

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 FN2 EXAM ETD2 11 Dec 2022
Subject Name :	2022 Dec: IIT M DIPLOMA FN2 EXAM ETD2
Creation Date :	2022-12-08 16:23:08
Duration :	180
Total Marks :	940
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 :	64065310842
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	940
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 :	64065329324
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 :	64065364942
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 1 Question Id : 640653451668 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 :

6406531503084. ✓ Yes

6406531503085. ✘ No

Sub-Section Number : 2

Sub-Section Id : 64065364943

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 2 Question Id : 640653451670 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

ConcurrentHashMap is a hash table implementation that supports full concurrency of retrievals and high expected concurrency for updates. All operations on this collection are thread-safe. Consider the code given below that uses a ConcurrentHashMap, and answer the question that follows.

```
class Example extends Thread{  
    Map siMap;  
    //Constructor is defined here  
    public void run(){  
        siMap.put("D",4);  
    }  
}  
  
public class FClass{  
    public static void main (String[] args) {  
        Map<String, Integer> siMap = new ConcurrentHashMap<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();  
        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 NOT true about the given code?

Options :

6406531503090. ✓ This program may generate ConcurrentModificationException.

This program may generate the output:

A => 1
B => 2
C => 3
D => 4

6406531503091. ✘

6406531503092. ✘

This program may generate the output:

D => 4

A => 1

B => 2

C => 3

This program may generate the output:

A => 1

B => 2

C => 3

6406531503093. *

Question Number : 3 Question Id : 640653451672 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 Callable{
    void call();
}

abstract class SmartPhone implements Callable{ //Line 1
    public abstract void record();
}

class Vivo extends SmartPhone{
    public void call() {
        System.out.println("Vivo call");
    }
    public void record() {
        System.out.println("Vivo record");
    }
}

class IPhone extends SmartPhone{
    public void call() {
        System.out.println("Iphone call");
    }
    public void record() {
        System.out.println("Iphone record");
    }
}

public class User {
    public static void showDetails(SmartPhone obj) { //Line 2
        obj.call();
        obj.record();
    }
    public static void main(String[] args) {
        showDetails(new Vivo());
        showDetails(new IPhone());
    }
}
```

Choose the correct option regarding the code.

Options :

Compiler error at Line 2 because the method **record** cannot be invoked on
6406531503098. ❌ SmartPhone object

Compiler error at Line 2 because the method **call** cannot be invoked on
6406531503099. ❌ SmartPhone object

6406531503100. ✓

The code generates the output:

Vivo call
Vivo record
Iphone call
Iphone record

6406531503101. ❌ Compiler error at Line 1 because method call is not defined in class SmartPhone

Question Number : 4 Question Id : 640653451673 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.

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

What will the output be?

Options :

6406531503102. ❌ 3 5 7 9

6406531503103. ✓ 5 7 9 11

6406531503104. ❌ 4 6 8 10

6406531503105. ❌ 2 4 6 8

Question Number : 5 Question Id : 640653451676 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 Employee{  
    String name;  
    public Employee(String name) {  
        this.name = name;  
    }  
    public String toString() {  
        return "name = "+ name;  
    }  
}  
class Manager extends Employee{  
    int team_count;  
    public Manager(String n, int c) {  
        super(n);  
        team_count = c;  
    }  
    public Manager(Manager m) {  
        super(m.name);  
        team_count = m.team_count;  
    }  
    public String toString() {  
        return super.toString() + ", " + "team_count = " + team_count;  
    }  
}  
public class Industry{  
    public static void main(String args[]){  
        Employee m1 = new Manager("Ram", 5);  
        Employee m2 = new Manager((Manager)m1);  
        m2.name = "Geeta";  
        System.out.println(m1 + "\n" + m2);  
    }  
}
```

What will the output be?

Options :

name = Geeta

6406531503114. ✘ name = Geeta

6406531503115. ✘

```
name = Geeta, team_count = 5  
name = Geeta, team_count = 5
```

```
name = Ram, team_count = 5  
name = Geeta, team_count = 5
```

6406531503116. ✓

```
name = Ram
```

6406531503117. ✗ name = Geeta

Question Number : 6 Question Id : 640653451677 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 PPA{  
    public void statement() {  
        System.out.println("Problem statement should be clear");  
    }  
    public void score() {  
        System.out.println("Score not considered");  
    }  
}  
class GRPA extends PPA{  
    public void score() {  
        System.out.println("Score should be considered");  
    }  
    public void extraPoints() {  
        System.out.println("No extra points for GRPA");  
    }  
}  
class OPE extends GRPA{  
    public void extraPoints() {  
        System.out.println("Extra points for challenging questions");  
    }  
}  
public class InheritanceTest {  
    public static void main(String[] args) {  
        GRPA obj = new OPE();  
        obj.statement();  
        obj.score();  
        obj.extraPoints(); //LINE 1  
    }  
}
```

Choose the correct option.

Options :

This program generates the output:

Problem statement should be clear

Score should be considered

6406531503118. ✘ No extra points for GRPA

This program generates the output:

Problem statement should be clear

Score not considered

6406531503119. ✘ No extra points for GRPA

This program generates the output:
Problem statement should be clear
Score should be considered
Extra points for challenging questions

6406531503120. ✓

6406531503121. ✗ LINE 1 generates compilation error

Question Number : 7 Question Id : 640653451679 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 Storage{
    void subscribe();
}

class Mobile{
    public InternalStorage getStorage1() {
        return new InternalStorage();
    }

    public CloudStorage getStorage2() {
        return new CloudStorage();
    }

    private class InternalStorage implements Storage{
        public void subscribe() {
            System.out.println("Subscription not required");
        }
    }

    private class CloudStorage extends InternalStorage{
        public void subscribe() {
            System.out.println("Subscription required");
        }
    }
}

public class PrivateTest {
    public static void main(String[] args) {
        Mobile m = new Mobile();
        //CODE BLOCK
        obj1.subscribe();
        obj2.subscribe();
    }
}
```

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

Subscription not required
Subscription required

Options :

6406531503126. ❌ InternalStorage obj1 = new InternalStorage();
CloudStorage obj2 = new CloudStorage();

6406531503127. ✓ Storage obj1 = m.getStorage1();
Storage obj2 = m.getStorage2();

6406531503128. ❌ InternalStorage obj1 = m.getStorage1();
CloudStorage obj2 = m.getStorage2();

```
Storage obj1 = new InternalStorage();
Storage obj2 = new CloudStorage();
```

6406531503129. *

Question Number : 8 Question Id : 640653451680 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.

```
class ButtonDemo extends JFrame implements ActionListener{  
    JButton btn;  
    JCheckBox cb;  
    JLabel label;  
    JPanel p1, p2, p3;  
    public ButtonDemo() {  
        // p1, p2, p3 JPanel objects created  
  
        btn = new JButton("Button");  
        cb = new JCheckBox("Check Box");  
        label = new JLabel();  
  
        // btn, label and cb 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);  
    }  
    public void actionPerformed(ActionEvent e) {  
        //CODE SEGMENT  
    }  
}  
  
public class GUITest {  
    public static void main(String[] args) {  
        new ButtonDemo();  
    }  
}
```



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

Options :

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

6406531503130. ✓

6406531503131. ❌

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

        if(e.equals(btn))
            label.setText("Button Clicked");
        if(e.equals(cb))
            label.setText("CheckBox Selected");
6406531503132. *
```

```
if(btn.isSelected())
    label.setText("Button Clicked");
if(cb.isSelected())
    label.setText("CheckBox Selected");
6406531503133. *
```

Question Number : 9 Question Id : 640653451681 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 Mobile{
    String model;
    String sdcard;
    //Constructor to initialize instance variables
}
public class OptionalTest {
    public static void main(String[] args) {
        var mList=new ArrayList<Mobile>();
        mList.add(new Mobile("Vivo z1x", "128GB"));
        mList.add(new Mobile("Lenovo k8", null));
        for(Mobile obj:mList) {
            Optional<String> op1=Optional.ofNullable(obj.sdcard);
            op1.ifPresent(s->System.out.println(s));
        }
    }
}
```

Choose the correct option.

Options :

This program generates the output:

128GB

6406531503134. ✘ null

This program generates the output:

6406531503135. ✓ 128GB

This program terminates abnormally due to `NullPointerException` without

6406531503136. ✘ printing any value.

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

6406531503137. ✘ 128GB

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.

Hello IITM students

```
public class FileTest {  
    public static void main(String[] args) {  
        try {  
            var out = new FileOutputStream("file1.txt", true);  
            var dout = new DataOutputStream(out);  
            dout.writeBytes(", how are you?");  
            dout.close();  
  
            var out2 = new FileOutputStream("file2.txt", false);  
            var dout2 = new DataOutputStream(out2);  
            dout2.writeBytes(", how are you?");  
            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:
 , how are you?
file2.txt:

6406531503142. ❌ Hello IITM students, how are you?

file1.txt and file2.txt

6406531503143. ❌ Hello IITM students, how are you?

6406531503144. ✓

file1.txt:

Hello IITM students, how are you?

file2.txt:

, how are you?

file1.txt and file2.txt

, how are you?

6406531503145. ❌

Question Number : 11 Question Id : 640653451684 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.

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

Choose the correct option.

Options :

This program generates the output:

5.5

55

10

6406531503146. ✓ 1

6406531503147. ❌

This program generates the output:

```
5  
55  
10  
1
```

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

6406531503148. ✘

This program generates compile time error with the message:

6406531503149. ✘ incompatible types: possible lossy conversion from double to int

Question Number : 12 Question Id : 640653451685 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 5 in the above code, the activation record of which method is at the top of the stack of activation records?

Options :

6406531503150. ✘ main

6406531503151. ✓ methodOne

6406531503152. ✘ methodTwo

6406531503153. ✘ methodThree

Question Number : 13 Question Id : 640653451686 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 maximum marks in a subject for a class of students. The teacher splits the class into two equal groups, and computes the maximum in each group simultaneously, and then finds the maximum of the two. Based on this information, consider the Java code given below.

```
import java.util.*;  
  
class MaxCompute implements Runnable{  
    ArrayList<Integer> half_batch = new ArrayList();  
    int max;  
    public MaxCompute(ArrayList<Integer> hb) {  
        half_batch = (ArrayList<Integer>)hb.clone();  
        max = -1;  
    }  
    public void run() {  
        max = Collections.max(half_batch);  
    }  
    public int getMax() {  
        return max;  
    }  
}  
public class MaxMarks {  
    public static void main(String[] args) {  
        int max = -1;  
        // Accept the marks into two  
        // ArrayList<Integer> objects batch1 and batch2  
  
        MaxCompute sc1 = new MaxCompute(batch1);  
        MaxCompute sc2 = new MaxCompute(batch2);  
        Thread t1 = new Thread(sc1);  
        Thread t2 = new Thread(sc2);  
        t1.start();  
        t2.start();  
  
        //----- LINE-1  
  
        if (sc1.getMax() >= sc2.getMax())  
            max = sc1.getMax();  
        else  
            max = sc2.getMax();  
        System.out.println(max);  
    }  
}
```

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

Options :

6406531503154. ✘ `Thread.sleep(1000);`

6406531503155. ✓ `while(sc1.getMax() == -1 || sc2.getMax() == -1) {}`

6406531503156. ❌ while(sc1.getMax() == -1 && sc2.getMax() == -1) {}

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

6406531503157. ❌

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

6406531503158. ❌

Question Number : 14 Question Id : 640653451687 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.

```
// ...
Connection conn = db.getDBConnection();
if(conn == null)
    throw new RuntimeException("No connection exists");
// ...
```

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: No connection exists
    at DBAssert.main(DBAssert.java:<line number>)
```

Options :

Connection conn = db.getDBConnection();
6406531503159. ✓ assert conn != null : "No connection exists";

6406531503160. ❌

```
try {  
    Connection conn = db.getDBConnection();  
    assert conn != null;  
}  
catch(RuntimeException e) {  
    System.out.println("No connection exists");  
}
```

6406531503161. *

```
Connection conn = db.getDBConnection();  
assert conn != null;  
if (conn == null)  
    System.out.println("No connection exists");
```

6406531503162. *

```
Connection conn = db.getDBConnection();  
try {  
    assert conn != null;  
}  
catch (AssertionError e) {  
    System.out.println("No connection exists");  
}
```

Question Number : 15 Question Id : 640653451688 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 DivisionByThreeException is defined here
// ... class InputIsThreeException is defined here

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

    static void getQuotient() throws DivisionByThreeException {
        try {
            whatIsInput();
        }
        catch (InputIsThreeException e) {
            DivisionByThreeException dt =
                new DivisionByThreeException("Cannot divide by 3");
            dt.initCause(e);
            throw dt;
        }
    }

    static void whatIsInput() throws InputIsThreeException {
        throw new InputIsThreeException("User input is 3");
    }
}
```

What is the output of this code?

Options :

Exception in thread "main" DivisionByThreeException: Cannot divide by 3
 // ...
 Caused by: InputIsThreeException: User input is 3
 // ...

6406531503163. ❌

Exception in thread "main" InputIsThreeException: User input is 3
 // ...
 Caused by: DivisionByThreeException: Cannot divide by 3
 // ...

6406531503164. ❌

Cannot divide by 3
6406531503165. ✓ User input is 3

User input is 3
6406531503166. ✗ Cannot divide by 3

Question Number : 16 Question Id : 640653451689 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 AbstractListTest {  
    public static void main(String[] args) {  
        AbstractList<String> ll = new LinkedList<String>();  
        AbstractList<String> al = new ArrayList<String>();  
        al.add("a");  
        al.add("b");  
        ll = al; //LINE-1  
        al.remove(1);  
        System.out.println(ll);  
    }  
}
```

Options :

Compiler error because objects of type `ArrayList<String>` and `LinkedList<String>` cannot be assigned to variables of type `AbstractList<String>`.
6406531503167. ✗

Compiler error in LINE-1 because an object of type `ArrayList<String>` cannot be assigned to an object of type `LinkedList<String>`.
6406531503168. ✗

This generates the output:
6406531503169. ✓ [a]

6406531503170. ✗

This generates the output:

[a, b]

Sub-Section Number : 3

Sub-Section Id : 64065364944

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 17 Question Id : 640653451669 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.*;
public class FClass{
    public static void main(String[] args){
        Map<String, Integer> order1 = new TreeMap<String, Integer>();
        order1.put("Pen", 3);
        order1.put("Notebook", 4);
        Map<String, Integer> order2 = new TreeMap<String, Integer>();
        order2.put("Eraser", 5);
        order2.put("Pen", 7);
        Map<String, Integer> totalSell = new TreeMap<String, Integer>();

        for(Map.Entry<String, Integer> e : order1.entrySet())
            totalSell.put(e.getKey(), e.getValue());

        for(Map.Entry<String, Integer> e : order2.entrySet())
            totalSell.merge(e.getKey(), e.getValue(), (x, y) -> y + x);

        System.out.println(totalSell);
    }
}
```

Choose the correct option regarding the code.

Options :

6406531503086. ✓ It generates the output: {Eraser=5, Notebook=4, Pen=10}

6406531503087. ✗ It generates the output: {Eraser=5, Notebook=4, Pen=7}

6406531503088. ✗ It generates the output: {Pen=7, Eraser=5, Notebook=4}

6406531503089. ✗ It generates NullPointerException during runtime.

Question Number : 18 Question Id : 640653451674 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 Student implements Cloneable{
    String name;
    int[] marks;
    public Student(String n, int[] m) {
        name = n;
        marks = m;
    }
    public Object clone() throws CloneNotSupportedException{
        return super.clone();
    }
}
public class Cloning {
    public static void main(String[] args) throws CloneNotSupportedException{
        int[] m = {12, 13, 15};
        Student s1 = new Student("Ram", m);
        Student s2 = (Student)s1.clone();
        Student s3 = s1;
        s2.marks[1] = 34;
        s3.name = "Sita";
        System.out.println(s1.name + " " + s1.marks[1]);
        System.out.println(s2.name + " " + s2.marks[1]);
        System.out.println(s3.name + " " + s3.marks[1]);
    }
}
```

What will the output be?

Options :

6406531503106. ✓ Sita 34

Ram 34

Sita 34

6406531503107. ✗ Sita 13

Ram 34

Sita 13

6406531503108. ✗ Ram 13

Ram 34

Sita 13

6406531503109. ❌ Ram 34

Ram 34

Sita 34

Question Number : 19 Question Id : 640653451678 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 students belong to the same family. Method `equals` is overridden to compare two `Student` objects as follows. If two students have the same ration card number, then both belong to the same family. Based on the given information, answer the question that follows.

