.js:

```
const bookSlot = {
  template: `<div id='slot-detail'>
    Slot ID: {{currentslot.id}},
    Slot Status: {{currentslot.status?'Booked':'Not Booked'}}</div>
    <button @click="$emit('book')"> Book </button>
  </div>`,
  props: ['currentslot'],
}

new Vue({
  el: '#app',
  data: {
    slot: { id: 1, status: false },
  },
  methods: {
    book() {
      this.slot.status = !this.slot.status
    },
  },
  components: {
    'book-slot': bookSlot,
  },
})
```

Sub questions

Question Number : 333 Question Id : 640653455475 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose the application is running on '<http://localhost:8080>'. What will be rendered by the browser inside the div element with ID 'slot-detail', when the user visits the website home page for the first time (except the button)?

Options :

6406531514649. ✘ Slot ID: 1, Slot Status: Booked

6406531514650. ✓ Slot ID: 1, Slot Status: Not Booked

6406531514651. ✘ Slot ID: 1

6406531514652. ✘ Slot Status: Booked

Question Number : 334 Question Id : 640653455476 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose the application is running on '<http://localhost:8080>'. What will be rendered by the browser inside the div element with ID 'slot-detail', when user clicks on the button with the text 'Book' 3 times (except the button)?

Options :

6406531514653. ✓ Slot ID: 1, Slot Status: Booked

6406531514654. ✘ Slot ID: 1, Slot Status: Not Booked

6406531514655. ✘ Slot ID: 1

6406531514656. ✘ Slot Status: Booked

Question Id : 640653455480 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 : (335 to 336)

Question Label : Comprehension

Consider the following application with markup “index.html” and javascript file “app.js”, and answer the given subquestions.

index.html:

```
<body>
  <div id="app">
    <router-view />
  </div>
  <script src="https://cdn.jsdelivr.net/npm/vue@2/dist/vue.js"></script>
  <script
src="https://unpkg.com/vue-router@3.0.0/dist/vue-router.js"></script>
  <script src="app.js"></script>
</body>
```

app.js:

```
const Booking = {
  template: `<div><div> Slot Booking </div><router-view /></div>` ,
}

const Error = { template: `<div> Page not Found </div>` }

const Booked = { template: `<div> Unbooked Slots </div>` }

const unBooked = { template: `<div> Booked Slots </div>` }

const router = new VueRouter({
  routes: [
    {
      path: '/',
      component: Booking,
      children: [
        { path: 'booked', component: Booked },
        { path: 'unbooked', component: unBooked },
        { path: '*', component: Error },
      ],
    },
  ],
})

new Vue({
  el: '#app',
  router,
})
```

Sub questions

Question Number : 335 Question Id : 640653455481 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose the application is running on '<http://localhost:8080>'. What will be rendered inside the 'router-view' of Booking component when user visits the URL '[http://127.0.0.1:8080/#/?](http://127.0.0.1:8080/#/)'?

Options :

6406531514665. ✓ Page not Found

6406531514666. ✗ Booked Slots

6406531514667. ✗ Unbooked Slots

6406531514668. ✗ None of these

Question Number : 336 Question Id : 640653455482 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

What will be rendered inside the 'router-view' of Booking component when user visits the URL '<http://127.0.0.1:8080/#/unbooked>'?

Options :

6406531514669. ✗ Page not Found

6406531514670. ✓ Booked Slots

6406531514671. ✗ Unbooked Slots

6406531514672. ✗ None of these

Sub-Section Number : 8

Sub-Section Id : 64065365896

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455470 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 : (337 to 338)

Question Label : Comprehension

Consider the following application with markup “index.html” and javascript file “app.js”, and answer the given subquestions.

index.html:

```
<body>
  <div id="app">
    <div id="sort">
      <li v-for="slot in recent">{{slot.date.getDate()}}</li>
    </div>
    <div id="status">
      <li v-for="slot in booked">{{slot.id}}</li>
    </div>
  </div>
  <script src="https://cdn.jsdelivr.net/npm/vue@2/dist/vue.js"></script>
  <script src="app.js"></script>
</body>
```

app.js :

```
new Vue({
  el: '#app',
  data: {
    slots: [
      { id: 1, date: new Date('December 19'), status: true },
      { id: 2, date: new Date('December 17'), status: false },
    ],
  },
  computed: {
    recent() {
      return this.slots.sort((b, a) => {
        return b.date - a.date
      })
    },
    booked() {
      return this.slots.filter((slot) => {
        return slot.status
      })
    },
  },
})
```

Sub questions

Question Number : 337 Question Id : 640653455471 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Suppose the application is running on '<http://localhost:8080>', and a user visits the same URL. What will be rendered inside the div element having ID 'sort'?

Options :

6406531514637. ✘ 19

17

6406531514638. ✘ 19

6406531514639. ✘ 17

6406531514640. ✓ 17

19

Question Number : 338 Question Id : 640653455472 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose the application is running on '<http://localhost:8080>', and a user visits the same URL. What will be rendered inside the div element having ID "status"?

Options :

6406531514641. ✘ 1

2

6406531514642. ✓ 1

6406531514643. ✘ 2

6406531514644. ✘ None of these

Sub-Section Number : 9

Sub-Section Id : 64065365897

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455477 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 : (339 to 340)

Question Label : Comprehension

Consider the following application with markup “index.html” and javascript file “app.js”, and answer the given subquestions.

index.html:

```
<body>
  <div id="app">
    <router-view />
  </div>
  <script src="https://cdn.jsdelivr.net/npm/vue@2/dist/vue.js"></script>
  <script
src="https://unpkg.com/vue-router@3.0.0/dist/vue-router.js"></script>
  <script src="app.js"></script>
</body>
```

app.js:

```
const Home = { template: `<div> Welcome Home</div>` }
const slotComp = {
  template: `<div>
    <ol>
      <li v-for='slot in availableSlots'> {{slot.description}} </li>
    </ol>
  </div>`,
  data() {
    return {
      slots: [
        { id: 1, description: 'Slot1', status: 'true' },
        { id: 2, description: 'Slot2', status: 'true' },
        { id: 3, description: 'Slot3', status: 'false' },
      ],
    }
  },
  computed: {
    availableSlots() {
      const slots = this.slots.filter((slot) => {
        return (
          slot.status == this.$route.params.status &&
          slot.id >
            (this.$route.query.offset ? parseInt(this.$route.query.offset) :
0)
        )
      })
      return slots
    },
  },
}
const router = new VueRouter({
  routes: [
    { path: '/', component: Home },
    { path: '/slot/:status', component: slotComp },
  ],
})
new Vue({
  el: '#app',
  router,
})
```

Sub questions

Question Number : 339 Question Id : 640653455478 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the application is running on 'http://localhost:8080'. Suppose the user visits the URL '<http://127.0.0.1:8080/#/slot/true>'. What will be rendered by the browser inside the "router-view"?

Options :

6406531514657. ✓ 1. Slot1

2. Slot2

6406531514658. ✗ 1. Slot2

2. Slot3

6406531514659. ✗ 1. Slot1

6406531514660. ✗ 1. Slot2

Question Number : 340 Question Id : 640653455479 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Suppose the user visits the URL '<http://127.0.0.1:8080/#/slot/true?offset=1>', what will be rendered inside the 'router-view'?

Options :

6406531514661. ✗ 1. Slot1

2. Slot2

6406531514662. ✗ 1. Slot2

2. Slot3

6406531514663. ✗ 1. Slot1

6406531514664. ✓ 1. Slot2

MLF

Section Id :	64065329442
Section Number :	12
Section type :	Online

Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	50
Display Number Panel :	Yes
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 :	64065365898
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 341 Question Id : 640653455483 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 "DIPLOMA LEVEL: MACHINE LEARNING FOUNDATIONS"

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

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

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

Options :

6406531514673. ✓ YES

6406531514674. ✗ NO

Sub-Section Number :

2

Sub-Section Id : 64065365899

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 342 Question Id : 640653455484 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

For the data sets $(x^i, y^i) = [(1, 0), (2, 2), (3, 4), (4, 5), (5, 5)]$, $i = 1$ to 5 , Consider the regression model $f(x) = x$. What is the mean squared loss of $f(x)$. (Enter answer correct to one decimal place)?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.6

Question Number : 343 Question Id : 640653455486 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Does the limit for the following function exist at x tends to zero?

$$f(x) = \sin \frac{1}{x}, x \neq 0$$

(Provide 1 as answer for 'Yes' and 0 for 'No'.)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 344 **Question Id :** 640653455498 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 2

Question Label : Short Answer Question

For a rectangle whose perimeter is 20 m, use the Lagrange multiplier method to find the dimensions that will maximize the area. What is the value of $\frac{2 \times \text{Length}}{\text{Breadth}}$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 345 **Question Id :** 640653455502 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 2

Question Label : Short Answer Question

The heights (in cm) of a randomly selected learner of IITM are normally distributed with unknown mean μ and standard deviation σ . A random sample of 15 learners gave the following heights.

109, 143, 133, 160, 106, 152, 177, 161, 142, 124, 152, 148, 138, 129, 180

Based on the available information, find the maximum likelihood estimator of μ , the mean height of the learners. Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

142 to 146

Sub-Section Number : 3

Sub-Section Id : 64065365900

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 346 **Question Id :** 640653455485 **Question Type :** MSQ **Is Question**

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

Correct Marks : 3 **Selectable Option :** 0

Question Label : Multiple Select Question

Which of the following statements are true ?

Options :

6406531514676. ✓ If a function f is continuous at a , then $|f|$ is also continuous at a

6406531514677. ✗ If f is a continuous function at $x = a$ and g is a continuous function at $f(a)$ then $g \circ f$ is not a continuous function at a

6406531514678. ✓ If functions f and g be continuous at a , then $f + g$ is continuous at a

6406531514679. ✓ If functions f and g be continuous at a , then $f \cdot g$ is continuous at a

Question Number : 347 **Question Id :** 640653455488 **Question Type :** MSQ **Is Question**

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

Correct Marks : 3 **Selectable Option :** 0

Question Label : Multiple Select Question

Which of the following statements is/are false?

Options :

6406531514682. ✓ A 3×3 matrix can have same column space and null space.
6406531514683. ✗ A 6×6 matrix can have same column space and null space.
6406531514684. ✗ Dimension of column space is always equal to the dimension of row space
6406531514685. ✓ Column space and row space of a matrix are the same.

Question Number : 348 Question Id : 640653455489 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements is/are false?

Options :

6406531514686. ✓ Rank of a $n \times n$ Hermitian matrix is always equal to n .
6406531514687. ✗ Rank of a $n \times n$ unitary matrix is always equal to n .
6406531514688. ✗ If A is a Hermitian matrix, then A^T is Hermitian.
6406531514689. ✓ Zero can be one of the eigenvalues of a unitary matrix.

Question Number : 349 Question Id : 640653455497 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following is true about the function $f(x) = x^2 + y^2 + 2xy$?

Options :

6406531514711. ✓ It is Convex function.

6406531514712. ❌ Its Hessian matrix is indefinite.

6406531514713. ✓ (0, 0) is a local minima of this function.

6406531514714. ❌ (0, 0) is a local maxima of this function.

Sub-Section Number : 4

Sub-Section Id : 64065365901

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 350 Question Id : 640653455487 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

What is the maximum possible nullity of the 4×4 orthogonal matrix?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number : 5

Sub-Section Id : 64065365902

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 351 Question Id : 640653455496 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What is value of the function $f(x) = x_1^3 + x_2^3 + x_3^3 - x_1x_2 - x_2x_3 - x_1x_3$ with an initial guess of $(1, 1, 1)$ and a step size of 0.5 after one iteration using gradient descent? Enter the value up to two decimal points accuracy.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

-0.39 to -0.36

Question Number : 352 **Question Id :** 640653455499 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 3

Question Label : Short Answer Question

While solving for the optimal weight vector (w) for a linear regression problem

using gradient descent, we have $y = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ and $X = \begin{bmatrix} 0 & 1 \\ 1 & 1 \\ 1 & 2 \end{bmatrix}$. $w^t = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$ after t iterations.

If the value of $w^{t+1} = \begin{bmatrix} i \\ j \end{bmatrix}$ in next iteration using gradient descent method, then what is the absolute value of $|i + j|$? Assume $\eta = 1$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 7

Question Number : 353 **Question Id :** 640653455501 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 3

Question Label : Short Answer Question

Let X be a uniformly continuous random variable on $[0, 100]$. Pick a real number from $[0, 100]$, call this number ' a '. A number will then drawn from X . The cost incurred in playing this game is as follows:

$$\text{Cost} = \begin{cases} 2(a - x), & \text{if } x \leq a \\ x - a, & \text{if } x > a \end{cases}$$

What number should you pick to minimize the expected cost? Enter the answer correct to two decimal places.