```
class Student{
    private String name;
    private String rationcardno;

    //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) {
        Student s1 = new Student("ABC", "RC12345");
        Student s2 = new Student("XYZ", "RC99999");
        Student s3 = new Student("MNO", "RC99999");
        if(s1.equals(s3))
            System.out.println(s1+" "+s3+" belong to the same family");
        if(s2.equals(s3))
            System.out.println(s2+" "+s3+" belong to the same family");
    }
}
```

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

XYZ, MNO belong to the same family

Options :

```
if(obj instanceof Student) {
    Student s = (Student) obj;
    if(this.rationcardno == s.rationcardno)
        return false;
}
```

6406531503122. ✘ return true;

6406531503123. ✘

```
if(obj instanceof Student) {  
    Student s = obj;  
    if(this.rationcardno == obj.rationcardno)  
        return true;  
}  
return false;
```

```
if(obj instanceof Student) {  
    Student s = obj;  
    if(this.rationcardno == obj.rationcardno)  
        return false;  
}  
return true;
```

6406531503124. ❌

```
if(obj instanceof Student) {  
    Student s = (Student) obj;  
    if(this.rationcardno == s.rationcardno)  
        return true;  
}  
return false;
```

6406531503125. ✓

Question Number : 20 Question Id : 640653451682 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 UPIPayment implements Serializable{
    private double amount;
    private transient String id;
    private transient int pin;

    //Constructor to initialize instance variables

    public String toString() {
        return "amount=" + amount + ", id=" + id + ", pin=" + pin;
    }

    private void writeObject(ObjectOutputStream out) throws IOException{
        out.defaultWriteObject();
        out.writeInt(pin*1000);
    }

    private void readObject(ObjectInputStream in) throws Exception{
        in.defaultReadObject();
        pin = in.readInt() / 1000;
    }
}

public class SerialTest {
    public static void main(String[] args) throws Exception{
        var fos = new FileOutputStream("UPI.txt");
        var oos = new ObjectOutputStream(fos);
        UPIPayment payment = new UPIPayment(1000, "12345@ybl", 738611);
        oos.writeObject(payment);

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

What will the output be?

Options :

6406531503138. ✘ amount=1000.0, id=null, pin=0

6406531503139. ✘ amount=1000.0, id=12345@ybl, pin=738611

6406531503140. ✓ amount=1000.0, id=null, pin=738611

6406531503141. ✘ amount=1000.0, id=12345@ybl, pin=0

Question Number : 21 Question Id : 640653451691 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 LinkedHashSet is a hash table and linked list implementation of the Set interface, and maintains the order in which elements were inserted into the set.

A TreeSet class, on the other hand, orders the elements using their natural ordering, or by a Comparator provided at set creation time, depending on which constructor is used.

You are given a type Student with instance variables roll_number and total_marks. Match the following scenarios with the appropriate collection to use for each scenario when the students given in the options are of the given type Student.

- | | | |
|------|---|------------------|
| I. | To obtain the list of students in increasing order of their ranks in the class | A. LinkedHashSet |
| II. | To process the list of student requests in the order in which the applications were submitted by them | B. TreeSet |
| III. | To list the students in decreasing order of their roll number | |
| IV. | To select the first 10 students who submitted their homework | |

Options :

6406531503175. ✘ I,II-A and III,IV-B

6406531503176. ✓ I,III-B and II,IV-A

6406531503177. ✘ I,IV-A and II,III-B

6406531503178. ✘ I,IV-B and II,III-A

Sub-Section Number : 4

Sub-Section Id : 64065364945

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 22 Question Id : 640653451671 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;

    // Constructor is defined here

    public void run(){
        e.request(n_tickets, name);
    }
}
public class Test{
    public static void main(String[] args) throws InterruptedException{
        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();
        t2.join();
        t1.start();
    }
}
```

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

Options :

Sita cannot book 1 ticket

6406531503094. ✘ Raju booked 1 ticket

Raju booked 1 ticket

6406531503095. ✘ Sita booked 1 ticket

Raju booked 1 ticket

6406531503096. ✓ Sita cannot book 1 ticket

6406531503097. ✘ All of these

Question Number : 23 Question Id : 640653451675 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 largest area of the given Computable objects. From among the options, identify the appropriate function header for function printArea that takes as input an array of Computable objects and prints the largest area among them.

```
import java.util.*;
abstract class Computable {
    int dimension;
    public abstract double area();
}
class Circle extends Computable{
    // Constructor
    // method area() that returns area of circle
}
class Square extends Computable{
    // Constructor
    // method area() that returns area of square
}
public class Area{
    // LINE 1: FUNCTION HEADER
    {
        // invokes method area()
        // to print the value of largest area
    }
    public static void main(String[] args) {
        Computable[] c = {new Circle(4), new Square(3)};
        printArea(c);
    }
}
```

Choose the correct option(s).

Options :

6406531503110. ✘ public static void printArea(<?> c)

6406531503111. ✘ public static void printArea(T[] c)

6406531503112. ✓ public static <T extends Computable> void printArea(T[] c)

6406531503113. ✓ public static void printArea(Computable[] c)

Question Number : 24 Question Id : 640653451690 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. Which among the code blocks given in the options, when placed in place of CODE BLOCK will NOT print the items in List<String> ls?

```
import java.util.*;
public class ListIteratorTest {
    public static void main(String[] args) {
        List<String> ls = new ArrayList<String>();
        ls.add("String 1");
        ls.add("String 2");
        ls.add("String 3");

        //CODE BLOCK
    }
}
```

Options :

6406531503171. ✘

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

6406531503172. ✘

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

6406531503173. ✓

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

6406531503174. ✘

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

MLT

Section Id :	64065329325
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 :	64065364946
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 25 Question Id : 640653451692 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 :

6406531503179. ✓ YES

6406531503180. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065364947

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 26 Question Id : 640653451719 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 :

6406531503226. ✗ A decision stump

6406531503227. ✓ A fully grown decision tree with randomly selected features for splitting the nodes.

6406531503228. ✓ k-NN classifier with a smaller value of k .

6406531503229. ✗ k-NN classifier with a larger value of k .

Sub-Section Number : 3

Sub-Section Id : 64065364948

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 27 Question Id : 640653451721 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?:

-3.7, 4.9, -2.0, 5.2, 7.4, -8.3

Options :

6406531503231. ✘ 1, 4.9, 1, 5.2, 7.4, 1

6406531503232. ✘ 0, 1, 0, 1, 1, 0

6406531503233. ✓ 0, 4.9, 0, 5.2, 7.4, 0

6406531503234. ✘ -1, +1, -1, +1, +1, -1

6406531503235. ✘ -3.7, 0, -2.0, 0, 0, -8.3

Question Number : 28 Question Id : 640653451726 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 100 iterations with a learning rate 0.01. 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 :

6406531503239. ✘ Learning rate may be too low; Try increasing it.

6406531503240. ✓ Learning rate may be too high; Try reducing it.

6406531503241. ✘ Number of features in the training data may be too low, try increasing them.

6406531503242. ✘ Number of features in the training data may be too high, try reducing them.

Sub-Section Number : 4

Sub-Section Id : 64065364949

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 29 Question Id : 640653451701 Question Type : MCQ Is Question

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

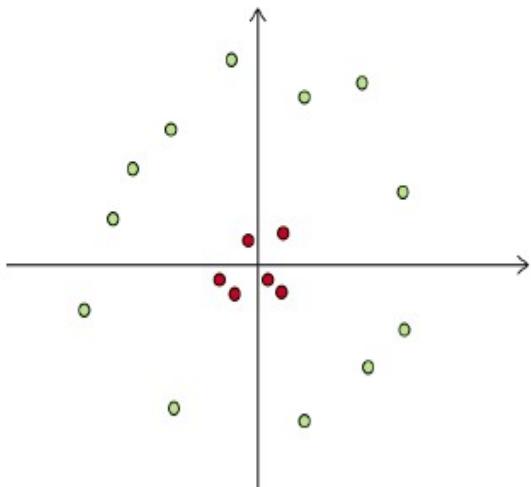
Time : 0

Correct Marks : 4

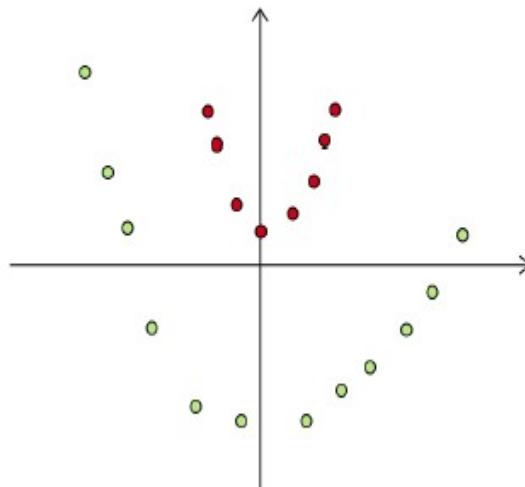
Question Label : Multiple Choice Question

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 :

6406531503196. ✘ Only dataset-1

6406531503197. ✘ Only dataset-2

6406531503198. ✓ On both dataset-1 and dataset-2

6406531503199. ✘ Neither dataset-1 nor dataset-2

Question Number : 30 Question Id : 640653451707 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 $x_1 x_2 k(x_1, x_2)$ a valid kernel? Here, $x_1, x_2 \in \mathbb{R}$?

Options :

6406531503204. ✓ YES

6406531503205. ✘ NO

Question Number : 31 Question Id : 640653451727 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:

$$y_i = w_0 + w_1x_i + w_2x_i^2 + w_3x_i^3 + w_4x_i^4 + \epsilon \text{ where } \epsilon \text{ is a Gaussian noise.}$$

You use two models to fit the data:

Model 1: $\hat{y} = a_0 + a_1x$

Model 2: $\hat{y} = a_0 + a_1x + a_2x^2 + a_3x^3 + \dots + a_9x^9$

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

Options :

6406531503243. ✘ Lower, underfit

6406531503244. ✘ Lower, overfit

6406531503245. ✓ Higher, overfit

6406531503246. ✘ Higher, underfit

Sub-Section Number : 5

Sub-Section Id : 64065364950

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 32 Question Id : 640653451720 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 10 inputs and 2 outputs. If there are 5 hidden layers each with 5

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 :

187

Sub-Section Number : 6

Sub-Section Id : 64065364951

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 33 **Question Id :** 640653451693 **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 $\{10, 23.5, 8, 2.8, 15, 35, 18.4\}$ 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 :

35

Question Number : 34 **Question Id :** 640653451725 **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 1000 data points and 100 features. Assume that there exists a w such that $\|w\| = 1$, $y_i(w^T x_i) \geq 0.2 \forall i$. 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 :

25

Sub-Section Number : 7

Sub-Section Id : 64065364952

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 35 **Question Id :** 640653451697 **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 :

$$\mathbf{x}_1 = \begin{bmatrix} 2 \\ 0 \end{bmatrix}, y_1 = 1 \quad \mathbf{x}_2 = \begin{bmatrix} 6 \\ 2 \end{bmatrix}, y_2 = 1$$

$$\mathbf{x}_3 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}, y_3 = -1 \quad \mathbf{x}_4 = \begin{bmatrix} -4 \\ -1 \end{bmatrix}, y_4 = -1$$

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 :

6406531503187. ✓ $\begin{bmatrix} 0.5 \\ -1 \end{bmatrix}$

6406531503188. ✗ $\begin{bmatrix} 50 \\ -100 \end{bmatrix}$

6406531503189. ✗ $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$

6406531503190. ✗ $\begin{bmatrix} -1 \\ 1 \end{bmatrix}$

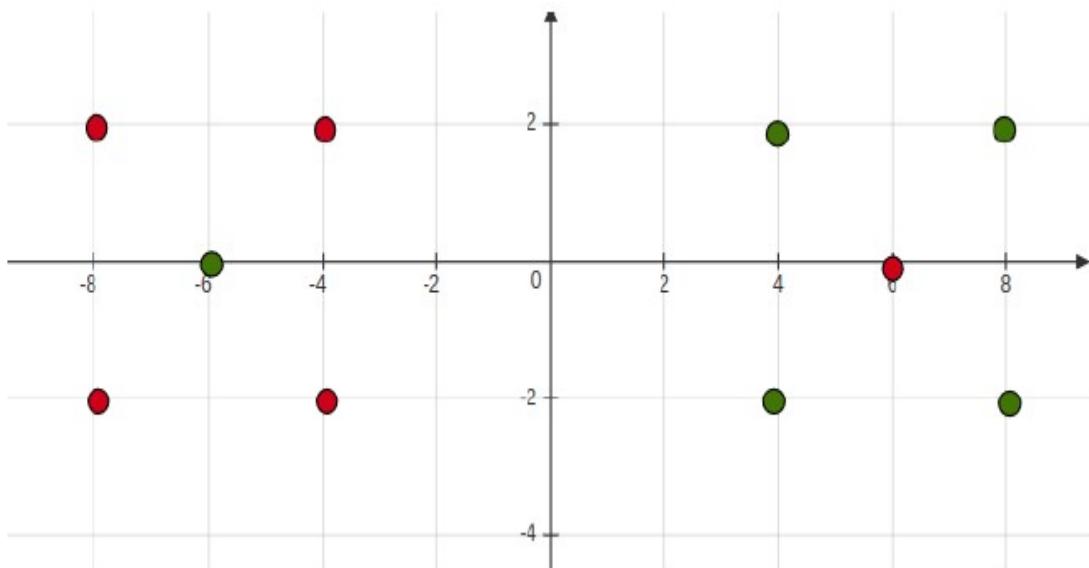
Question Number : 36 Question Id : 640653451728 Question Type : MCQ Is Question

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 larger leave-one-out cross-validation error?

Options :

6406531503247. ✓ 1-Nearest Neighbor

6406531503248. ✗ 3-Nearest Neighbor

Sub-Section Number : 8

Sub-Section Id : 64065364953

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 37 Question Id : 640653451718 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 :

6406531503222. ✗ If $\alpha_i^* = C$, the i^{th} point is incorrectly classified by w^* .

6406531503223. ✓ If the i^{th} data point pays a nonzero bribe, then $\alpha_i^* = C$.

6406531503224. ❌ If i^{th} data point lies on one of the supporting hyperplanes, then $\alpha_i^* = 0$.

6406531503225. ✓ If i^{th} data point lies on the correct supporting hyperplane, it does **not** pay any bribes.

Sub-Section Number :	9
Sub-Section Id :	64065364954
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653451708 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 : (38 to 39)

Question Label : Comprehension

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

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

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

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 : 38 Question Id : 640653451709 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 :

6406531503206. ❌ Model 1

6406531503207. ✓ Model 2

6406531503208. ✗ Both will fit equally well

6406531503209. ✗ Can not say

Question Number : 39 Question Id : 640653451710 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 :

6406531503210. ✗ Model 1

6406531503211. ✗ Model 2

6406531503212. ✓ It will depend upon the underlying distribution that generates the dataset and therefore, can not say.

6406531503213. ✗ Both will give the equal error

Sub-Section Number : 10

Sub-Section Id : 64065364955

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653451694 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 : (40 to 41)

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:

$$\mathbf{C} = \begin{bmatrix} 15 & a & b \\ a & 9 & c \\ b & c & 3 \end{bmatrix}$$

$[x_1 \ x_2 \ x_3]^T$ 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 : 40 Question Id : 640653451695 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 :

15

Question Number : 41 Question Id : 640653451696 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 \mathbf{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 :

6406531503183. ✘ Each pair of features has a strong positive correlation. For instance is, if x_1 increases, then x_2 also increases.

6406531503184. ✘ Each pair of features has a strong negative correlation. For instance is, if x_1 increases, then x_2 decreases.

6406531503185. ✓ Each pair of features is uncorrelated. For instance is, if x_1 increases, we can say nothing about the trend of x_2 .

6406531503186. ✘ Unless we know the exact values of the off-diagonal elements a , b and c , we can't comment about the correlation among features.

Question Id : 640653451711 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 : (42 to 43)

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 1.

Assume that no smoothing is done.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 42 Question Id : 640653451712 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}_1^0 ? \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 :

1

Question Number : 43 Question Id : 640653451713 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

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

Options :

6406531503215. ✘ 0

6406531503216. ✘ 1

6406531503217. ✓ Indeterminate as $P(y = 0|x) = P(y = 1|x) = 0$

6406531503218. ✘ Indeterminate as $P(y = 0|x) = P(y = 1|x) = 1$

Question Id : 640653451722 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 : (44 to 45)

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 : 44 Question Id : 640653451723 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 : 45 Question Id : 640653451724 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 : 11

Sub-Section Id : 64065364956

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 46 **Question Id :** 640653451729 **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 :

6406531503249. ❌ $C_1: (f_1, f_2, f_3, f_4), C_2: (f_5, f_6, f_7, f_8)$

6406531503250. ❌ $C_1: (f_1, f_2, f_5, f_6), C_2: (f_3, f_4, f_7, f_8)$

6406531503251. ✓ $C_1: (f_1, f_2, f_6), C_2: (f_3, f_4, f_5, f_7, f_8)$

6406531503252. * $C_1: (f_2, f_4, f_6), C_2: (f_1, f_3, f_5, f_7, f_8)$

Sub-Section Number :	12
Sub-Section Id :	64065364957
Question Shuffling Allowed :	No
Is Section Default? :	null
Question Id : 640653451702 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	

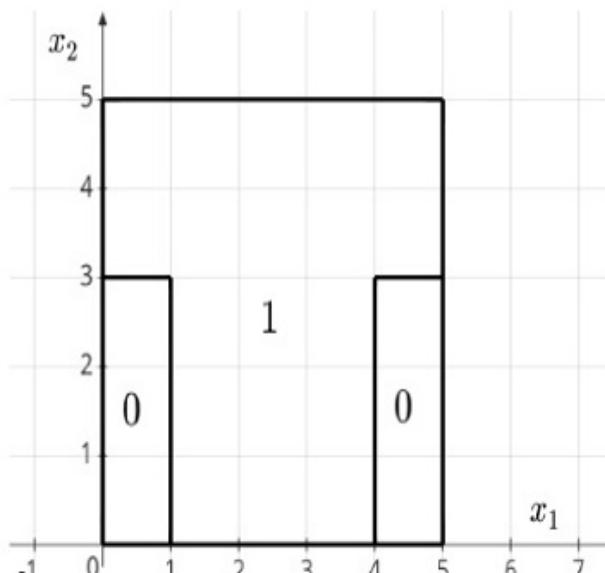
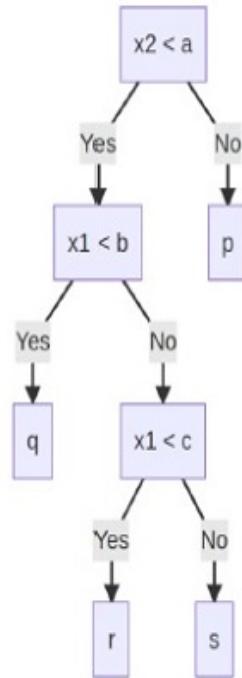
Consider a binary classification problem in \mathbb{R}^2 . The features for this problem lie in a square:

$$0 \leq x_1 \leq 5$$

$$0 \leq x_2 \leq 5$$

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 0 and one which has label 1.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 47 Question Id : 640653451703 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 :

3

Question Number : 48 **Question Id :** 640653451704 **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 :

1

Question Number : 49 **Question Id :** 640653451705 **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 : 640653451706 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?