Response Type : Numeric**Evaluation Required For SA : Yes****Show Word Count : Yes****Answers Type : Range****Text Areas : PlainText****Possible Answers :****33 to 34****Sub-Section Number :** 6**Sub-Section Id :** 64065365903**Question Shuffling Allowed :** Yes**Is Section Default? :** null**Question Number : 354 Question Id : 640653455490 Question Type : MCQ Is Question****Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction****Time : 0****Correct Marks : 2****Question Label : Multiple Choice Question**

For what value of k , the function $f(x) = kx_1^2 + x_2^2 - kx_1x_2$ is positive semi-definite?

Options :

6406531514690. ✘ 0

6406531514691. ✘ 1

6406531514692. ✓ 4

6406531514693. ✘ 2

Question Number : 355 Question Id : 640653455503 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

If $X \sim \text{Poisson}(\lambda)$, then the upper bound for $P(X \geq k)$ where $a > 0$ using Markov's inequality is

Options :

6406531514723. ✘ λk

6406531514724. ✓ $\frac{\lambda}{k}$

6406531514725. ✘ $\frac{1}{\lambda k}$

6406531514726. ✘ $\frac{1}{\lambda}$

Sub-Section Number : 7

Sub-Section Id : 64065365904

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 356 Question Id : 640653455491 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Let f be a function of three variables. The eigenvalues of Hessian of f are 2, 4, 1. Then what does f give ?

Options :

6406531514694. ✓ Minima.

6406531514695. ✗ Maxima.

6406531514696. ✗ Saddle.

6406531514697. ✗ It can be either maxima or minima.

Question Number : 357 Question Id : 640653455500 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Using Karush-Kuhn-Tucker conditions, solve the following problem.

maximize $f(x, y) = xy$

subject to $x + y^2 \leq 2$, $x, y \geq 0$

The global maximum is at

Options :

6406531514717. ✗ $(\frac{2}{3}, \frac{4}{3})$

6406531514718. ✗ $(\frac{4}{3}, \sqrt{\frac{1}{2}})$

6406531514719. ✗ $(\frac{2}{3}, \frac{1}{3})$

6406531514720. ✓ $(\frac{4}{3}, \sqrt{\frac{2}{3}})$

Sub-Section Number : 8

Sub-Section Id : 64065365905

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 358 Question Id : 640653455504 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

The joint density function of two continuous random variables W and X be given by:

$$f_{WX}(w, x) = \begin{cases} 6w^2x, & 0 < w, x < 1 \\ 0, & \text{otherwise} \end{cases}$$

Let $Y = W^2$, $Z = WX$. Find the joint distribution of Y and Z .

Options :

6406531514727. *

$$g_{YZ}(y, z) = \begin{cases} \frac{3z}{\sqrt{y}}, & 0 < y < 1, 0 < z < 1 \\ 0, & \text{otherwise} \end{cases}$$

6406531514728. *

$$g_{YZ}(y, z) = \begin{cases} -\frac{3z}{\sqrt{y}}, & w^2 < y < 1, 0 < z < 1 \\ 0, & \text{otherwise} \end{cases}$$

6406531514729. ✓

$$g_{YZ}(y, z) = \begin{cases} \frac{3z}{\sqrt{y}}, & w^2 < y < 1, 0 < z < 1 \\ 0, & \text{otherwise} \end{cases}$$

6406531514730. *

$$g_{YZ}(y, z) = \begin{cases} 6\sqrt{y}z, & w^2 < y < 1, 0 < z < 1 \\ 0, & \text{otherwise} \end{cases}$$

Sub-Section Number : 9

Sub-Section Id : 64065365906

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 359 Question Id : 640653455492 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

What are the properties of principal components in PCA?

Options :

6406531514698. ✓ All principal components are orthogonal to each other.

6406531514699. ✗ The number of principal components for n -dimensional data are atmost $n-1$.

6406531514700. ✓ The first principal component accounts for most of the possible variability of the original data i.e, maximum possible variance.

6406531514701. ✓ The first principal component is the eigenvector of the covariance matrix corresponding to the maximum eigenvalue.

Sub-Section Number : 10

Sub-Section Id : 64065365907

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455493 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 : (360 to 361)

Question Label : Comprehension

A company manufactures two types of products, A and B. Market research and available resources have indicated that the combined production level should not exceed 1200 products per week and demand for products of type B is at most half of that times production of products of type A. Further, the production level of products of type A can exceed three times the production of products of other type at most 600 units. If the company makes profits of \$12 and \$16 per products respectively on products A and B. If the number of products manufactured of type A and type B are x and y respectively, then formulate this problem so that the company can maximize the profit.

Based on the above data answer the given subquestions

Sub questions

Question Number : 360 Question Id : 640653455494 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

The objective function for the problem is

Options :

6406531514702. ✓ max $12x + 16y$

6406531514703. ✗ max $50x + 15y$

6406531514704. ✗ min $12x - 16y$

6406531514705. ✗ max $50x - 15y$

Question Number : 361 Question Id : 640653455495 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

The constraint function for the problem is

Options :

6406531514706. ✓ $x \geq 0, y \geq 0$

6406531514707. ✗ $y \geq \frac{x}{2}$

6406531514708. ✓ $x - 3y \leq 600$

6406531514709. ✗ $x + y \geq 1200$

Sem2 Statistics2

Section Id :	64065329443
Section Number :	13
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	40
Display Number Panel :	Yes
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 :	64065365908
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 362 Question Id : 640653455505 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 "FOUNDATION LEVEL /DIRECT ENTRY DIPLOMA:
STATISTICS FOR DATA SCIENCE 2"**

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

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

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

Options :

6406531514731. ✓ YES

6406531514732. ✗ NO

Question Number : 363 Question Id : 640653455506 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

Discrete random variables:

Distribution	PMF ($f_X(k)$)	CDF ($F_X(x)$)	$E[X]$	$\text{Var}(X)$
Uniform(A) $A = \{a, a+1, \dots, b\}$	$\frac{1}{n}, \quad x = k$ $n = b - a + 1$ $k = a, a+1, \dots, b$	$\begin{cases} 0 & x < 0 \\ \frac{k-a+1}{n} & k \leq x < k+1 \\ & k = a, a+1, \dots, b-1, b \\ 1 & x \geq n \end{cases}$	$\frac{a+b}{2}$	$\frac{n^2-1}{12}$
Bernoulli(p)	$\begin{cases} p & x = 1 \\ 1-p & x = 0 \end{cases}$	$\begin{cases} 0 & x < 0 \\ 1-p & 0 \leq x < 1 \\ 1 & x \geq 1 \end{cases}$	p	$p(1-p)$
Binomial(n, p)	${}^n C_k p^k (1-p)^{n-k}, \quad k = 0, 1, \dots, n$	$\begin{cases} 0 & x < 0 \\ \sum_{i=0}^k {}^n C_i p^i (1-p)^{n-i} & k \leq x < k+1 \\ & k = 0, 1, \dots, n \\ 1 & x \geq n \end{cases}$	np	$np(1-p)$
Geometric(p)	$(1-p)^{k-1} p, \quad k = 1, \dots, \infty$	$\begin{cases} 0 & x < 0 \\ 1 - (1-p)^k & k \leq x < k+1 \\ & k = 1, \dots, \infty \end{cases}$	$\frac{1}{p}$	$\frac{1-p}{p^2}$
Poisson(λ)	$\frac{e^{-\lambda} \lambda^k}{k!}, \quad k = 0, 1, \dots, \infty$	$\begin{cases} 0 & x < 0 \\ e^{-\lambda} \sum_{i=0}^k \frac{\lambda^i}{i!} & k \leq x < k+1 \\ & k = 0, 1, \dots, \infty \end{cases}$	λ	λ

Continuous random variables:

Distribution	PDF ($f_X(k)$)	CDF ($F_X(x)$)	$E[X]$	$\text{Var}(X)$
Uniform $[a, b]$	$\frac{1}{b-a}, a \leq x \leq b$	$\begin{cases} 0 & x \leq a \\ \frac{x-a}{b-a} & a < x < b \\ 1 & x \geq b \end{cases}$	$\frac{a+b}{2}$	$\frac{(b-a)^2}{12}$
Exp(λ)	$\lambda e^{-\lambda x}, x > 0$	$\begin{cases} 0 & x \leq 0 \\ 1 - e^{-\lambda x} & x > 0 \end{cases}$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$
Normal(μ, σ^2)	$\frac{1}{\sigma\sqrt{2\pi}} \exp\left(\frac{-(x-\mu)^2}{2\sigma^2}\right), -\infty < x < \infty$	No closed form	μ	σ^2
Gamma(α, β)	$\frac{\beta^\alpha}{\Gamma(\alpha)} x^{\alpha-1} e^{-\beta x}, x > 0$		$\frac{\alpha}{\beta}$	$\frac{\alpha}{\beta^2}$
Beta(α, β)	$\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} x^{\alpha-1} (1-x)^{\beta-1}$ $0 < x < 1$		$\frac{\alpha}{\alpha+\beta}$	$\frac{\alpha\beta}{(\alpha+\beta)^2(\alpha+\beta+1)}$

1. **Markov's inequality:** Let X be a discrete random variable taking non-negative values with a finite mean μ . Then,

$$P(X \geq c) \leq \frac{\mu}{c}$$

2. **Chebyshev's inequality:** Let X be a discrete random variable with a finite mean μ and a finite variance σ^2 . Then,

$$P(|X - \mu| \geq k\sigma) \leq \frac{1}{k^2}$$

3. **Weak Law of Large numbers:** Let $X_1, X_2, \dots, X_n \sim \text{iid } X$ with $E[X] = \mu, \text{Var}(X) = \sigma^2$.

Define sample mean $\bar{X} = \frac{X_1 + X_2 + \dots + X_n}{n}$. Then,

$$P(|\bar{X} - \mu| > \delta) \leq \frac{\sigma^2}{n\delta^2}$$

4. **Using CLT to approximate probability:** Let $X_1, X_2, \dots, X_n \sim \text{iid } X$ with $E[X] = \mu, \text{Var}(X) = \sigma^2$.

Define $Y = X_1 + X_2 + \dots + X_n$. Then,

$$\frac{Y - n\mu}{\sqrt{n}\sigma} \approx \text{Normal}(0, 1).$$

5. Bias of an estimator: $\text{Bias}(\hat{\theta}, \theta) = E[\hat{\theta}] - \theta$.

6. Method of moments: Sample moments, $M_k(X_1, X_2, \dots, X_n) = \frac{1}{n} \sum_{i=1}^n X_i^k$

Procedure: For one parameter θ

- Sample moment: m_1
- Distribution moment: $E(X) = f(\theta)$
- Solve for θ from $f(\theta) = m_1$ in terms of m_1 .
- $\hat{\theta}$: replace m_1 by M_1 in the above solution.

7. Likelihood of i.i.d. samples: Likelihood of a sampling x_1, x_2, \dots, x_n , denoted

$$L(x_1, \dots, x_n) = \prod_{i=1}^n f_X(x_i; \theta_1, \theta_2, \dots)$$

8. Maximum likelihood (ML) estimation:

$$\theta_1^*, \theta_2^*, \dots = \arg \max_{\theta_1^*, \theta_2^*, \dots} \prod_{i=1}^n f_X(x_i; \theta_1, \theta_2, \dots)$$

9. Bayesian estimation: Let $X_1, \dots, X_n \sim \text{i.i.d. } X$, parameter Θ .

Prior distribution of Θ : $\Theta \sim f_\Theta(\theta)$.

Samples, $S : (X_1 = x_1, \dots, X_n = x_n)$

Posterior: $\Theta | (X_1 = x_1, \dots, X_n = x_n)$

Bayes' rule: Posterior \propto Prior \times Likelihood

Posterior density $\propto f_\Theta(\theta) \times P(X_1 = x_1, \dots, X_n = x_n | \Theta = \theta)$

10. Normal samples with unknown mean and known variance:

$X_1, \dots, X_n \sim \text{i.i.d. Normal}(M, \sigma^2)$.

Prior $M \sim \text{Normal}(\mu_0, \sigma_0^2)$.