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Id : 640653451714 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	1	$\frac{1}{3}$?
x_2	?	-1	$\frac{1}{3}$	$\frac{1}{2}$
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 : 640653451715 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_1 ?

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 : 52 Question Id : 640653451716 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_2 ?

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 : 53 **Question Id :** 640653451717 **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 : 64065364958

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653451698 **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
1	0	1
1	1	1
0	1	1
0.5	-0.5	1
0	-1	-1
-1	0	-1
-1	2	-1
-2	5	-1

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 54 Question Id : 640653451699 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 $\begin{bmatrix} 3 \\ 1 \end{bmatrix}$.

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 :

5

Question Number : 55 Question Id : 640653451700 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 :

6406531503192. ✘ The new dataset is **not** linearly separable.

6406531503193. ✓ The new dataset is linearly separable.

If a hard-margin, linear-SVM is trained on the new dataset, the optimal weight vector will be $\begin{bmatrix} 3 \\ 1 \end{bmatrix}$

6406531503194. ✓ If a hard-margin, linear-SVM is trained on this new dataset with 9 points, the optimal weight vector will **not** be $\begin{bmatrix} 3 \\ 1 \end{bmatrix}$

6406531503195. ✘

Section Id :	64065329326
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 :	64065364959
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 56 Question Id : 640653451730 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 :

6406531503253. ✓ YES

6406531503254. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065364960

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 57 Question Id : 640653451731 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.

<http://appdev1.com/sep-22?week=2#MVC>

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

URL Component	Name
1. http	A. Domain Name
2. appdev1.com	B. Query String
3. /sep-22	C. Protocol
4. ?week=2	D. Fragment
5. #MVC	E. Path

Options :

6406531503255. ✗ 1-C, 2-A, 3-D, 4-B, 5-E

6406531503256. ✓ 1-C, 2-A, 3-E, 4-B, 5-D

6406531503257. ✗ 1-C, 2-A, 3-B, 4-D, 5-E

6406531503258. ✗ 1-C, 2-A, 3-B, 4-E, 5-D

Question Number : 58 Question Id : 640653451736 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/home>
- <http://127.0.0.1:8000/logout>

Options :

6406531503272. ✘ current user is lily

logged out

lily logged in

6406531503273. ✘ current user is Rose

logged out

Rose logged in

6406531503274. ✓ Rose logged in

current user is Rose

logged out

6406531503275. ✗ lily logged in

current user is lily

logged out

Question Number : 59 Question Id : 640653451738 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 is true about the way of adding style in HTML documents?

Options :

6406531503280. ✗ Order of precedence of **external** styles is greater than **internal** and **inline** style attributes

6406531503281. ✗ Order of precedence of **internal** styles is greater than **inline** and **external** style attributes

6406531503282. ✓ Order of precedence of **Inline** styles is greater than **internal** and **external** style attributes

6406531503283. ✗ None of these

Question Number : 60 Question Id : 640653451740 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 template snippets correctly implements a **for loop** for creating a list of title links for an image?

Options :

6406531503288. ✗

```
<ul>
    {% for item in navigation %}
        <li>
            <a href = "{{item.href}}">{{item.title}}</a>
        </li>
    {% endfor-navigation %}
</ul>
```

```
<ul>
    {{ for item in navigation }}
        <li>
            <a href = "{%item.href%}">%item.title%</a>
        </li>
    {{ endfor }}
</ul>
```

6406531503289. *

```
<ul>
    {% for item in navigation %}
        <li>
            <a href = "{{item.href}}">{{item.title}}</a>
        </li>
    {% endfor %}
```

6406531503290. ✓

```
<ul>
    {% for item in navigation %}
        <li>
            <a href = "{{item.href}}">{{item.title}}</a>
        </li>
    {% end %}
```

6406531503291. *

Question Number : 61 Question Id : 640653451742 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 :

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

6406531503296. ✘

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

6406531503297. ✓

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

6406531503298. ✘

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

6406531503299. ✘

Question Number : 62 Question Id : 640653451743 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

Given the resource below, What is displayed when a user visits "<http://localhost:5000/hello>" on the browser?

```
from flask_restful import Api
api = Api(app)
class Hello(Resource):
    def post(self):
        return {'User':'Abhishek'}
api.add_resource(Hello, '/hello')
```

Options :

6406531503300. ✖ HTTP 404 - Page Not Found Error

```
{
    "Hello": "Abhishek"
}
```

6406531503301. ✖

6406531503302. ✖ Hello Abhishek

```
{
    "message": "The method is not allowed for the requested URL."
}
```

6406531503303. ✓

Question Number : 63 Question Id : 640653451746 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
|_ index.html
|_ main.html
```

File: home.html

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

File: index.html

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

File: main.html

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

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

Options :

Directory listing for /

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

6406531503312. ✘

Hello from Home!

6406531503313. ✘

Hello from Index!

6406531503314. ✓

Hello from Main!

6406531503315. ✶

Question Number : 64 Question Id : 640653451764 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 :

6406531503368. ✶ A-1, B-2, C-3, D-4

6406531503369. ✶ A-2, B-4, C-1, D-3

6406531503370. ✓ A-3, B-4, C-2, D-1

6406531503371. ✶ A-4, B-3, C-1, D-2

Sub-Section Number : 3

Sub-Section Id : 64065364961

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 65 Question Id : 640653451735 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 page with javascript, which is running at the URL

<http://127.0.0.1:8000>, then choose the correct HTML rendering.

```
<!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*3;
    </script>

  </body>
</html>
```

Options :

Creating a JSON String

6406531503268. ❌ Hi Balu, New Delhi,30

Creating a JSON String

6406531503269. ❌ Hi Balu, 30, New Delhi

Creating a JSON String

6406531503270. ✓ Hi Balu, New Delhi,90

Creating a JSON String

Hi Balu, 90, New Delhi
6406531503271. ✘

Question Number : 66 Question Id : 640653451737 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) == 3
```

Options :

6406531503276. ✘ passed test1.py test_answer - assert 2 == 3

6406531503277. ✘ 2 Failed

6406531503278. ✘ 1 passed

6406531503279. ✓ Failed test1.py test_answer - assert 2 == 3

Question Number : 67 Question Id : 640653451739 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 :

6406531503284. ✘ {% expand 'base.html'%}

6406531503285. ✘ {% include 'base.html'%}

6406531503286. ✓ {% extends 'base.html'%}

6406531503287. ✘ {% inherits 'base.html %}

Question Number : 68 Question Id : 640653451741 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')
```

6406531503292. ✘

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

6406531503293. ✓

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

6406531503294. ✘

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

6406531503295. ✘

Question Number : 69 Question Id : 640653451744 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 the given HTML template, to correctly embed a URL in the href, the argument "user" in the "url_for" function must be a _____?

```
<a href = "{{ url_for('user') }}>Click here</a>
```

Options :

6406531503304. ✓ A view function name

6406531503305. ✗ An HTML template name

6406531503306. ✗ A URL

6406531503307. ✗ An environment variable

Question Number : 70 Question Id : 640653451763 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 :

6406531503364. ✗ Statement 1 is correct, but statement 2 is incorrect.

6406531503365. ✗ Statement 2 is correct, but statement 1 is incorrect.

6406531503366. ✓ Both statements 1 and 2 are correct.

6406531503367. ✗ Both statements 1 and 2 are incorrect.

Sub-Section Number :

4

Sub-Section Id :

64065364962

Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 71 Question Id : 640653451765 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
AadhaarNo	Integer	Not Null, UNIQUE
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 Department = 'Biology';
```

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

Options :

6406531503372. ❌ RollNo

6406531503373. ❌ Name

6406531503374. ❌ AadhaarNo

6406531503375. ✓ Department

Sub-Section Number :	5
Sub-Section Id :	64065364963

Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 72 Question Id : 640653451733 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 Git?

Options :

6406531503260. ❌ Git is an example of a centralized version control system.

6406531503261. ✓ A file can stay in both working directory and staging area at a given time, while working with Git.

6406531503262. ❌ Git and GitLab/GitHub are essentially the same.

6406531503263. ✓ The command "git checkout -b <branch_name>" will create the new branch and switches to the new branch created.

Question Number : 73 Question Id : 640653451734 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 database migrations?

Options :

6406531503264. ✓ Flask does not provide support for migrations, as of December 2022.

6406531503265. ❌ The database migration allows a developer to make schema changes without losing the data.

6406531503266. ✓ One of the disadvantages of migration is that a developer can only upgrade the database, and it does not allow rollbacks.

6406531503267. ❌ 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 : 640653451745 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 :

6406531503308. ✓ `User.query.filter(User.name = 'Ram').all()`

6406531503309. ✗ `User.query.get(name = 'Ram').all()`

6406531503310. ✗ `User.query.filter_by('Ram').all()`

6406531503311. ✓ `User.query.filter_by(name = 'Ram').all()`

Sub-Section Number : 6

Sub-Section Id : 64065364964

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 75 Question Id : 640653451750 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 :

6406531503324. ✓ python module_0.py MAD-1

6406531503325. ✗ python module_0.py MAD 2

6406531503326. ✗ python module_0.py BDM

6406531503327. ✓ python module_0.py SysCom

Question Number : 76 Question Id : 640653451761 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 :

6406531503356. ❌ Software package A is faster than Software package B for inputs in the range $N \in [0,3]$

6406531503357. ✓ Software package B is faster than Software package A for inputs in the range $N \in [0,3]$

6406531503358. ✓ Time taken by both the software packages A and B is the same when $N = 3$.

6406531503359. ❌ Software package B is faster than Software package A for all $N > 3$.

Question Number : 77 Question Id : 640653451762 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', 'ML-practices']
programming = ['Java', 'MAD-I', 'System-Commands', 'PDSA']

@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/ML-techniques>”, the browser will render:

Programming course found, ML-techniques!

6406531503360. ❌

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

Data Science course found, ML-practices!

6406531503361. ✓

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

No course found!

6406531503362. ✓

6406531503363. ❌

For the URL, "http://localhost:5000/courses/Java", the browser will render:

Data Science course found, Java!

Question Number : 78 Question Id : 640653451766 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	name	password
U1	Mack	UabZa
U2	Jack	ZeFad
U3	Shaun	UsTZb

logstable:

logid	userid	name
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 :

```
select logid, logstable.name from user1 inner join logstable on  
user1.userid = logstable.userid where user1.name = 'Shaun'
```

6406531503376. ✓

```
select logid, logstable.name from user1 natural join logstable where  
user1.name = 'Shaun'
```

6406531503377. ✗

```
select logid, logstable.name from user1 inner join logstable on  
user1.name = logstable.name where user1.name = 'Shaun'
```

6406531503378. ✗

```
select logid, logstable.name from user1, logstable WHERE user1.userid  
= logstable.userid and user1.name = 'Shaun'
```

6406531503379. ✓

Sub-Section Number :

7

Sub-Section Id :

64065364965

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 79 Question Id : 640653451732 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 $(01000001)_2$.

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 :

Sub-Section Number :	8
Sub-Section Id :	64065364966
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653451747 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}} and {{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 : 640653451748 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','c': 'statistics',
'd': 'machine learning'}
```

Options :

6406531503316. ✓ Data science combines programming abilities and competence in mathematics and statistics to draw important insights from data.

6406531503317. ✗ Data science combines programming abilities and competence in mathematics and machine learning to draw important insights from data.

6406531503318. ✗ machine learning combines programming abilities and competence in mathematics and statistics to draw important insights from data.

6406531503319. ✗ KeyError: 'd'

Question Number : 81 Question Id : 640653451749 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 :

6406531503320. ✗ Data science combines {{a}} abilities and competence in mathematics and statistics to draw important insights from data.

6406531503321. ✓ Data science combines abilities and competence in mathematics and statistics to draw important insights from data.

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

6406531503322. ✘

6406531503323. ✘ KeyError: 'a'

Sub-Section Number :	9
Sub-Section Id :	64065364967
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653451751 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 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 : 82 Question Id : 640653451752 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 :

6406531503328. ❌ One-to-one

6406531503329. ❌ One-to-many

6406531503330. ❌ Many-to-one

6406531503331. ✓ Many-to-Many

Question Number : 83 Question Id : 640653451753 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,  
producers = p1)  
>>> db.session.add(mov)  
>>> db.session.commit()
```

6406531503332. ❌

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

6406531503333. ❌

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

6406531503334. ✓

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

6406531503335. ✓

Sub-Section Number : 10

Sub-Section Id : 64065364968

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653451754 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 86)

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 : 84 Question Id : 640653451755 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 GET -d "{\"employee_id\" : \"2003\", \"employee_name\" : \"Suresh\"}" -H "Content-Type: application/json"
```

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

Options :

6406531503336. *

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

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

6406531503337. ✘

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

6406531503338. ✓

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

6406531503339. ✘

Question Number : 85 Question Id : 640653451756 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 POST
```

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

Options :

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

6406531503340. ✘

6406531503341. ✓

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

6406531503342. *

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

6406531503343. *

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

Question Number : 86 Question Id : 640653451757 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\",
\"employee_name\": \"Suresh\"}" -H "Content-Type: application/json"
```

Options :

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

6406531503344. *

```
{
    "employee_id": "2003"
}
```

6406531503345. *

6406531503346. *

```
{  
    "employee_name": "Suresh"  
}
```

None of these

6406531503347. ✓

Sub-Section Number : 11

Sub-Section Id : 64065364969

Question Shuffling Allowed : No

Is Section Default? : null

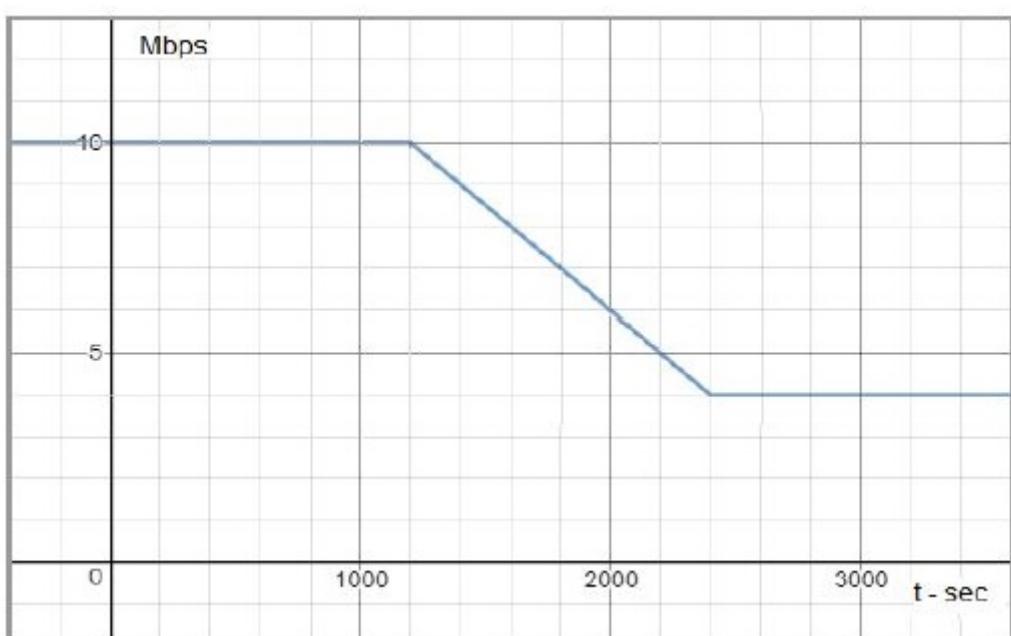
Question Id : 640653451758 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (87 to 88)

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 : 87 Question Id : 640653451759 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 :

6406531503348. ✘ 4

6406531503349. ✓ 7

6406531503350. ✘ 8

6406531503351. ✘ 10

Question Number : 88 Question Id : 640653451760 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 12:45 pm? [Assuming that the user is using the entire bandwidth from 12:15 p.m to 12:45 p.m]

Options :

6406531503352. ✘ 12.6

6406531503353. ✘ 1.26

6406531503354. ✘ 15.75

6406531503355. ✓ 1.575

Section Id :	64065329327
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 :	64065364970
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 89 Question Id : 640653451767 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 :

6406531503380. ✓ Yes

6406531503381. ✘ No

Sub-Section Number :	2
Sub-Section Id :	64065364971
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 90 Question Id : 640653451768 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 Power BI 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 :

6406531503382. ✘ The summary can be generated using Quill and this is possible because Quill can be used as an extension in Power BI.

6406531503383. ✘ Quill can only be used for visualization. Therefore a summary of the dataset cannot be generated.

6406531503384. ✘ Power BI does not support generation of summary. Therefore using other visualization tools such as Tableau would work.

6406531503385. ✓ None of the options are appropriate for the generation of summary for the given question.

Question Number : 91 Question Id : 640653451769 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

Your project requires you to study the districts and their respective health indicators. You have a shapefile with you that provides the required details. The objective of the project is to identify and carve out districts that present high levels of health indicators. Choose the most suitable answer among the given options.

Options :

6406531503386. ✓ QGIS can be used to create the shapefiles for districts with high levels of health indicators.

6406531503387. ✗ While QGIS can be used to create shapefiles for the requirement, it cannot be used to identify the districts with high levels of health indicators.

6406531503388. ✗ QGIS cannot be used to meet the objectives of the project.

6406531503389. ✗ None of the options are suitable to meet the objectives of the project.

Question Number : 92 Question Id : 640653451770 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 :

6406531503390. ✗ Percentage, Score

6406531503391. ✗ Sentiment, Percentage

6406531503392. ✓ Sentiment, Score

6406531503393. ✗ Score, Labels

Question Number : 93 Question Id : 640653451771 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

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 "location1" and the coordinates of location 2 is stored in the variable "location2".

Code Snippet:

```
distances_km = []

for row in df.itertuples(index=False):
    distances_km.append(
        <missing line>
)
df['Distance'] = distances_km
df.head(10)
```

Options :

- 6406531503394. ✘ geopy.distance(location1, location2).km
- 6406531503395. ✘ geopy.distance(location1, location2)
- 6406531503396. ✓ geopy.distance.distance(location1, location2).km
- 6406531503397. ✘ geopy.distance.distance.distance(location1_coord, location2_coord).km

Question Number : 94 Question Id : 640653451773 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 year, annual cotton production, annual rainfall, loan interest rates and fuel prices. You would like to compute the correlation coefficient between annual cotton production and other variables in the dataset to analyze the effects of various variables on the target variable. Choose the most suitable option among the following choices:

Options :

- 6406531503402. ✘ Excel cannot be used to compute correlation coefficients. Although we can use excel to visualize the data using scatter plots to study the relationships.
- 6406531503403. ✘ The CORREL() function in Excel is not suitable for this analysis because it doesn't take more than two variables as inputs.
- 6406531503404. ✘ Correlation coefficients cannot be computed for continuous variables.

6406531503405. ✓ None of the options are appropriate.

Question Number : 95 Question Id : 640653451774 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 would like to prepare your dataset before analysis. You choose python pandas-profiling library to perform exploratory analysis. Choose the most suitable option among the given choices:

Options :

6406531503406. ❌ Your choice of pandas-profiling library is not appropriate because it does not provide information about outliers.

6406531503407. ✓ Your choice is appropriate because the pandas-profiling library provides information about outliers.

6406531503408. ❌ pandas-profiling library is appropriate because it helps build models.

Question Number : 96 Question Id : 640653451776 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

Comicgen is a useful tool in narrating data stories using comics. Which of the following is not a function of comicgen?

Options :

6406531503413. ❌ Comicgen creates comic characters

6406531503414. ❌ Comicgen provides options to custom create different comic characters and their emotions and pose

6406531503415. ❌ Comicgen can be easily integrated into Google sheets or Excel to narrate your data stories

6406531503416. ✓ You can type in your data story into comicgen to get your comic in return

Question Number : 97 Question Id : 640653451777 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 :

6406531503417. ✘ compressed_mat

6406531503418. ✘ comp_mat

6406531503419. ✓ csr_matrix

6406531503420. ✘ zip_mat

Question Number : 98 Question Id : 640653451778 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 has functions and tools that are useful in the analysis of large graphs?

Options :

6406531503421. ✓ scikit-network

6406531503422. ✘ pandas-network

6406531503423. ✘ numpy-network

6406531503424. ✘ pd-network

Question Number : 99 Question Id : 640653451779 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:

Options :

- 6406531503425. ✘ Visualize project management charts
- 6406531503426. ✘ create stunning dashboards for large projects
- 6406531503427. ✘ merge Comicgen characters into a comic
- 6406531503428. ✓ Visualize complex network data

Question Number : 100 Question Id : 640653451780 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 has functions extensively written to extract data from Wikipedia pages?

Options :

- 6406531503429. ✘ BeautifulSoup
- 6406531503430. ✘ wikimedia
- 6406531503431. ✓ wikipedia
- 6406531503432. ✘ wiki_scrape

Question Number : 101 Question Id : 640653451781 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 dataset provided to you has information about countries and respective populations. You plan to visualize the data in Tableau using the map representation. But you are unable to do so because the map representation is not activated for you to choose. What might be the issue? Provided below is a snapshot of the dataset column names and types. Choose the most appropriate option that would solve the problem.

Column Name	Column Type
Country	String
Population	Integer

Options :

6406531503433. ❌ The provided dataset is incomplete
6406531503434. ❌ We also need Latitude and Longitude information to activate the map representation
6406531503435. ✓ There might be column type incompatibility issues
6406531503436. ❌ The given information provided would not have caused any issues. It is sufficient for map representation

Question Number : 102 Question Id : 640653451782 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'
```

Options :

6406531503437. ❌ TRUE
6406531503438. ✓ FALSE

Question Number : 103 Question Id : 640653451783 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

___ is helpful to understand the structure of (or inspect) a website before writing a scraping script.

Options :

6406531503439. ✘ BeautifulSoup

6406531503440. ✓ Developer Tools

6406531503441. ✘ Airflow

6406531503442. ✘ Pycaret

Question Number : 104 Question Id : 640653451784 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

___ library has tools to get a webpage's html contents into Python.

Options :

6406531503443. ✘ BeautifulSoup

6406531503444. ✘ numpy

6406531503445. ✓ requests

6406531503446. ✘ get

Question Number : 105 Question Id : 640653451786 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

Type of location (tourist/historic/etc.) can be retrieved using Nominatim in Python

Options :

6406531503451. ✓ TRUE

6406531503452. ✘ FALSE

Question Number : 106 Question Id : 640653451787 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 delimiters cannot be used in text-to-column function in Excel?

Options :

6406531503453. ❌ Comma (,)

6406531503454. ❌ Tab (\t)

6406531503455. ❌ Semi colon (;)

6406531503456. ❌ Tilde (~)

6406531503457. ✓ None of these

Question Number : 107 Question Id : 640653451788 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 is the y-axis in autocorrelation plot?

Options :

6406531503458. ✓ Correlation

6406531503459. ❌ Covariance

6406531503460. ❌ Standard deviation

6406531503461. ❌ Variance

6406531503462. ❌ None of these

Question Number : 108 Question Id : 640653451789 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 tools cannot be used for anonymising the data?

Options :

6406531503463. ✘ Anonimatron

6406531503464. ✘ ARX anonymization tool

6406531503465. ✓ PowerBI

6406531503466. ✘ Amnesia

6406531503467. ✘ sdcMicro

Question Number : 109 Question Id : 640653451790 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

For a one-time anonymization, static anonymization is sufficient. Is this statement true or false?

Options :

6406531503468. ✓ TRUE

6406531503469. ✘ FALSE

Question Number : 110 Question Id : 640653451791 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 number of lecture hours attended by students affects their exam scores. Which Excel function would you use as a starting point in this analysis?

Options :

6406531503470. ✘ STDEV.P()

6406531503471. ✘ STDEV.S()

6406531503472. ✓ SLOPE()

6406531503473. ✘ EXACT()

Question Number : 111 Question Id : 640653451792 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 number of lecture hours attended by students affects their exam scores, we plan to run a regression analysis after the preliminary analysis. Which of the following features provide you with the capability to do this?

Options :

6406531503474. ✓ Data Analysis Toolpak

6406531503475. ✗ Regression Analyzer

6406531503476. ✗ Regression ToolBokz

6406531503477. ✗ OptSol finder

Question Number : 112 Question Id : 640653451793 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 a variable X, which can take values AA, BB, or CC. The first 4 values of this variable in a dataset are CC, AA, BB, AA. The format of representing this information as shown in the table below is called:

AA	BB	CC
0	0	1
1	0	0
0	1	0
1	0	0

Options :

6406531503478. ✘ multi-col format

6406531503479. ✓ one - hot encoding

6406531503480. ✘ long format

6406531503481. ✘ integer

Question Number : 113 Question Id : 640653451794 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 a variable X, which can take values AA, BB, or CC. The first 4 values of this variable in a dataset are CC, AA, BB, AA. This information is represented as shown below.

AA	BB	CC
0	0	1
1	0	0
0	1	0
1	0	0

To convert a variable to this format in Python, one can use:

Options :

6406531503482. ✓ pandas.get_dummies

6406531503483. ✗ from sklearn.preprocessing import BinaryEncoder

6406531503484. ✗ import numpy as np

6406531503485. ✗ import seaborn as sb

Question Number : 114 Question Id : 640653451795 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

k-means is typically influenced by the start values. What option in sklearn.cluster.KMeans helps reduce the impact?

Options :

6406531503486. ✗ verbose

6406531503487. ✗ algorithm

6406531503488. ✓ n_init

6406531503489. ✗ init

Question Number : 115 Question Id : 640653451796 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 Pandas dataframe *DF* has a column named *salary_range* which contains the salary details of 10000 employees of a firm binned as *medium*, *high*, and *very high*. You are interested in finding out the number of employees in each category of *salary_range*. Which of the following commands will help you to achieve this goal?

Options :

6406531503490. ❌ `DF['salary_range'].bin_count()`

6406531503491. ✓ `DF['salary_range'].value_counts()`

6406531503492. ❌ `DF$'salary_range.bin_count()`

6406531503493. ❌ `DF$'salary_range.value_counts()`

Question Number : 116 Question Id : 640653451797 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 :

6406531503494. ❌ `random_state`

6406531503495. ❌ `min_sample_split`

6406531503496. ❌ `class_balance`

6406531503497. ✓ `class_weight`

Question Number : 117 Question Id : 640653451798 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 $\text{Sum}_{i=1 \text{ to } 100} |y_i - y_{\text{hat},i}| / 100$. Which of the following functions will help you in achieving this easily?

Options :

6406531503498. ✓ from sklearn.metrics import mean_absolute_error

6406531503499. ✗ from sklearn.metrics import median_absolute_error

6406531503500. ✗ from sklearn.metrics import median_absolute_percentage_error

6406531503501. ✗ from sklearn.metrics import average_absolute_percentage_error

Question Number : 118 Question Id : 640653451799 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 :

6406531503502. ✗ ARIMA(..., trend = (4,1,0))

6406531503503. ✓ ARIMA(..., order = (4,1,0))

6406531503504. ✗ ARIMA(..., order = (0,4,1))

6406531503505. ✗ ARIMA(..., trend = (0,4,1))

Question Number : 119 Question Id : 640653451800 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 :

6406531503506. ❌ Visualization tool

6406531503507. ❌ Dashboard helper

6406531503508. ✓ low-code machine learning library

6406531503509. ❌ Data cleaning solution

Question Number : 120 Question Id : 640653451801 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 and *polarity* are two properties returned by the sentiment function of library:

Options :

6406531503510. ❌ TextBulb

6406531503511. ❌ NLPText

6406531503512. ✓ TextBlob

6406531503513. ❌ NLP

Question Number : 121 Question Id : 640653451802 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 0.8 means that the text statement:

Options :

6406531503514. ❌ has a positive sentiment

6406531503515. ❌ has a negative sentiment

6406531503516. ✓ is more of an opinion statement

6406531503517. ✘ is more of a factual statement

Question Number : 122 Question Id : 640653451803 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 negative 0.5 means that the text statement:

Options :

6406531503518. ✘ has a positive sentiment

6406531503519. ✓ has a negative sentiment

6406531503520. ✘ is more of an opinion statement

6406531503521. ✘ is more of a factual statement

Question Number : 123 Question Id : 640653451804 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 fruits into its respective groups (citrus, berries, melons, apples & pears, and tropical & exotic). Which of the following loss functions from Keras would you pick for the task?

Options :

6406531503522. ✘ binary_crossentropy

6406531503523. ✓ categorical_crossentropy

6406531503524. ✘ mean_squared_error

6406531503525. ✘ mean_absolute_error

Question Number : 124 Question Id : 640653451805 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 :

6406531503526. ✘ builds a decision tree classifier and prints the accuracy of the classifier

6406531503527. ✘ reports the root mean square error of the model

6406531503528. ✘ runs different classification models and compares the results

6406531503529. ✓ builds a text report displaying the main classification metrics

Question Number : 125 Question Id : 640653451806 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 :

6406531503530. ✘ always helps reduce matrix space

6406531503531. ✓ helps reduce matrix space when there are a lot of zero entries in the matrix

6406531503532. ✘ helps reduce matrix space when there are a lot of negative entries in the matrix

6406531503533. ✘ makes matrix multiplication more meaningful and powerful

Question Number : 126 Question Id : 640653451808 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 :

6406531503538. ✘ merge Comicgen characters into a comic

6406531503539. ✅ visualize complex network data

6406531503540. ✅ create dashboards for small scale projects

6406531503541. ✅ Edit photographs and videos

Question Number : 127 Question Id : 640653451809 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 :

6406531503542. ✅ Network

6406531503543. ✅ Elements

6406531503544. ✅ Console

6406531503545. ✅ Sources

Question Number : 128 Question Id : 640653451810 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 :

6406531503546. ✅ Urllib

6406531503547. ✅ BeautifulSoup

6406531503548. ✅ Requests

6406531503549. ✅ Pandas

Question Number : 129 Question Id : 640653451811 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 JSON format:

Options :

6406531503550. ✓ TRUE

6406531503551. ✗ FALSE

Question Number : 130 Question Id : 640653451812 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 :

6406531503552. ✗ Bar chart

6406531503553. ✗ Line chart

6406531503554. ✓ Box and Whisker chart

6406531503555. ✗ Histogram

Sub-Section Number : 3

Sub-Section Id : 64065364972

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 131 Question Id : 640653451772 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>
    </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>
    </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': '<B>'})
```

#Daily Low Values

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

Options :

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

6406531503398. ✖ = wr-value--temperature--c

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

6406531503399. ✖ = wr-value--temperature--c

<A> = wr-day-temperaturelow

6406531503400. ✓ = wr-day-temperaturehigh

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

6406531503401. ✶ = high-label wr-hide-visually

Question Number : 132 Question Id : 640653451775 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 extracts and displays details of **9 scheduled airlines** in India. 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/20220603020500/https://  
en.wikipedia.org/wiki/List_of_airlines_of_India').text  
  
soup = BeautifulSoup(website_url, 'html.parser')  
  
required_table = soup.find_all('table')[0]  
  
df = pd.read_html(str(required_table))  
  
df=pd.DataFrame(df[0])  
  
df
```

6406531503409. ✓

6406531503410. ✶

```
import requests
import pandas as pd
from bs4 import BeautifulSoup
website_url =
requests.get('https://web.archive.org/web/20220603020500/https://en.wikipedia.org/wiki/List_of_airlines_of_India').text
required_table = soup.find_all('table')[1]
df = pd.read_html(str(required_table))
df=pd.DataFrame(df[0])
df
```

```
import get
import pandas as pd
from bs4 import BeautifulSoup
website_url = get.requests
('https://web.archive.org/web/20220603020500/https://en.wikipedia.org/wiki/List_of_airlines_of_India').text
soup = BeautifulSoup(website_url,'html.parser')
df = pd.read_html(str(required_table))
df=pd.DataFrame(df[0])
```

6406531503411. ✘ df

```
import requests
import pandas as pd
from bs4 import BeautifulSoup
soup = BeautifulSoup(website_url,python.html')
required_table = soup.find_all('table')[0]
df = pd.read_html(str(required_table))
df=pd.DataFrame(df[0])
```

6406531503412. ✘ df

Question Number : 133 Question Id : 640653451785 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 among the following code blocks will get you the latitude and longitude of "IIT Madras"?