Posterior mean: $\hat{\mu} = \bar{X} \left(\frac{n\sigma_0^2}{n\sigma_0^2 + \sigma^2} \right) + \mu_0 \left(\frac{\sigma^2}{n\sigma_0^2 + \sigma^2} \right)$

11. Hypothesis Testing

- Test for mean

Case (1): When population variance σ^2 is known (z -test)

Test	H_0	H_A	Test statistic	Rejection region
right-tailed	$\mu = \mu_0$	$\mu > \mu_0$	$T = \bar{X}$ $Z = \frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}}$	$\bar{X} > c$
left-tailed	$\mu = \mu_0$	$\mu < \mu_0$	$T = \bar{X}$ $Z = \frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}}$	$\bar{X} < c$
two-tailed	$\mu = \mu_0$	$\mu \neq \mu_0$	$T = \bar{X}$ $Z = \frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}}$	$ \bar{X} - \mu_0 > c$

Case (2): When population variance σ^2 is unknown (t -test)

Test	H_0	H_A	Test statistic	Rejection region
right-tailed	$\mu = \mu_0$	$\mu > \mu_0$	$T = \bar{X}$ $t_{n-1} = \frac{\bar{X} - \mu_0}{S/\sqrt{n}}$	$\bar{X} > c$
left-tailed	$\mu = \mu_0$	$\mu < \mu_0$	$T = \bar{X}$ $t_{n-1} = \frac{\bar{X} - \mu_0}{S/\sqrt{n}}$	$\bar{X} < c$
two-tailed	$\mu = \mu_0$	$\mu \neq \mu_0$	$T = \bar{X}$ $t_{n-1} = \frac{\bar{X} - \mu_0}{S/\sqrt{n}}$	$ \bar{X} - \mu_0 > c$

- χ^2 -test for variance:

Test	H_0	H_A	Test statistic	Rejection region
right-tailed	$\sigma = \sigma_0$	$\sigma > \sigma_0$	$T = \frac{(n-1)S^2}{\sigma_0^2} \sim \chi_{n-1}^2$	$S^2 > c^2$
left-tailed	$\sigma = \sigma_0$	$\sigma < \sigma_0$	$T = \frac{(n-1)S^2}{\sigma_0^2} \sim \chi_{n-1}^2$	$S^2 < c^2$
two-tailed	$\sigma = \sigma_0$	$\sigma \neq \sigma_0$	$T = \frac{(n-1)S^2}{\sigma_0^2} \sim \chi_{n-1}^2$	$S^2 > c^2$ where $\frac{\alpha}{2} = P(S^2 > c^2)$ or $S^2 < c^2$ where $\frac{\alpha}{2} = P(S^2 < c^2)$

- Two samples z -test for means:

Test	H_0	H_A	Test statistic	Rejection region
right-tailed	$\mu_1 = \mu_2$	$\mu_1 > \mu_2$	$T = \bar{X} - \bar{Y}$ $\bar{X} - \bar{Y} \sim \text{Normal}\left(0, \frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}\right)$ if H_0 is true	$\bar{X} - \bar{Y} > c$
left-tailed	$\mu_1 = \mu_2$	$\mu_1 < \mu_2$	$T = \bar{Y} - \bar{X}$ $\bar{Y} - \bar{X} \sim \text{Normal}\left(0, \frac{\sigma_2^2}{n_2} + \frac{\sigma_1^2}{n_1}\right)$ if H_0 is true	$\bar{Y} - \bar{X} > c$
two-tailed	$\mu_1 = \mu_2$	$\mu_1 \neq \mu_2$	$T = \bar{X} - \bar{Y}$ $\bar{X} - \bar{Y} \sim \text{Normal}\left(0, \frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}\right)$ if H_0 is true	$ \bar{X} - \bar{Y} > c$

- Two samples F -test for variances

Test	H_0	H_A	Test statistic	Rejection region
one-tailed	$\sigma_1 = \sigma_2$	$\sigma_1 > \sigma_2$	$T = \frac{S_1^2}{S_2^2} \sim F_{(n_1-1, n_2-1)}$	$\frac{S_1^2}{S_2^2} > 1 + c$
one-tailed	$\sigma_1 = \sigma_2$	$\sigma_1 < \sigma_2$	$T = \frac{S_1^2}{S_2^2} \sim F_{(n_1-1, n_2-1)}$	$\frac{S_1^2}{S_2^2} < 1 - c$
two-tailed	$\sigma_1 = \sigma_2$	$\sigma_1 \neq \sigma_2$	$T = \frac{S_1^2}{S_2^2} \sim F_{(n_1-1, n_2-1)}$	$\frac{S_1^2}{S_2^2} > 1 + c_R$ where $\frac{\alpha}{2} = P(T > 1 + c_R)$ or $\frac{S_1^2}{S_2^2} < 1 - c_L$ where $\frac{\alpha}{2} = P(T < 1 - c_L)$

Options :

6406531514733. ✓ Useful Data has been mentioned above.

6406531514734. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :

2

Sub-Section Id :

64065365909

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 364 Question Id : 640653455507 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

The joint PMF of two discrete random variables X and Y is given by

$$f_{XY}(x, y) = \frac{xy}{3}, \quad \text{for } x = 0, 1, 2; y = 0, 1$$

Find $P(0 < X \leq 1 | Y = 1)$. Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.30 to 0.36

Question Number : 365 Question Id : 640653455508 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

The heights (in cm) of people in a certain area are normally distributed with mean μ and standard deviation 40. The heights from a random sample of 10 people are as follows: 155, 159, 145, 155, 150, 160, 165, 157, 169, 145. Suppose $\hat{\mu}$ is the maximum likelihood estimate for μ . Letting $X \sim \text{Normal}(\hat{\mu}, 2)$, find the value of $f_X(158)$. Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.10 to 0.14

Sub-Section Number :	3
Sub-Section Id :	64065365910
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 366 Question Id : 640653455509 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements are correct?

Options :

6406531514737. ❌ The probability of accepting the Null hypothesis when it is not true is called as level of significance.

6406531514738. ❌ If the significance level of a test T is 0.1, then the power of the test T will be 0.9.

6406531514739. ✓ Type II error is the probability of accepting the Null hypothesis when it is not true.

6406531514740. ✓ The probability of rejecting the Null hypothesis when it is true is called as level of significance.

Sub-Section Number :	4
Sub-Section Id :	64065365911
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 367 Question Id : 640653455510 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider 100 samples $X_1, X_2, \dots, X_{100} \sim \text{iid Normal}(\mu, 16)$. Let the null and alternative hypothesis be $H_0 : \mu = 1$ and $H_A : \mu = -1$. Suppose $T = \frac{X_1 + X_2 + \dots + X_{100}}{100}$. Consider a test that rejects H_0 if $T > c$ for some constant c . What should be the critical value for the test at a significance level of 0.05?