Assume the Nominatim library is imported using the command given below:

```
from geopy.geocoders import Nominatim
```

Options :

6406531503447. ❌

```
location = locator.geocode("IIT Madras, Chennai, India")
print("Latitude = {}, Longitude = {}".format(location.latitude,
location.longitude))
```

6406531503448. ❌

```
locator = Nominatim(user_agent="myGeocoder")
location = locator.geocode("IIT Madras, Chennai, India")
print("Latitude = {}, Longitude = {}")
```

6406531503449. ✓

```
locator = Nominatim(user_agent="myGeocoder")
location = locator.geocode("IIT Madras, Chennai, India")
print("Latitude = {}, Longitude = {}".format(location.latitude, location.longitude))
```

6406531503450. ❌

```
locator = Nominatim(user_agent="myGeocoder")
print("Latitude = {}, Longitude =
{}".format(location.latitude, location.longitude))
```

Question Number : 134 Question Id : 640653451813 Question Type : MCQ Is Question

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

Time : 0

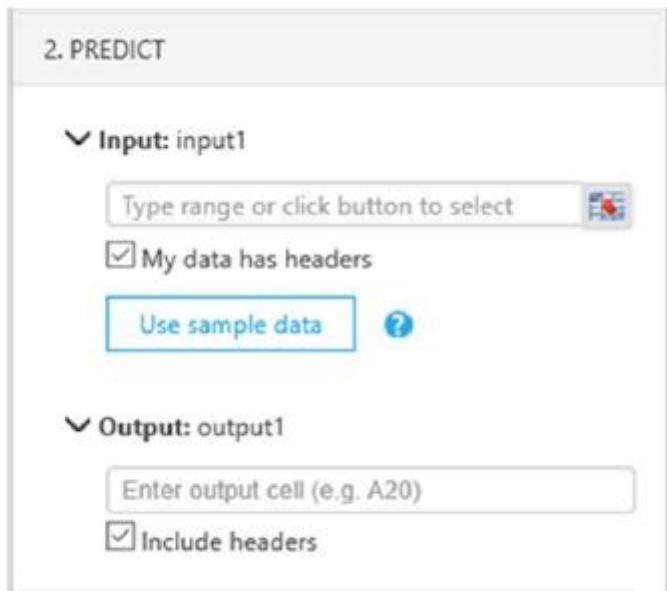
Correct Marks : 2

Question Label : Multiple Choice Question

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

	A	B
1	review	sentiment1
2	One of the other reviewers has positive	
3	A wonderful little production. < positive	
4	I thought this was a wonderful v positive	
5	Basically there's a family where negative	
6	Petter Mattei's "Love in the Tim positive	
7	Probably my all-time favorite m positive	
8	I sure would like to see a resurrepositive	
9	This show was an amazing, fresh negative	
10	Encouraged by the positive com negative	
11	If you like original gut wrenchin positive	

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.



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

Options :

Input: Sheet1!A1:A11
 6406531503556. ✓ Output: Sheet1!C1

Input: Sheet1!B1:B11

6406531503557. *

Output: Sheet1!C1

Sub-Section Number :	4
Sub-Section Id :	64065364973
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 135 Question Id : 640653451807 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 :

6406531503534. * analysis of faults in a computer network

6406531503535. ✓ social network analysis

6406531503536. ✓ analysis of large graphs

6406531503537. * enhancing one's social network

BDM

Section Id :	64065329328
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 :	64065364974
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 136 Question Id : 640653451814 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 :

6406531503558. ✓ Yes

6406531503559. ✗ No

Sub-Section Number :	2
Sub-Section Id :	64065364975
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 137 Question Id : 640653451815 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 :

6406531503560. ❌ Satisfaction divided by the quantity of the good

6406531503561. ✓ Added satisfaction from having one more unit of the good

6406531503562. ❌ Satisfaction divided by the price of the good

6406531503563. ❌ All of these

6406531503564. ❌ None of these

Question Number : 138 Question Id : 640653451816 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

An increase in income leads to an increase in demand for:

Options :

6406531503565. ❌ Inferior good

6406531503566. ❌ Normal good

6406531503567. ❌ Substitute good

6406531503568. ✓ Luxury good

Question Number : 139 Question Id : 640653451818 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 :

6406531503573. ❌ The units used to measure quantity but not the units used to measure price
6406531503574. ❌ The units used to measure price but not the units used to measure quantity
6406531503575. ✓ Neither the units used to measure quantity nor the units used to measure price
6406531503576. ❌ The units used to measure the quantity and the units used to measure price

Question Number : 140 Question Id : 640653451821 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 :

6406531503585. ❌ Low demand / slow moving items - to avoid clutter or congestion near the processing area
6406531503586. ✓ High Demand / Fast Moving items - Saves time and effort. Helps in quicker access
6406531503587. ❌ Expensive Items - To increase security, the items are kept at a visible distance, enabling constant surveillance
6406531503588. ❌ Inexpensive Items - To avoid significant losses caused by thefts.

Question Number : 141 Question Id : 640653451839 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 plan stages will typically have the longest span for low technology and quick set up factory operation?

Options :

6406531503636. ✓ Strategic Plan

6406531503637. ❌ Capacity Requirement Plan

6406531503638. ❌ Purchase Plan

6406531503639. ❌ Production Plan

6406531503640. ❌ Shift Operation Plan

Sub-Section Number : 3

Sub-Section Id : 64065364976

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 142 Question Id : 640653451817 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 :

6406531503569. ❌ Market research data

6406531503570. ✓ Stock market data

6406531503571. ✓ Rainfall data

6406531503572. ❌ Consumer pyramid data

Question Number : 143 Question Id : 640653451827 Question Type : MSQ Is Question

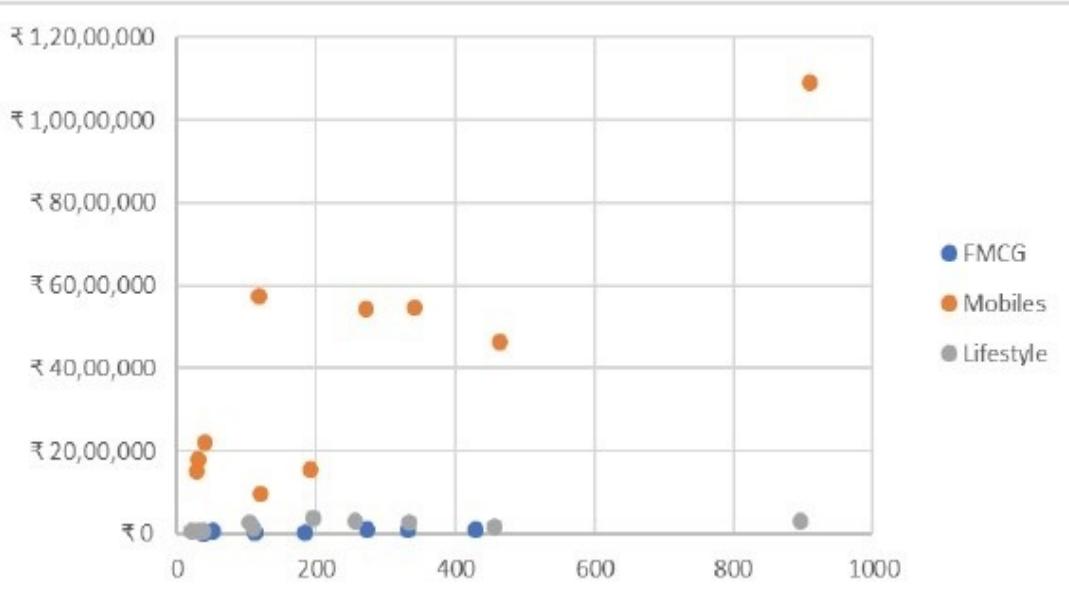
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Selectable Option : 0

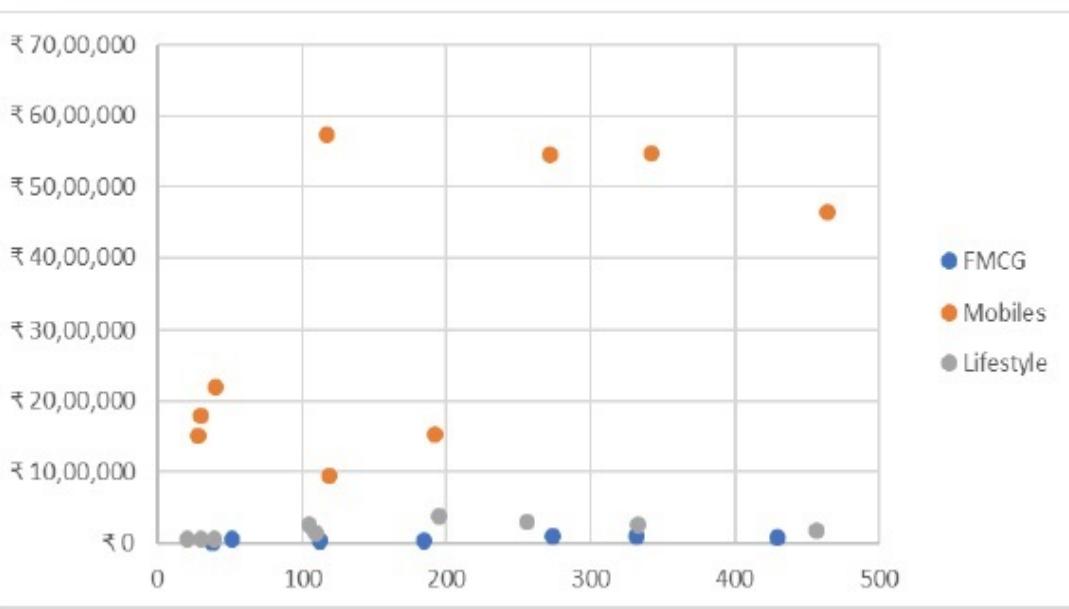
Question Label : Multiple Select Question

What brings about the change in the following scatter plots?

Before:



After:



Options :

- 6406531503605. ✖ Formatting Legend
- 6406531503606. ✖ Increasing Data Points
- 6406531503607. ✓ Reducing the axis range
- 6406531503608. ✓ Eliminating the Outliers

Question Number : 144 Question Id : 640653451828 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 :

6406531503609. ✓ Warehouse / Firm has inventory that is difficult to sell

6406531503610. ✗ It is a high-demand product - with a heavy flow of sales volume

6406531503611. ✓ The replenishment of that product from the Mother Distribution Center is not keeping up with the sales observed by the recipient DC.

6406531503612. ✗ Too many return orders.

Question Number : 145 Question Id : 640653451831 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 :

6406531503622. ✗ Profit

6406531503623. ✓ Cost of Goods Sold

6406531503624. ✗ Closing Inventory

6406531503625. ✗ Fixed Cost

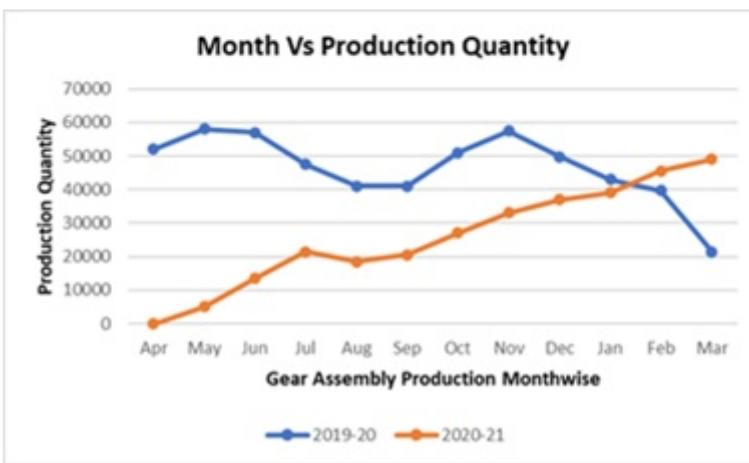
Question Number : 146 Question Id : 640653451840 Question Type : MSQ Is Question

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 :

6406531503641. ❌ Production Quantity is similar between two fiscal years (2019-20 and 2020-21)
6406531503642. ✓ Difference between the Sales and Production shows an increase in December 2019-20 from the previous month
6406531503643. ✓ Production Quantity is likely to be influenced by Sales
6406531503644. ❌ No meaningful conclusion can be derived from the graph.

Sub-Section Number :

4

Sub-Section Id :

64065364977

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 147 Question Id : 640653451819 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 :

6406531503577. ✓ Current assets are 2 times the liability

6406531503578. ✗ Liability is 2 times the current assets

6406531503579. ✓ Stocks is 0.5 times the liability

6406531503580. ✗ Liability is 0.5 times Stocks

6406531503581. ✓ Current assets are greater than stocks

6406531503582. ✗ Stocks are greater than current assets

6406531503583. ✗ None of these

Sub-Section Number : 5

Sub-Section Id : 64065364978

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 148 Question Id : 640653451820 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

Sub-Section Number : 6

Sub-Section Id : 64065364979

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Id : 640653451823 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 : (149 to 150)

Question Label : Comprehension

Analyze the following data set and answer the given subquestions:

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 : 149 Question Id : 640653451824 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 :

6406531503593. ✘ People who buy Groceries avoid the usage of Credit Card

6406531503594. ✓ The test group did not respond well to the new features or nudges.

6406531503595. ✗ The nudge worked.

6406531503596. ✗ It is not possible for a previously Medium level engagement customer to drop down to an 'About to Churn' Level

Question Number : 150 Question Id : 640653451825 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 the PayBuddy case - what are the main causes for the company to face losses?

Options :

6406531503597. ✓ Wrong assessment of Credit Approval

6406531503598. ✗ Low commission rate per transaction

6406531503599. ✗ Travel Industry hit by COVID

6406531503600. ✗ Users unaware/unsure about the concept of credit

Sub-Section Number : 7

Sub-Section Id : 64065364980

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653451832 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 : (151 to 156)

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 : 151 Question Id : 640653451833 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 :

6406531503626. ❌ only performance

6406531503627. ✓ only availability

6406531503628. ❌ performance and quality

6406531503629. ❌ All of these

6406531503630. ❌ None of these

Question Number : 152 Question Id : 640653451834 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 : 153 Question Id : 640653451835 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 : 154 Question Id : 640653451836 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 : 155 Question Id : 640653451837 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 : 156 Question Id : 640653451838 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

Sub-Section Number : 8

Sub-Section Id : 64065364981

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 157 Question Id : 640653451822 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 :

6406531503589. ✓ A - 4,B - 2,C - 1,D - 5

6406531503590. ✗ A - 4,B - 2,C - 3,D - 5

6406531503591. ✗ A - 5,B - 2,C - 1,D - 3

6406531503592. ✘ A - 5,B - 1,C - 2,D - 3

Sub-Section Number :	9
Sub-Section Id :	64065364982
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 158 Question Id : 640653451829 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 :

6406531503613. ✘ Targets users with low bank balances and provides them with surplus money

6406531503614. ✓ Acts as the mediator between the merchant and the financial institutions involved

6406531503615. ✘ Acts as a distributor for products and services

6406531503616. ✓ Provides multiple payment options

Question Number : 159 Question Id : 640653451830 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 :

6406531503617. ✘ Revenue

6406531503618. ✘ Direct Material Cost

6406531503619. ✘ Direct Labour Cost

6406531503620. ✘ Shipping Cost

Sub-Section Number :	10
Sub-Section Id :	64065364983
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 160 Question Id : 640653451841 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 :

6406531503645. ✓ Partha > Akanksha > Siva > Lavanya

6406531503646. ✗ Akanksha > Lavanya > Siva> Partha

6406531503647. ✗ Partha < Akanksha < Lavanya < Siva

6406531503648. ✗ Akanksha < Lavanya < Siva< Partha

Sub-Section Number :	11
Sub-Section Id :	64065364984
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 161 Question Id : 640653451826 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

From the table, which of the options best represents the revenue change from 31st March 2022 to 1st April 2022?

Date	Sum of Revenue
23-03-2022	₹ 28,92,404
24-03-2022	₹ 27,48,802
25-03-2022	₹ 27,83,849
26-03-2022	₹ 31,52,277
27-03-2022	₹ 31,97,606
28-03-2022	₹ 30,83,087
29-03-2022	₹ 29,96,175
30-03-2022	₹ 27,70,834
31-03-2022	₹ 28,45,271
01-04-2022	₹ 26,48,451
02-04-2022	₹ 30,03,639
03-04-2022	₹ 29,84,822
04-04-2022	₹ 28,52,689
05-04-2022	₹ 27,84,763
06-04-2022	₹ 28,29,945

Options :

6406531503601. ✗ 10 Percent - Reduction

6406531503602. ✗ 7 Percent - Increment

6406531503603. ✓ 7 Percent - Reduction

6406531503604. ✗ 10 Percent - Increment

Question Number : 162 Question Id : 640653451842 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 :

6406531503649. ❌ I -> II -> III -> IV

6406531503650. ✓ II -> I -> IV -> III

6406531503651. ❌ I -> II -> IV -> III

6406531503652. ❌ II -> I -> III -> IV

System Commands

Section Id :	64065329329
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 :	64065364985

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Number : 163 Question Id : 640653451843 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 :

6406531503653. ✓ YES

6406531503654. ✗ NO

Sub-Section Number :

2

Sub-Section Id :

64065364986

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 164 Question Id : 640653451844 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 -ne '*\n*\n*' # There is a space after the last *
echo -n '* ' # There is a space after *
```

Options :

*
* * *
*

6406531503655. ❌

* * * * *

6406531503656. ❌

* *\n*\n* *

6406531503657. ❌

* *
*
*

6406531503658. ✓

Question Number : 165 Question Id : 640653451845 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 :

6406531503659. ✓ soft link

6406531503660. ✗ hard link

6406531503661. ✗ either soft link or hard link

6406531503662. ✗ links will not work for this requirement

Question Number : 166 Question Id : 640653451848 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\$vgg@yGp 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 :

6406531503671. ✗ Cut the paragraph and paste at the end of the document.

6406531503672. ✗ Copy the paragraph and paste at the end of the document.

6406531503673. ✗ Cut and paste the entire document (finally one copy of initial document)

6406531503674. ✓ Copy and paste the entire document (finally two copies of initial document)

Question Number : 167 Question Id : 640653451851 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
done < file1 > file2 | tee file3
```

Options :

6406531503680. ❌ *file2* will be empty at the end of execution

6406531503681. ✓ *file3* will be empty at the end of execution

6406531503682. ❌ The contents of *file1* will be displayed in the terminal

6406531503683. ❌ *file3* will contain the contents of *file1*

Question Number : 168 Question Id : 640653451852 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. Assume that the regular expression is using Extended Regular Expression Engine (ERE).