Options :

6406531514741. ✓ $\frac{2F_Z^{-1}(0.95)}{5} + 1$

6406531514742. ✗ $\frac{2F_Z^{-1}(0.95)}{5} - 1$

6406531514743. ✗ $\frac{2F_Z^{-1}(0.05)}{5} + 1$

6406531514744. ✗ $\frac{4F_Z^{-1}(0.95)}{5} - 1$

Question Number : 368 Question Id : 640653455511 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following situations and match them with suitable test statistics and hypothesis tests: Suppose we observe samples from a normal distribution, where the variance is known. We want to check whether the mean is greater than μ . What test statistic and test can be applied for this situation?

Options :

6406531514745. ✓ Test Statistic: $T = \text{Sample mean}$, Hypothesis test: Z -test.

6406531514746. ✗ Test Statistic: $T = \text{Sample mean}$, Hypothesis test: χ^2 -test.

6406531514747. ✗ Test Statistic: $T = \text{Sample variance}$, Hypothesis test: χ^2 -test.

6406531514748. ✖ Test Statistic: T = Sample mean, Hypothesis test: t -test.

Sub-Section Number :	5
Sub-Section Id :	64065365912
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653455512 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 : (369 to 371)

Question Label : Comprehension

Let a random variable X represent the unit temperature change and let Y represent the unit pressure change during a chemical process.

The joint density for X and Y is given by

$$f_{XY}(x, y) = \begin{cases} cxy & \text{for } 0 < x < 2, 0 < y < 2 \\ 0 & \text{otherwise} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 369 Question Id : 640653455513 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Find the value of c . Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.25

Question Number : 370 Question Id : 640653455514 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

What is the probability that the unit temperature change is equal to 0.5?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 371 Question Id : 640653455515 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What is the probability that the unit pressure change during the chemical process is more than 0.5, given that the unit temperature change is equal to 0.5? Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.91 to 0.96

Question Id : 640653455516 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 : (372 to 374)

Question Label : Comprehension

A train running between two stations A and B will be late on any day by a random amount X , where $X \sim \text{Uniform } [0, \theta]$. Suppose the train is late by random amounts X_1, \dots, X_n independently on n days.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 372 Question Id : 640653455517 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Consider an estimator $\hat{\theta} = \frac{2}{n} \sum_{i=1}^n X_i$ of θ .

Is $\hat{\theta}$ an unbiased estimator of θ ?

Options :

6406531514752. ✓ Yes

6406531514753. ✗ No

Question Number : 373 Question Id : 640653455518 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Assume θ is an unknown parameter. Find the maximum likelihood estimate of θ .

Options :

6406531514754. ✓ $\hat{\theta}_{ML} = \max(X_1, \dots, X_n)$

6406531514755. ✗ $\hat{\theta}_{ML} = \min(X_1, \dots, X_n)$

6406531514756. ✗ $\hat{\theta}_{ML} = \frac{1}{n}$

6406531514757. ✗ $\hat{\theta}_{ML} = \frac{1}{\theta}$

Question Number : 374 Question Id : 640653455519 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Consider θ as a random variable with prior distribution as Uniform [0,1]. Choose the correct options from the following:

Options :

6406531514758. ✗ Posterior $\propto \left(\frac{1}{n}\right)^n$

6406531514759. ✗ Posterior $\propto \frac{1}{n}$

6406531514760. ✓ Posterior $\propto \left(\frac{1}{\theta}\right)^n$

6406531514761. ✗ Posterior $\propto \frac{1}{\theta}$

Question Id : 640653455520 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 : (375 to 376)

Question Label : Comprehension

We wish to estimate the probability p of getting the number four on a biased die using a Bayesian estimator. Consider 10 independent throws and let X be the number of times four appears on the die. Assume the prior distribution of p to be Beta(1, 1).

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 375 Question Id : 640653455521 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Out of 10 throws, if four appeared a total of five times, find the posterior distribution of p .

Options :

6406531514762. ✘ Bernoulli(0.4)

6406531514763. ✘ Beta(4, 4)

6406531514764. ✓ Beta(6, 6)

6406531514765. ✘ Bernoulli(0.6)

Question Number : 376 Question Id : 640653455522 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the posterior mean using the given prior. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.4 to 0.6

Question Id : 640653455523 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 : (377 to 378)

Question Label : Comprehension

The density function of a continuous random variable X is given by

$$f_X(x) = \frac{2}{\theta^2}(\theta - x), \quad 0 < x < \theta$$

where $\theta > 1$. Consider a random sample $(1, 0, 1, 0, 0)$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 377 Question Id : 640653455524 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the method of moments estimate of θ for the given sample. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1.1 to 1.3

Question Number : 378 **Question Id :** 640653455525 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 3

Question Label : Short Answer Question

Find the maximum likelihood estimate of θ for the given sample. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1.3 to 1.5

Question Id : 640653455526 **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 : (379 to 380)

Question Label : Comprehension

An urn contains some blue balls and some red balls. Shalini claims that if a ball is picked randomly from the urn, then the probability p that the ball will be blue is 0.2. Suspecting that 0.2 is too high, Nandan decided to pick 10 balls randomly. If two or more blue balls are picked out of those 10 balls, then he accepts Shalini's claim or else he rejects it.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 379 Question Id : 640653455527 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Define null hypothesis and alternative hypothesis.

Options :

6406531514769. ❌ $H_0 : p = 0.2, H_A : p \neq 0.2$

6406531514770. ❌ $H_0 : p = 0.2, H_A : p > 0.2$

6406531514771. ✓ $H_0 : p = 0.2, H_A : p < 0.2$

6406531514772. ❌ $H_0 : p \neq 0.2, H_A : p = 0.2$

Question Number : 380 Question Id : 640653455528 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Find the significance level of the test. Enter the answer correct to three decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.36 to 0.39

Sem2 Maths2

Section Id :	64065329444
Section Number :	14
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	50
Display Number Panel :	Yes
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 :	64065365913
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 381 Question Id : 640653455529 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 "FOUNDATION LEVEL/DIRECT ENTRY DIPLOMA:
MATHEMATICS FOR DATA SCIENCE 2"**

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

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

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

Options :

6406531514774. ✓ YES

6406531514775. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	64065365914
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 382 Question Id : 640653455530 Question Type : MSQ Is Question**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 3 Selectable Option : 0**

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :If a system of linear equations $Ax = b$ has no solution, then b is a linear combination of the columns of the coefficient matrix A .