Options :

6406531503684. ❌ ...

6406531503685. ❌ .**.*

6406531503686. ❌ (.)\1\1

6406531503687. ✓ (.) .* \1.* \1

6406531503688. ❌ ^(.) .* \1.* \1\$

Question Number : 169 Question Id : 640653451854 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  
s/\n//g
```

Options :

6406531503697. ❌ Merge every two consecutive lines to a single line

6406531503698. ✓ Merge every three consecutive lines to a single line

6406531503699. ❌ Merge every four consecutive lines to a single line

6406531503700. ❌ The input remains unaltered

Question Number : 170 Question Id : 640653451857 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] == 2 {  
    print  
}  
' data
```

Options :

6406531503706. ❌ The lines that are distinct

6406531503707. ❌ The lines that are repeated exactly twice

6406531503708. ✓ The lines that are repeated twice or more

6406531503709. ❌ The lines that are repeated more than twice

Sub-Section Number : 3

Sub-Section Id : 64065364987

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 171 Question Id : 640653451846 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 FILE`
    # "2022-10-20 14:52:58.738413991 +0530"
    # *****
    # * COMPLETE THE SCRIPT *
    # *****
done
```

Options :

6406531503663. ❌ `mv $file ${creation_time/_/T}`

6406531503664. ❌ `mv $file $creation_time`

6406531503665. ✓ `temp="${creation_time%%.*}"
temp="${temp/_/T}"
mv "$file" "${file}_${temp}"`

6406531503666. ❌

```
temp="${creation_time%.*}"
temp="${temp% /T}"
mv "$file" "$temp"
```

Question Number : 172 Question Id : 640653451847 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 10:00 pm every day-of-week from Monday through Friday in every month from January through June and at 9:00 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
```

6406531503667. ✓

```
0 10 * 1-6 1-5 /home/bill/autoscript/backup.sh
0 9 * 7-12 1-5 /home/bill/autoscript/backup.sh
```

6406531503668. ✗

```
0 9 * 1-5 1-6 /home/bill/autoscript/backup.sh  
0 10 * 1-5 7-12 /home/bill/autoscript/backup.sh
```

6406531503669. ✘

```
0 21 * 1-6 1-5 /home/bill/autoscript/backup.sh  
0 22 * 7-12 1-5 /home/bill/autoscript/backup.sh
```

6406531503670. ✘

Sub-Section Number : 4

Sub-Section Id : 64065364988

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 173 Question Id : 640653451849 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
```

6406531503675. ✘

```
while read file; do  
    cp "./${file##*/}" "$file"  
done < files
```

6406531503676. ✓

```
while read file; do  
    cp "./${file//\//\\//}" "$file"  
done < files
```

6406531503677. ✓

```
for file in `cat files`; do
    cp "$file" "./${file##*/}"
done
```

6406531503678. ✘

Question Number : 174 Question Id : 640653451853 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 the regular expression is using Extended Regular Expression Engine (ERE).

```
^$  
^([[:digit:]]){3,}$  
^[^.]+$
```

Options :

6406531503689. ✓ An empty line

6406531503690. ✘ A line having a number with only one decimal place (Ex: 10.1)

6406531503691. ✘ A line without a space

6406531503692. ✘ A line with three spaces

6406531503693. ✘ A line starts with two consecutive numbers

6406531503694. ✓ A line containing only four consecutive numbers

6406531503695. ✓ A line without a dot

6406531503696. ✘ A line with one or more dot characters

Question Number : 175 Question Id : 640653451856 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 :

6406531503702. ✘ Only the first occurrence of `~ITER~` in every line of the file `data` is replaced

6406531503703. ✘ 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
6406531503704. ✓

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/"
```

6406531503705. ✓

Sub-Section Number : 5

Sub-Section Id : 64065364989

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 176 Question Id : 640653451850 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=0
    if ((i%3==0)); then
        f=1
        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 :

7

Question Number : 177 **Question Id :** 640653451855 **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/g
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Sub-Section Number :	6
Sub-Section Id :	64065364990
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 178 Question Id : 640653451858 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
1 2
3 4
5 6
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 :	64065329330
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 :	64065364991
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 179 Question Id : 640653451859 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 :

6406531503711. ✓ YES

6406531503712. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065364992

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 180 Question Id : 640653451860 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

We wish to load digit dataset from sklearn. Which of the following will result into an error?

Options :

from sklearn.datasets import load_digits

6406531503713. ✗ (X, y) = load_digits(return_X_y = True)

from sklearn.datasets import load_digits

6406531503714. ✗ data = load_digits(return_X_y = True)

from sklearn.datasets import load_digits

6406531503715. ✗ data = load_digits()

from sklearn.datasets import load_digits

6406531503716. ✓ X, y = load_digits()

Question Number : 181 Question Id : 640653451862 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/are incorrect about the AUC?

Options :

6406531503718. ❌ AUC stands for Area Underneath the Curve.

6406531503719. ✓ A completely effective classifier is a diagonal line, and it will have an AUC of 0.5.

6406531503720. ❌ The larger the value of AUC, the more effective the classifier.

6406531503721. ❌ 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.

6406531503722. ❌ None of these.

Question Number : 182 Question Id : 640653451876 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 option to set the regularization rate in RidgeClassifier?

Options :

6406531503764. ❌ `logit_classifier = LogisticRegression(penalty='12')`

6406531503765. ✓ `from sklearn.linear_model import RidgeClassifier`
`ridge_classifier = RidgeClassifier(alpha=0.001)`

6406531503766. ❌ `SGDClassifier(loss="perceptron", eta0=1, learning_rate="constant",`
`penalty=None)`

6406531503767. ❌

```
if solver == 'auto':
    if return_intercept:
        solver = "sag"
    elif not sparse.issparse(X):
        solver = "cholesky"
    else:
        solver = "sparse_cg"
```

Question Number : 183 Question Id : 640653451877 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

Putting **loss=hinge** in class `sklearn.linear_model.SGDClassifier(loss='hinge')` dictates which of the following loss functions in `SGDClassifier`?

Options :

6406531503768. ❌ hinge but quadratically penalized

6406531503769. ❌ logistic regression

6406531503770. ✓ linear SVM

6406531503771. ❌ None of these

Question Number : 184 Question Id : 640653451879 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 is imbalanced?

Options :

6406531503776. ❌ GaussianNB

6406531503777. ✓ ComplementNB

6406531503778. ❌ CategoricalNB

6406531503779. ✘ None of these

Question Number : 185 Question Id : 640653451881 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 for the following block of code?

```
X = [[0], [1], [2], [3]]  
y = [0, 1, 1, 1]  
from sklearn.neighbors import KNeighborsRegressor  
neigh = KNeighborsRegressor(n_neighbors=2)  
neigh.fit(X, y)  
print(neigh.predict([[2.5]]))
```

Options :

6406531503784. ✘ [0.]

6406531503785. ✘ [0.5]

6406531503786. ✘ [1.5]

6406531503787. ✓ [1.]

Question Number : 186 Question Id : 640653451884 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?

1. 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.
2. Statement 2: Sklearn can process large data in batches and updates the model parameters for each batch.

Options :

6406531503796. ✘ Statement 1 is correct but statement 2 is incorrect.

6406531503797. ✘ Statement 1 is incorrect but statement 2 is correct.

6406531503798. ✘ Statement 1 and statement 2 both are incorrect.

6406531503799. ✓ Statement 1 and statement 2 both are correct.

Question Number : 187 Question Id : 640653451885 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 implements largest measure of regularization, i.e. which of these models will have lowest overfitting?

Options :

from sklearn.svm import SVC

6406531503800. ✘ clf_svm = SVC(C=80)

from sklearn.svm import SVC

6406531503801. ✘ clf_svm = SVC(C=20)

from sklearn.svm import SVC

6406531503802. ✘ clf_svm = SVC(C=1)

from sklearn.svm import SVC

6406531503803. ✓ clf_svm = SVC(C=0.1)

Question Number : 188 Question Id : 640653451889 Question Type : MCQ Is Question

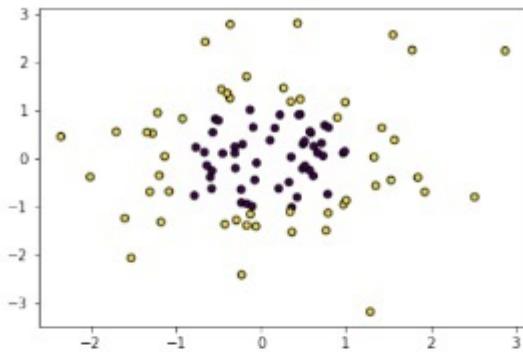
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

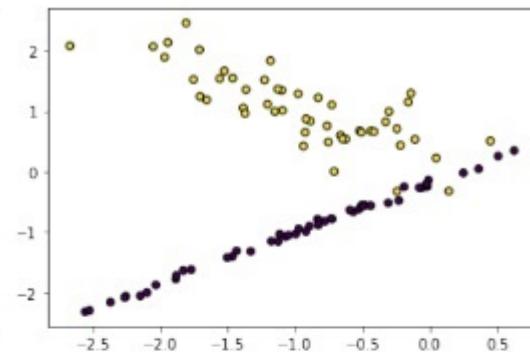
Correct Marks : 2

Question Label : Multiple Choice Question

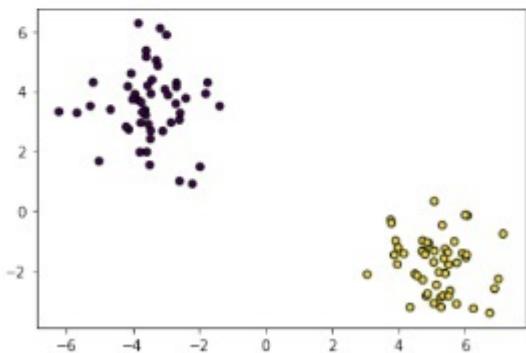
Consider the following scatter plots of four different input datasets:



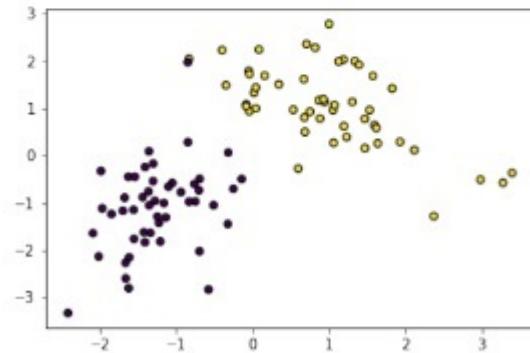
Data 1



Data 2



Data 3



Data 4

Which data will be classified better using gaussian rbf kernel?

Options :

6406531503813. ✘ Data 4

6406531503814. ✘ Data 3

6406531503815. ✓ Data 1

6406531503816. ✘ Data 2

Question Number : 189 Question Id : 640653451890 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 statements regarding a decision tree model:

1. It is a non-parametric model.
2. It has a tendency to underfit if allowed to grow unconditionally.

3. It can be used for regression and classification problems only, but not for clustering.
4. It is one of the most difficult machine learning models to interpret.
5. For regression problems, decision tree's loss function and evaluation metric can be same.

Choose the option with all the correct statements:

Options :

6406531503817. ✓ 1, 3, 5

6406531503818. ✗ 1, 3

6406531503819. ✗ 3, 5

6406531503820. ✗ 2, 4

6406531503821. ✗ 1, 3, 4

6406531503822. ✗ 1, 2, 4

Question Number : 190 Question Id : 640653451891 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 in a decision tree (in sklearn):

Options :

6406531503823. ✓ It creates only two new children nodes always.

6406531503824. ✗ It can create two or more new children nodes always.

6406531503825. ✗ It depends on the cardinality of the categorical feature.

6406531503826. ✗ It depends on the scale of the numerical feature.

Question Number : 191 Question Id : 640653451895 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 statements:

1. The K-means algorithm aims to choose centroids that minimise the inertia.
2. The K-Means algorithm requires the number of clusters to be specified

Choose the correct option of the following:

Options :

6406531503841. ✓ Both statement 1 and 2 are correct.

6406531503842. ✗ Statement 1 is correct but statement 2 is incorrect.

6406531503843. ✗ Statement 1 is incorrect but statement 2 is correct.

6406531503844. ✗ Both statement 1 and 2 are incorrect.

Question Number : 192 Question Id : 640653451896 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 as

Options :

6406531503845. ✗ Centroid Based Clustering

6406531503846. ✗ Distribution-based Clustering

6406531503847. ✗ Density-based Clustering

6406531503848. ✓ Connectivity-Based Clustering

Sub-Section Number : 3

Sub-Section Id : 64065364993

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 193 Question Id : 640653451882 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 :

6406531503788. ✓ HashingVectorizer does not store vocabulary, its object takes less space compared to CountVectorizer

6406531503789. ✗ CountVectorizer does not store vocabulary, its object takes less space compared to HashingVectorizer

6406531503790. ✓ HashingVectorizer alleviates any dependence with function calls performed on the previous chunk of data in case of incremental learning

6406531503791. ✗ CountVectorizer alleviates any dependence with function calls performed on the previous chunk of data in case of incremental learning

Question Number : 194 Question Id : 640653451883 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 partial_fit in sklearn's Perceptron model helps to:

Options :

6406531503792. ✓ Iteratively train the model over a large dataset

6406531503793. ✓ Implement batch gradient descent

6406531503794. ✗ Update half of the weight parameters in each epoch.

6406531503795. ✓ Tracking progress of the model in each iteration.

Question Number : 195 Question Id : 640653451886 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 are True about ν in NuSVC?

Options :

- ✓ ν is introduced in NuSVC to control the number of support vectors and margin errors.
- ✓ ν is an upper bound on the fraction of margin errors and a lower bound of the fraction of support vectors.

- ✓ ν is an lower bound on the fraction of margin errors and a upper bound of the fraction of support vectors.

- ✗ ν is introduced in LinearSVC to control only the number of support vectors.

Question Number : 196 Question Id : 640653451892 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 in sklearn?

Options :

- ✗ Number of features
- ✓ Number of minimum samples to split
- ✓ Height of the tree
- ✗ Diameter of the tree

Sub-Section Number : 4

Sub-Section Id : 64065364994

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 197 Question Id : 640653451861 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

Enter the output (up to 2 decimal points) for the following block of code.

```
from sklearn.datasets import make_blobs
X, y = make_blobs(n_samples=22, centers=7, n_features=12, random_state=42)
print (X.shape[1])
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

11.95 to 12.05

Sub-Section Number : 5

Sub-Section Id : 64065364995

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 198 **Question Id :** 640653451866 **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=3, interaction_only=False)
data = data.reshape(2,2)
poly.fit_transform(data)
```

which of the following could be the correct output?

Options :

6406531503733. ✘ array([[1., 2., 1., 4., 2., 1.], [1., 2., 1., 4., 2., 1.]])

6406531503734. ✘ array([[1., 2., 1., 4., 2., 1., 4., 4., 2., 1.], [1., 2., 1., 4., 2., 1., 4., 4., 2., 1.]])

6406531503735. ✘ array([[1., 2., 1., 2.], [1., 2., 1., 2.]])

6406531503736. ✓ array([[1., 2., 1., 4., 2., 1., 8., 4., 2., 1.], [1., 2., 1., 4., 2., 1., 8., 4., 2., 1.]])

Question Number : 199 Question Id : 640653451867 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 :

6406531503737. ✘ [0.85,0.1,0.05]

6406531503738. ✘ [2,3,1]

6406531503739. ✓ [0.85,0]

6406531503740. ✘ There are some mistakes in the 3rd /4th line of code, hence it will produce error.

Question Number : 200 Question Id : 640653451871 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= [[1,0], [2, 1], [3, 2]]
y= [10, 20, 30]
clf.fit(X, y)
linear_model.Ridge(alpha=1, max_iter=1000,
                    tol=0.0001, fit_intercept=True)
clf.score()
```

Options :

6406531503750. ✘ 5

6406531503751. ✘ 99

6406531503752. ✓ Given code will produce an error

6406531503753. ✘ 0.96

Question Number : 201 Question Id : 640653451872 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 correct code block or blocks to set adaptive learning rate while using SGDRegressor will be:

Options :

6406531503754. ✘ from sklearn.linear_model import SGDRegressor
linear_regressor = (SGDRegressor_learning_rate='adaptive', eta0=1e-2)

6406531503755. ✘ from sklearn.model_selection import SGDRegressor
SGD_regressor = LinearRegressor(learning_rate='adaptive', eta0=1e-2)

6406531503756. ✓ from sklearn.linear_model import SGDRegressor
linear_regressor = SGDRegressor(learning_rate='adaptive')

6406531503757. ✘ from sklearn.model_selection import SGDRegressor
SGD_regressor = linear_model(learning_rate='adaptive', eta0=1e-2)

Question Number : 202 Question Id : 640653451874 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:

1. Statement 1 : In order to extend ROC curve and ROC area to multi-label classification, it is necessary to binarize the output.
2. Statement 2: In SGDClassifier, setting warm_start=True retains the weight values of the model after max_iter and hence produce different results for each execution.

Choose the correct option:

Options :

6406531503759. ❌ Statement 1 is correct but statement 2 is incorrect.

6406531503760. ❌ Statement 1 is incorrect but statement 2 is correct.

6406531503761. ❌ Statement 1 and statement 2 both are incorrect.

6406531503762. ✓ Statement 1 and statement 2 both are correct.

Question Number : 203 Question Id : 640653451878 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 :

6406531503772. ❌ (11, 1)

6406531503773. ✘ (1, 11)

6406531503774. ✘ (10, 1)

6406531503775. ✓ (1, 10)

Question Number : 204 Question Id : 640653451880 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 = [
    'This is Sparta!']
vectorizer = TfidfVectorizer()
X = vectorizer.fit_transform(corpus)
vectorizer.get_feature_names_out()
```

Options :

6406531503780. ✓ array(['is', 'sparta', 'this'], dtype=object)

6406531503781. ✘ array(['is', 'sparta', 'this', '!'], dtype=object)

6406531503782. ✘ array(['sparta', 'this', '!'], dtype=object)

6406531503783. ✘ array(['sparta'], dtype=object)

Question Number : 205 Question Id : 640653451887 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 = [[0, 0], [1, 1]]
y = [0, 1]
clf = svm.SVC()
clf.fit(X, y)
clf.predict([[2., 2.]])
```

Options :

6406531503808. ✘ array([2])

6406531503809. ✘ array([1.5])

6406531503810. ✓ array([1])

6406531503811. ✘ array([0])

Question Number : 206 Question Id : 640653451897 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 regression problem to solve with following information:

1. All features are numerical.
2. The dataset has size of 40 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 :

6406531503849. ✘ Perform one hot encoding followed by training with LinearRegression model (from sklearn.linear_model).

6406531503850. ✘ Perform standard scaling followed by training with KNeighborsRegressor model (from sklearn.neighbors).

6406531503851. ✘ Perform min-max scaling followed by training with DecisionTreeRegressor model (from sklearn.tree).

6406531503852. ✓ Perform min-max scaling followed by training with SGDRegressor model (from

sklearn.linear_model).

Sub-Section Number :	6
Sub-Section Id :	64065364996
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 207 Question Id : 640653451898 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 code and select the correct options.

(Note: Assume necessary imports.)

```
pipe = Pipeline([('scaler', StandardScaler()),
                 ('classifier', MLPRegressor(hidden_layer_sizes=(150,
                                                               100,
                                                               50),
                                              tol=1e-2, alpha=1e-4, solver="sgd",
                                              learning_rate_init=0.1, max_iter=50,
                                              random_state=1))])
pipe.fit(X_train,y_train)
```

Options :

6406531503853. ❌ Scaled data have values in between [0, 1].

6406531503854. ✓ Regressor has three hidden layers.

6406531503855. ❌ Regressor has 150 hidden layers.

6406531503856. ✓ Regressor applies stochastic gradient decent to update the weights.

Sub-Section Number :	7
Sub-Section Id :	64065364997
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 208 Question Id : 640653451864 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	tom	52	84	78
1	nick	51	76	81
2	juli	41	76	81
3	Abhi	62	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 :

15.95 to 16.05

Question Number : 209 Question Id : 640653451873 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=6, random_state=0)
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 :

6

Question Number : 210 **Question Id :** 640653451875 **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([-1, 1, 1, 1])
y = np.array([0, 1, 1, 1])
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 : 211 Question Id : 640653451888 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 = [[0], [1], [2]]
Y = [0, 1, 2]
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 :

3

Sub-Section Number : 8

Sub-Section Id : 64065364998

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 212 Question Id : 640653451863 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 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]

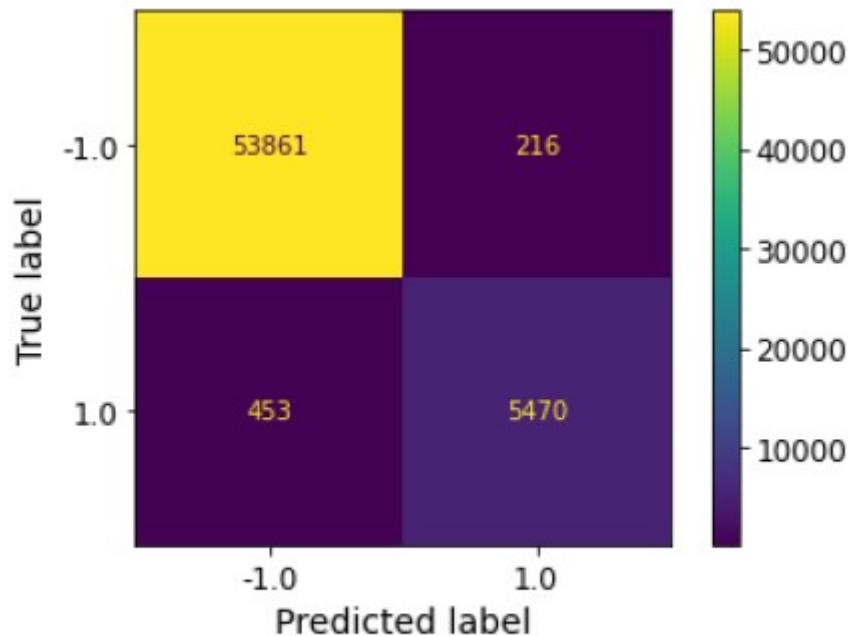


Figure 1: Confusion matrix

Options :

6406531503723. ✓ Precision: 0.9783, Recall: 0.9289, Accuracy: 0.9909

6406531503724. ✗ Precision: 0.9289, Recall: 0.9783, Accuracy: 0.9909

6406531503725. ✗ Precision: 0.9909, Recall: 0.9783, Accuracy: 0.9289

6406531503726. ✗ None of these.

Question Number : 213 Question Id : 640653451865 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"], [[.1, .9], [.9, .1]], eps=1e-15,
              normalize=True, sample_weight=None, labels=None)
print(loss)
```

Options :

6406531503728. ✘ 1
6406531503729. ✘ 0
6406531503730. ✘ 0.210
6406531503731. ✓ 0.105
6406531503732. ✘ 0.233

Question Number : 214 Question Id : 640653451893 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

Rajesh 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 10 to 20 (both inclusive) at the interval of 1.
3. Cross validation =4.
4. Learning rate must vary between 0.1 to 1.0 (both inclusive) at the intervals of 0.1.
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 Rajesh's task?

[Note: Assume necessary imports and variables for training and test sets.]

Options :

- ```
params = {'n_estimators':list(range(10,21)),
 'learning_rate': np.linspace(0.1,1.0, 10)}

ada = AdaBoostClassifier()
gs_ada = GridSearchCV(ada, cv =4, refit=True, param_grid =params)
gs_ada.fit(X_train, y_train)

6406531503831. ✓ 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 =4, refit=True, param_grid =params)
gs_ada.fit(X_train, y_train)
```

6406531503832. ✘ 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 = 4, fit_best=True, parameters =params)
gs_ada.fit(X_train, y_train)
```

6406531503833. ✘ 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 = 4, fit_best=True,
 parameters =params)
gs_ada.fit(X_test, y_test)
```

6406531503834. ✘ print(gs\_ada.best\_estimator\_.score(X\_train, y\_train))

```
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 = 4,
 parameters =params)
```

```
best_model = gs_ada.get_best_model().fit(X_train, y_train)
```

6406531503835. ✘ print(gs\_ada.best\_estimator\_.score(X\_test, y\_test))

**Question Number : 215 Question Id : 640653451894 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

Asha wants to train a bagging classifier with following specifications:

1. Base estimator as k nearest neighbour classifier with default parameter values.
2. 70% of the data is used to create a bag of samples.
3. Create subsets of training set with replacement.
4. Take all features when bootstrapping.
5. Train the model on training set.
6. Print score on test set.

Which of the following code blocks will correctly execute Asha's task?

[Note: Assume necessary imports and variables for training and test sets.]

**Options :**

bagging = BaggingClassifier(KNeighborsClassifier(),  
 max\_samples = 0.7,  
 bootstrap = True,  
 max\_features = 1.0)  
bagging.fit(X\_train, y\_train)  
6406531503836. ✓ print(bagging.score(X\_test, y\_test))

bagging = BaggingClassifier(KNeighborsClassifier(),  
 max\_samples = 70,  
 bootstrap = True,  
 max\_features = 'all')  
bagging.fit(X\_train, y\_train)  
6406531503837. ✗ print(bagging.score(X\_test, y\_test))

bagging = BaggingClassifier(KNeighborsClassifier(),  
 max\_samples = 0.7,  
 bootstrap = True,  
 max\_features = 'all')  
bagging.fit(X\_train, y\_train)  
6406531503838. ✗ print(bagging.score(X\_test, y\_test))

6406531503839. ✗

```
bagging = BaggingClassifier(KNeighborsClassifier(),
 max_samples = 70,
 bootstrap = False,
 max_features = 'all')
bagging.fit(X_train, y_train)
print(bagging.score(X_test, y_test))

bagging = BaggingClassifier(KNeighborsClassifier(),
 bag_size = 0.7,
 bootstrap = True,
 all_features = True)
bagging.fit(X_train, y_train)
print(bagging.score(X_test, y_test))
6406531503840. *
```

**Sub-Section Number :** 9

**Sub-Section Id :** 64065364999

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653451868 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 given 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(0.01, 1, 0.03)

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 : 640653451869 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 :**

6406531503741. ✘ 0.03

6406531503742. ✓ 0.7

6406531503743. ✓ 0.01

6406531503744. ✓ 0.1

6406531503745. ✘ 1

**Question Number : 217 Question Id : 640653451870 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 :**

6406531503746. ✘ 1

6406531503747. ✓ -3000.38

6406531503748. ✘ 0.528

6406531503749. ✘ 0.681

## PDSA

|                                                                     |             |
|---------------------------------------------------------------------|-------------|
| <b>Section Id :</b>                                                 | 64065329331 |
| <b>Section Number :</b>                                             | 8           |
| <b>Section type :</b>                                               | Online      |
| <b>Mandatory or Optional :</b>                                      | Mandatory   |
| <b>Number of Questions :</b>                                        | 30          |
| <b>Number of Questions to be attempted :</b>                        | 30          |
| <b>Section Marks :</b>                                              | 100         |
| <b>Display Number Panel :</b>                                       | Yes         |
| <b>Group All Questions :</b>                                        | No          |
| <b>Enable Mark as Answered Mark for Review and Clear Response :</b> | Yes         |
| <b>Maximum Instruction Time :</b>                                   | 0           |
| <b>Sub-Section Number :</b>                                         | 1           |
| <b>Sub-Section Id :</b>                                             | 64065365000 |
| <b>Question Shuffling Allowed :</b>                                 | No          |
| <b>Is Section Default? :</b>                                        | null        |

**Question Number : 218 Question Id : 640653451899 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 :**

6406531503857. ✓ YES

6406531503858. ✗ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 64065365001

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 219 Question Id : 640653451900 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 = 1
3 s = 1
4 while i**2 < n:
5 s = s + 1
6 i += 1
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 :**

6406531503859. ✘  $T(n) = O(n)$

6406531503860. ✓  $T(n) = O(\sqrt{n})$

6406531503861. ✘  $T(n) = O(n^2)$

6406531503862. ✘  $T(n) = O(\log n)$

**Question Number : 220 Question Id : 640653451901 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 list of  $n$  strings, each of length  $n$ , is sorted in lexicographic order using the merge-sort algorithm. The worst case running time of this computation is \_\_\_\_.

**Options :**

6406531503863. ✘  $O(n \log n)$

6406531503864. ✓  $O(n^2 \log n)$

6406531503865. ✘  $O(n^2 + \log n)$

6406531503866. ✘  $O(n^2)$

**Question Number : 221 Question Id : 640653451906 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 :**

6406531503881. ❌ the shortest path between every pair of vertices.

6406531503882. ✓ the shortest path from  $S$  to every vertex in the graph.

6406531503883. ❌ the shortest path from  $S$  to only those nodes that are leaves of  $T$ .

6406531503884. ❌ the longest path from  $S$  to every vertex in the graph.

**Question Number : 222 Question Id : 640653451907 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 11 vertices, 7 edges are marked as tree edges. The number of connected components in  $G$  is \_\_\_\_.

**Options :**

6406531503885. ❌ 2

6406531503886. ❌ 3

6406531503887. ✓ 4

6406531503888. ❌ 5

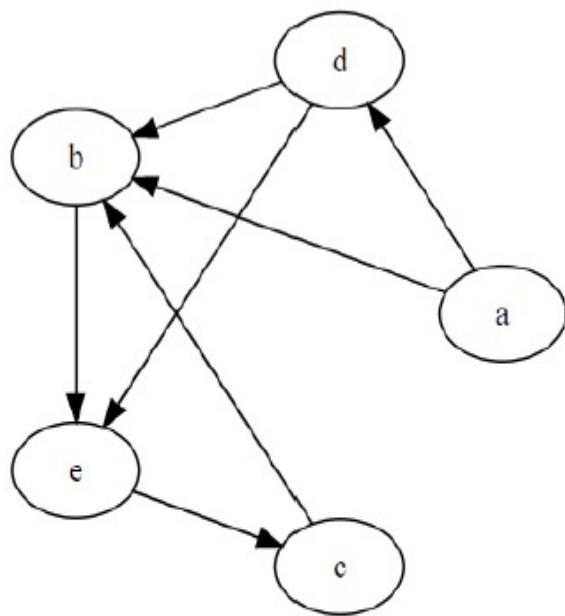
**Question Number : 223 Question Id : 640653451908 Question Type : MCQ Is Question**

**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  $a$ . 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 :**

6406531503889. ✘  $E_b = 2, E_c = 1$  and  $E_t = 4$

6406531503890. ✘  $E_b = 2, E_c = 2$  and  $E_t = 3$

6406531503891. ✓  $E_b = 1, E_c = 2$  and  $E_t = 4$

6406531503892. ✘  $E_b = 1, E_c = 3$  and  $E_t = 3$

**Question Number : 224 Question Id : 640653451910 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 Floyd-Warshall algorithm for finding all pairs of shortest distances in a graph?

**Options :**

6406531503897. ✘ Greedy

6406531503898. ✓ Dynamic programming

6406531503899. ✘ Divide and conquer

6406531503900. ✘ None of these

**Question Number : 225 Question Id : 640653451911 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. The edge  $e$  must definitely belong to each path from  $s$  to  $t$ .
2. The edge  $e$  must definitely belong to the minimum cost spanning tree of  $G$ .

**Options :**

6406531503901. ✘ Only 1

6406531503902. ✓ Only 2

6406531503903. ✘ Both 1 and 2

6406531503904. ✘ Neither 1 nor 2

**Question Number : 226 Question Id : 640653451912 Question Type : MCQ Is Question**

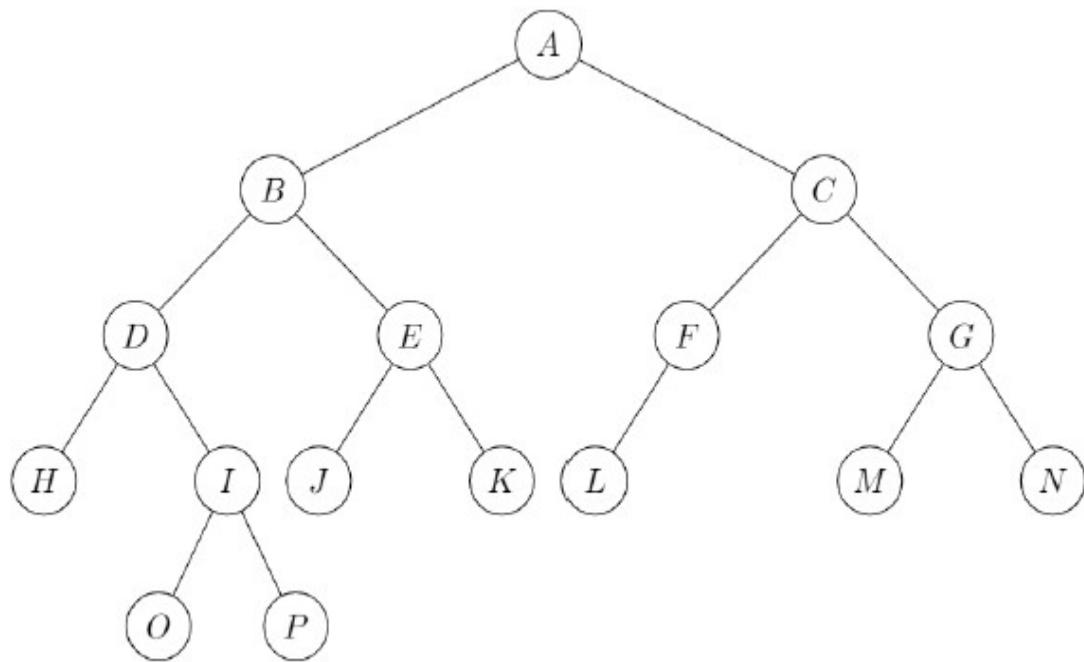
**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**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 4<sup>th</sup> largest node (in terms of value) in the given binary search tree?

**Options :**

6406531503905. ✘  M

6406531503906. ✘  F

6406531503907. ✘  G

6406531503908. ✓  C

6406531503909. ✘  L

**Question Number : 227 Question Id : 640653451913 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 7 are \_\_\_\_\_. Consider that the height of the empty tree is 0.