6406531514776. ✗

Consider a system of linear equations $Ax = b$. If b is a linear combination of the columns of the coefficient matrix A , then the system $Ax = b$ has a solution.

6406531514777. ✓

If the number of variables is more than the number of equations in a system of linear equations $Ax = 0$, then it has a unique solution.

6406531514778. ✗

The kernel of the linear transformation $S : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ such that $S(v) = Av^T$, where $v = (x, y, z)$, is the solution space of the system of linear equations $Av^T = 0$.

6406531514779. ✓

Question Number : 383 Question Id : 640653455536 Question Type : MSQ Is Question**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following subspaces have a basis whose cardinality is 2?

Options :

6406531514790. ✓ $\{A \in \mathcal{M}_{3 \times 3}(\mathbb{R}) : A \text{ is a diagonal matrix and the sum of the diagonal entries of } A \text{ is } 0\}$.

6406531514791. ✗ $\{A \in \mathcal{M}_{3 \times 3}(\mathbb{R}) : A \text{ is a scalar matrix}\}$.

6406531514792. ✗ $\text{span}\{(1, 3, 5), (2, 6, 10), (-3, -9, -15)\}$.

6406531514793. ✓ $\text{span}\{(1, 1, 0, 0), (1, 1, 1, 0), (4, 4, 1, 0), (-1, -1, 5, 0)\}$.

Question Number : 384 Question Id : 640653455550 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Consider the affine subspaces $L_1 = \{(x, y, z) \in \mathbb{R}^3 : x + y + z = 1\}$ and $L_2 = \{(x, y, z) \in \mathbb{R}^3 : x = 3\}$. Let W_1 and W_2 be the subspaces corresponding to L_1 and L_2 respectively. Choose the correct option(s).

Options :

6406531514816. ✓ $W_1 = \text{span} \{(1, -1, 0), (0, 1, -1)\}$.

6406531514817. ✗ $W_2 = \text{span} \{(1, 0, 0), (0, 1, 0)\}$.

6406531514818. ✗ $W_1 \cap W_2$ represents a plane passing through the origin in \mathbb{R}^3 .

6406531514819. ✓ $W_1 \cap W_2$ represents a line passing through the origin in \mathbb{R}^3 .

Sub-Section Number :	3
Sub-Section Id :	64065365915
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 385 Question Id : 640653455549 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Let A be a 3×3 orthogonal matrix. Which of the following options is/are true?

Options :

6406531514812. ✘ The rows of A are not linearly independent.

6406531514813. ✘ The system of linear equations $Ax = b$, where $b \neq 0$ has infinitely many solutions.

6406531514814. ✓ The columns of A form an orthogonal set of vectors of the inner product space \mathbb{R}^3 w.r.t. the dot product.

6406531514815. ✓ The rank of A is 3.

Sub-Section Number :	4
Sub-Section Id :	64065365916
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 386 Question Id : 640653455535 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Consider $V = \mathbb{R}^3$ with inner product as the dot product and $W = \{(x, y, z) \mid x = y\}$ is a subspace of V . If (a, b, c) is the projection of $(1, 2, 3)$ onto W , then what is $a + b + 2c$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

9

Sub-Section Number : 5

Sub-Section Id : 64065365917

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455531 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 : (387 to 389)

Question Label : Comprehension

Let $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ be a linear transformation defined by $T(x, y) = (x + y, x - y)$.

Answer the given subquestions.

Sub questions

Question Number : 387 Question Id : 640653455532 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Choose the correct option(s) about T .

Options :

6406531514780. ✘ T is not onto.

6406531514781. ✘ The range of T is a one-dimensional subspace of \mathbb{R}^2 .

6406531514782. ✓ The nullity of T is 0.

6406531514783. ✓ T is one-one.

Question Number : 388 Question Id : 640653455533 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

If $A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$ is the matrix representation

of T with respect to a basis $\{(1, 1), (1, 2)\}$

for the domain and $\{(1, 1), (1, -1)\}$

for the co-domain, then what is $b + c$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 389 Question Id : 640653455534 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0**Question Label :** Multiple Select Question

Let A be the matrix representation of T with respect to a basis $\{(1, 1), (1, 2)\}$ for the domain and $\{(1, 1), (1, -1)\}$ for the co-domain (obtained in the previous question) and B be the matrix representation of T with respect to the standard ordered basis for \mathbb{R}^2 for both the domain and co-domain. Choose the correct option(s).

Options :

6406531514785. ✓ Rank of the matrix A is 2.

6406531514786. ✗ Both the systems $Ax = 0$ and $Bx = 0$ have infinitely many solutions.

6406531514787. ✗ A and B are similar matrices.

6406531514788. ✓ A and B are equivalent matrices.

Sub-Section Number : 6

Sub-Section Id : 64065365918

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455537 **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 : (390 to 393)

Question Label : Comprehension

Consider the function $f(x, y, z) = x^2 + y^2 + z^2 + xy + yz + kzx$. Use this information to answer the given subquestions.

Sub questions

Question Number : 390 Question Id : 640653455538 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following matrices represent
the transpose of the Hessian matrix of
the function at any critical point?

Options :

$$\begin{bmatrix} 2 & 1 & k \\ 1 & k & 1 \\ k & 1 & 2 \end{bmatrix}$$

6406531514794. ✘

$$\begin{bmatrix} 2 & 1 & k \\ 1 & 2 & 1 \\ 2 & 1 & k \end{bmatrix}$$

6406531514795. ✘

$$\begin{bmatrix} 2 & 1 & k \\ 1 & 2 & 1 \\ k & 1 & 2 \end{bmatrix}$$

6406531514796. ✓

$$\begin{bmatrix} k & 1 & 2 \\ 1 & k & 1 \\ 2 & 1 & k \end{bmatrix}$$

6406531514797. ✘

Question Number : 391 Question Id : 640653455539 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

If $k = 1$, then the function attains a value
at the critical point which is locally maximum

6406531514798. ✘

6406531514799. ✓ If $k = 2$, then the Hessian test is inconclusive.

There is at least one value of k for which

6406531514800. ✓ the critical point is a saddle point.

If $k = 3$, then the function attains a value at the

6406531514801. ✘ critical point which is locally minimum.

Question Number : 392 Question Id : 640653455540 Question Type : MSQ Is Question

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

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

Equations $f_x = 0, f_y = 0, f_z = 0$ do not form a system

6406531514802. ✘ of linear equations.

6406531514803. ✓ For any value of k the Hessian matrix is a symmetric matrix.

6406531514804. ✓ If $k = 2$, then the nullity of the Hessian matrix is 1.

6406531514805. ✘ For any value of k , the Hessian matrix has rank 2.

Question Number : 393 Question Id : 640653455541 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Let H denote the matrix obtained by putting $k = 1$ in the Hessian matrix. Let $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ be the linear transformation

$T(x, y, z) = (a_1x + b_1y + c_1z, a_2x + b_2y + c_2z, a_3x + b_3y + c_3z)$. If H is the matrix representation of T w.r.t the standard ordered basis $\{e_1, e_2, e_3\}$ for both domain and codomain, then find the value of $2(a_1 + a_2) + (b_2 + b_3) - (c_1 + c_3)$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sub-Section Number : 7

Sub-Section Id : 64065365919

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455542 **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 : (394 to 395)

Question Label : Comprehension

Consider the plane $x + y + z = 1$ in \mathbb{R}^3 . Let (a, b, c) be the point on the plane such that the distance of the point from the origin is the least. Use this information to answer the given subquestions.

Sub questions

Question Number : 394 Question Id : 640653455543 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the value of $15(a + b)$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 395 Question Id : 640653455544 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

If d is the minimum distance from the origin, then find the value of $9d^2$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Sub-Section Number : 8

Sub-Section Id : 64065365920

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455545 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 : (396 to 398)

Question Label : Comprehension

Consider the function $f(a, b) = b^3 + \int_0^a (3x^2 + 3b^2 - 15)dx$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 396 Question Id : 640653455546 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Find the number of critical points.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 397 Question Id : 640653455547 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Let $p_1 = (1, -2)$, $p_2 = (0, \sqrt{2})$, $p_3 = (\sqrt{5}, 0)$,
 $p_4 = (-1, 2)$, $p_5 = (-\sqrt{5}, 0)$ and

Answer the following questions
with respect to these points

Write down the values of i in increasing order
for which p_i , $i = 1, 2, 3, 4, 5$, is a
point of local minima according to the
Hessian test e.g. if p_1 and p_2 are points
of local minima, your answer
should be 13. If there is no such i ,
enter 0 as your answer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 398 **Question Id :** 640653455548 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 2

Question Label : Short Answer Question

Let $p_1 = (1, -2)$, $p_2 = (0, \sqrt{2})$, $p_3 = (\sqrt{5}, 0)$,
 $p_4 = (-1, 2)$, $p_5 = (-\sqrt{5}, 0)$ and

Answer the following questions

with respect to these points.

Write down the values of i in
increasing order for which
 p_i , $i = 1, 2, 3, 4, 5$, is a saddle point
according to the Hessian test e.g.
if p_1 and p_3 are saddle points,
your answer should be 13.
If there is no such i , enter 0 as your answer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

14

Sub-Section Number : 9

Sub-Section Id : 64065365921

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653455551 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 : (399 to 402)

Question Label : Comprehension

Answer the given subquestions about the functions

$$u(x, y) = x^2 + e^y \text{ and } v(x, y) = y^2 + ye^x$$

Sub questions

Question Number : 399 Question Id : 640653455552 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Selectable Option : 0

Question Label : Multiple Select Question

If (s_1, s_2) is the unit vector along the direction in which the directional derivative of the function $u(x, y)$ at the point $(1, 1)$ is the maximum and (r_1, r_2) is the unit vector along the direction in which the directional derivative of the function $v(x, y)$ at the point $(1, 1)$ is the minimum, then which of the following options is/are true?

Options :

6406531514820. ✓ $s_1 + s_2 = \frac{2+e}{\sqrt{4+e^2}}$

6406531514821. ✗ $s_1 + s_2 = -\frac{2+e}{\sqrt{4+e^2}}$

6406531514822. ✗ $r_1 + r_2 = \frac{2+2e}{\sqrt{2e^2+4e+4}}$

6406531514823. ✓ $r_1 + r_2 = -\frac{2+2e}{\sqrt{2e^2+4e+4}}$

Question Number : 400 Question Id : 640653455553 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

If $L_u(x, y)$ is the linear approximation of the function $u(x, y)$ at point $(2, 3)$ and $L_u(3, 4) = (a + be^3)$, and if $L_v(x, y)$ is the linear approximation of the function $v(x, y)$ at point $(1, 2)$, and $L_v(3, 4) = (c + de)$, then find the value of $(a + c) - (b + d)$, where a, b, c, d are integers.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 401 Question Id : 640653455554 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

6406531514825. ✓ $z = 2x + e^2y - 1 - e^2$ is the tangent plane to the function $u(x, y)$ at point $(1, 2)$.

6406531514826. ✗ $x(t) = 1 + \frac{1}{\sqrt{2}}t, y(t) = 2 + \frac{1}{\sqrt{2}}t,$
 $z(t) = (1 + e^2) + \frac{e^2}{\sqrt{2}}t$ is the tangent line of the function $u(x, y)$ at point $(1, 2)$ in the direction of $\frac{1}{\sqrt{2}}(1, 1)$.

6406531514827. ✗ $z = 2ex + (4 + e)y + 4 - 3e$ is the tangent plane to the function $v(x, y)$ at point $(1, 2)$.

6406531514828. ✓ $x(t) = 1 + \frac{1}{\sqrt{2}}t, y(t) = 2 + \frac{1}{\sqrt{2}}t, z(t) = (4 + 2e) + (2\sqrt{2} + \frac{3e}{\sqrt{2}})t$ is the tangent line of the function $v(x, y)$ at point $(1, 2)$ in the direction of $\frac{1}{\sqrt{2}}(1, 1)$.

Question Number : 402 Question Id : 640653455555 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Consider a function $g(x, y)$ such that

$$g(x, y) = \begin{cases} u(x, y) & x = y \\ v(x, y) & x \neq y \end{cases}$$

Which of the following options is/are true?

Options :

6406531514829. ❌ $g(x, y)$ is continuous at the origin.

6406531514830. ✓ $g_{xy}(1, 2) = e$.

6406531514831. ❌ $g_{xy}(x, y)$ is not continuous at $(1, 2)$.

6406531514832. ✓ $g_y(1, 1) = 2 + e$.