**Options :**

6406531503910. ✘ 128 and 7, respectively

6406531503911. ✘ 127 and 6, respectively

6406531503912. ✘ 128 and 6, respectively

6406531503913. ✓ 127 and 7, respectively

**Question Number : 228 Question Id : 640653451926 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 :**

6406531503943. ✘  $T = \text{'baabaabaabaab'}$  and  $P = \text{'abba'}$

6406531503944. ✓  $T = \text{'aaaaaaaaaaaaaa'}$  and  $P = \text{'baaa'}$

6406531503945. ✘  $T = \text{'aaaaaaaaaaaaaa'}$  and  $P = \text{'abbb'}$

6406531503946. ✘  $T = \text{'aaaaaaaaaaaaaa'}$  and  $P = \text{'bbba'}$

**Question Number : 229 Question Id : 640653451927 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 terminate node  $\$$  for depth.

**Options :**

6406531503947. ✘  $\log n$

6406531503948. ✘  $\log m$

6406531503949. ✘  $n$

6406531503950. ✓  $m$

**Question Number : 230 Question Id : 640653451930 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 problem in NP is NP-complete if \_\_

**Options :**

6406531503958. ✘ it can be reduced to the 3-SAT problem in polynomial time.

6406531503959. ✓ the 3-SAT problem can be reduced to it in polynomial time.

6406531503960. ✘ it can be reduced to any other problem in NP in polynomial time.

6406531503961. ✘ some problem in NP can be reduced to it in polynomial time.

**Sub-Section Number :** 3

**Sub-Section Id :** 64065365002

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 231 Question Id : 640653451902 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:

[6, 2, 7, 9, 8, 11, 13, 12]

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 :**

6406531503867. ✓ 7

6406531503868. ✗ 9

6406531503869. ✗ 8

6406531503870. ✓ 11

6406531503871. ✗ 13

**Question Number : 232 Question Id : 640653451905 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 :**

6406531503877. ✓ Adjacency list representation uses less space when the graph is sparse(graph with few edges).

6406531503878. ✗ 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.

6406531503879. ✓ Finding `outdegree` of a vertex using adjacency list is faster than using adjacency matrix.

6406531503880. ✗ Finding `indegree` of a vertex using adjacency list is faster than using adjacency matrix.

**Question Number : 233 Question Id : 640653451909 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 :**

6406531503893. ✓ 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.

6406531503894. ✗ It returns the shortest path between all pairs of nodes.

6406531503895. ✗ The shortest path returned by Dijkstra's algorithm always passes through the least number of vertices.

6406531503896. ✓ To decide which node to visit next, Dijkstra's algorithm selects the node with smallest known distance.

**Question Number : 234 Question Id : 640653451915 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:-

6406531503915. ✓  $s(h) = s(h-1) + s(h-2) + 1$ , 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 6406531503916. ✓ the right subtree of any node can't be more than 1.

6406531503917. ✘ If the height of an AVL tree is  $h$ , the maximum number of nodes in it will be  $2^h + 1$ .

6406531503918. ✘ The complexity of both insertion and deletion of a node in AVL tree is  $O(n)$ .

**Question Number : 235 Question Id : 640653451916 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 :**

6406531503919. ✓ In an optimal Huffman tree, if leaf labelled **x** is at depth smaller than leaf labelled **y**, then **frequency(x) >= frequency(y)**

6406531503920. ✘ In an optimal Huffman tree, if leaf labelled **x** is at depth smaller than leaf labelled **y**, then **frequency(x) <= frequency(y)**

6406531503921. ✓ Huffman coding algorithm always generates prefix code.

6406531503922. ✓ Huffman coding algorithm is based on a greedy approach.

**Sub-Section Number :** 4

**Sub-Section Id :** 64065365003

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 236 Question Id : 640653451903 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 :**

6406531503872. ✘ 20

6406531503873. ✘ 17

6406531503874. ✓ 15

6406531503875. ✘ 25

**Question Number : 237 Question Id : 640653451921 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  $A_{0..n-1}$  is given below.

1.  $n = \text{length}(A)$
2. Initialize list  $L_{0..n-1} = 0$
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 :**

$$L_i = \begin{cases} 1 + L_{i+1}, & \text{if } A_i > A_{i+1} \\ 1, & \text{Otherwise} \end{cases}$$

6406531503932. ❌

$$L_i = \begin{cases} 1 + L_{i-1}, & \text{if } A_i > A_{i-1} \\ 1, & \text{Otherwise} \end{cases}$$

6406531503933. ✓

$$L_i = \begin{cases} 1 + L_{i-1}, & \text{if } A_i < A_{i-1} \\ 1, & \text{Otherwise} \end{cases}$$

6406531503934. ❌

$$L_i = \begin{cases} 1 + L_{i-1}, & \text{if } A_i \geq A_{i-1} \\ 1, & \text{Otherwise} \end{cases}$$

6406531503935. ❌

**Question Number : 238 Question Id : 640653451924 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 :**

6406531503938. ✘ [0, 1, 1, 2, 0, 1, 2, 3]

6406531503939. ✓ [0, 0, 1, 2, 3, 1, 2, 3]

6406531503940. ✘ [0, 1, 1, 2, 3, 1, 2, 3]

6406531503941. ✘ [0, 0, 1, 2, 3, 0, 1, 2]

**Sub-Section Number :** 5

**Sub-Section Id :** 64065365004

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 239 Question Id : 640653451904 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 10 (with index 0 to 9) using open addressing with linear probing and hash function is  $h(k) = (k) \bmod 10$ , where k is the key value. Initially, the table is empty. Following keys are inserted into table in given order.

36, 23, 72, 12, 54

If we insert a new key value 83, at which index of the hash table after inserting above keys?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

7

**Question Number :** 240 **Question Id :** 640653451914 **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 |
|----------|----|----|----|----|----|----|----|----|----|
| 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 a deadline  $D_i$ . Task  $T_i$  is successfully completed if completion time of  $T_i \leq$  deadline  $D_i$ .

The maximum number of successfully completed tasks is \_\_\_\_.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

7

**Question Number :** 241 **Question Id :** 640653451917 **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

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  $L = [4, 3, 5, 2, 1, 6]$  is \_\_\_\_.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

8

**Question Number :** 242 **Question Id :** 640653451922 **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 = "babcc"`

`s2 = "abacbcba"`

Let  $x$  be the length of the longest common subsequence between  $s1$  and  $s2$  and let  $y$  be the number of such unique longest common subsequences between  $s1$  and  $s2$ . Then  $x + 10y$  = \_\_\_\_

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

34

**Question Number : 243 Question Id : 640653451923 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  $10 \times 5$ ,  $5 \times 20$ ,  $20 \times 10$ , and  $10 \times 5$  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 :**

1500

**Question Number : 244 Question Id : 640653451925 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 Rabin-Karp algorithm using modulo arithmetic to match the pattern in base 10. Taking modulo  $q = 11$ , how many **false positives** matches does the Rabin-Karp matcher encounter while searching pattern 36 in the text 3147591653589363 ?

**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 :** 64065365005

**Question Shuffling Allowed :**

Yes

**Is Section Default? :**

null

**Question Number : 245 Question Id : 640653451928 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 :**

6406531503951. ✓  $x + y \leq 1200$

6406531503952. ✗  $2x - y \geq 0$

6406531503953. ✗  $3x - y \leq 600$

6406531503954. ✓  $x - 2y \geq 0$

6406531503955. ✓  $x - 3y \leq 600$

6406531503956. ✓  $x, y \geq 0$

**Sub-Section Number :**

7

**Sub-Section Id :**

64065365006

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 246 Question Id : 640653451929 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 G be a graph. The size of the minimum vertex cover of G is 12 and the size of the maximum independent set of G is 18. What are the number of the vertices in graph G?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

**30**

**Sub-Section Number :** 8

**Sub-Section Id :** 64065365007

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653451918 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): # Initially start_index = 0,
2 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 : 640653451919 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 :**

6406531503924. ✘ A greedy algorithm

6406531503925. ✘ A dynamic programming algorithm

6406531503926. ✓ A divide and conquer algorithm

6406531503927. ✘ None of these

**Question Number : 248 Question Id : 640653451920 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 :**

$$T(1) = T(2) = 1$$

$$\text{For } n > 2, T(n) = 2T(n/2) + O(1)$$

6406531503928. ✓

$$T(1) = T(2) = 1$$

$$\text{For } n > 2, T(n) = 2T(n/2) + O(n)$$

6406531503929. ✗

$$T(1) = T(2) = 1$$

$$\text{For } n > 2, T(n) = T(n/2) + O(1)$$

6406531503930. ✗

$$T(1) = T(2) = 1$$

$$\text{For } n > 2, T(n) = T(n/2) + O(n)$$

6406531503931. ✗

## DBMS

**Section Id :** 64065329332

**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

|                                                                     |             |
|---------------------------------------------------------------------|-------------|
| <b>Group All Questions :</b>                                        | No          |
| <b>Enable Mark as Answered Mark for Review and Clear Response :</b> | Yes         |
| <b>Maximum Instruction Time :</b>                                   | 0           |
| <b>Sub-Section Number :</b>                                         | 1           |
| <b>Sub-Section Id :</b>                                             | 64065365008 |
| <b>Question Shuffling Allowed :</b>                                 | No          |
| <b>Is Section Default? :</b>                                        | null        |

**Question Number : 249 Question Id : 640653451931 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 :**

6406531503962. ✓ Yes

6406531503963. ✗ No

|                                     |             |
|-------------------------------------|-------------|
| <b>Sub-Section Number :</b>         | 2           |
| <b>Sub-Section Id :</b>             | 64065365009 |
| <b>Question Shuffling Allowed :</b> | Yes         |
| <b>Is Section Default? :</b>        | null        |

**Question Number : 250 Question Id : 640653451932 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      | 700   |

Assuming the worst-case memory availability and considering takes as the outer relation, which of the following options is/are correct?

**Options :**

6406531503964. ❌ Number of block transfers require=420600

6406531503965. ✓ Number of block transfers require=420700

6406531503966. ❌ Number of seeks require=1200

6406531503967. ✓ Number of seeks require=1400

**Sub-Section Number :** 3

**Sub-Section Id :** 64065365010

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 251 Question Id : 640653451933 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:

$$\Pi_{name}(\Pi_{roll\_no, name}(\Pi_{section, roll\_no, name}(student)))$$

Choose the equivalent relational algebra expression.

**Options :**

6406531503968. ✘  $\Pi_{section}(\Pi_{roll\_no}(\Pi_{name}(student)))$

6406531503969. ✘  $\Pi_{roll\_no}(student)$

6406531503970. ✘  $\Pi_{section}(student)$

6406531503971. ✓  $\Pi_{name}(student)$

**Question Number : 252 Question Id : 640653451941 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 diagram as shown in figure 1.

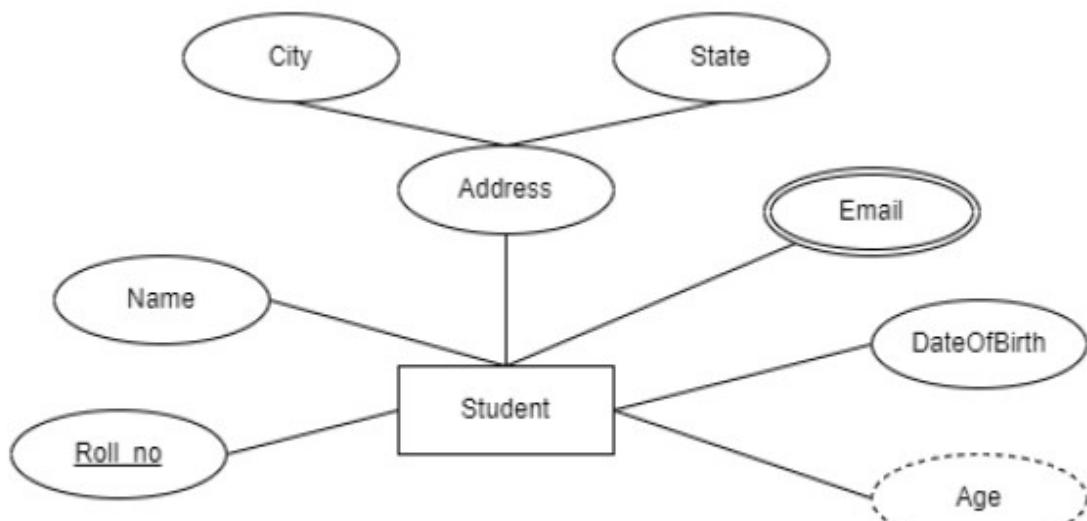


Figure 1: Student

Which of the following option is the correct E-R notation to express complex attributes?

**Options :**

6406531503994. ✓

**Student**

Roll no

Name

Address

City

State

{Email}

DateOfBirth

Age()

**Student**

Roll no

Name

Address

City

State

Email {}

DateOfBirth

(Age)

6406531503995. \*

**Student**

Roll no

Name

Address

City

State

{Email }

DateOfBirth

Age()

6406531503996. \*

6406531503997. \*

Student

Roll\_no

Name

Address

City

State

Email ()

DateOfBirth

{Age}

**Question Number : 253 Question Id : 640653451942 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 relation  $\text{Play}(\text{player\_name}, \text{team\_name}, \text{captain\_name})$  with the following functional dependencies:

$$\begin{aligned}\mathcal{F} = \{ & (\text{player\_name}, \text{team\_name}) \rightarrow \text{captain\_name}, \\ & \text{captain\_name} \rightarrow \text{team\_name} \\ \}&\end{aligned}$$

What is the highest normal form of the relation  $\text{Play}$ ?

**Options :**

6406531503998. ✘ 1NF

6406531503999. ✘ 2NF

6406531504000. ✓ 3NF

6406531504001. ✘ BCNF

**Question Number : 254 Question Id : 640653451943 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-4 is implemented using four disks. How much space is being utilized effectively?

[Note: Each disk has a size of 1 Terabyte]

**Options :**

6406531504002. ✘ 25%

6406531504003. ✘ 50%

6406531504004. ✓ 75%

6406531504005. ✘ 100%

**Question Number : 255 Question Id : 640653451955 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 is the full form of RAID?

**Options :**

6406531504043. ✘ Redundant Allocation of Independent Disks

6406531504044. ✘ Reliable Array of Independent Disks

6406531504045. ✓ Redundant Array of Independent Disks

6406531504046. ✘ Reliable Array of Inexpensive Disks

**Question Number : 256 Question Id : 640653451957 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 ₹75 is debited from account A and credited to account B.

Which among the following ACID properties ensures that the changes made to the database persist, even if there are system failures?

**Options :**

6406531504048. ✘ Atomicity

6406531504049. ✘ Consistency

6406531504050. ✘ Isolation

6406531504051. ✓ Durability

|                                     |             |
|-------------------------------------|-------------|
| <b>Sub-Section Number :</b>         | 4           |
| <b>Sub-Section Id :</b>             | 64065365011 |
| <b>Question Shuffling Allowed :</b> | Yes         |
| <b>Is Section Default? :</b>        | null        |

**Question Number : 257 Question Id : 640653451934 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 :**

6406531503972. ✓ Schedule **S1** is conflict serializable.

6406531503973. ✓ Schedule **S1** can be two-phase lockable.

6406531503974. ✓ Schedule **S2** is conflict serializable.

6406531503975. ✘ Schedule **S2** can be two-phase lockable.

**Question Number : 258 Question Id : 640653451944 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 log records of transactions where an immediate database modification scheme is used.

|    |                                          |
|----|------------------------------------------|
| 1  | $\langle T_0, \text{start} \rangle$      |
| 2  | $\langle T_0, A, 200, 300 \rangle$       |
| 3  | $\langle T_1, \text{start} \rangle$      |
| 4  | $\langle T_1, B, 1300, 1000 \rangle$     |
| 5  | $\langle T_2, \text{start} \rangle$      |
| 6  | $\langle T_2, C, 500, 300 \rangle$       |
| 7  | $\langle T_1, \text{commit} \rangle$     |
| 8  | $\langle T_3, \text{start} \rangle$      |
| 9  | $\langle T_2, \text{commit} \rangle$     |
| 10 | $\langle T_3, D, 400, 500 \rangle$       |
| 11 | $\langle \text{Checkpoint } L_1 \rangle$ |
| 12 | $\langle T_3, \text{commit} \rangle$     |
| 13 | $\langle T_0, \text{commit} \rangle$     |
| 14 | $\langle T_4, \text{start} \rangle$      |
| 15 | $\langle T_4, E, 2000, 1500 \rangle$     |

Suppose failure occurred after the step 15, then which of the following option(s) is/ are the correct?

**Options :**

6406531504006. ✓ T1 and T2 can be ignored.

6406531504007. ✗ T1, T2 and T3 can be ignored.

6406531504008. ✓ T4 need to be undone.

6406531504009. ✓ T0 and T3 need to be redone.

**Question Number : 259 Question Id : 640653451953 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 the decomposition of R must be lossless and in BCNF.

**Options :**

6406531504038. ✓ (A, B, H)

6406531504039. ✗ (A, B, C)

6406531504040. ✓ (A, B, G)

6406531504041. ✗ (A, B, G, H)

**Sub-Section Number :**

5

**Sub-Section Id :**

64065365012

**Question Shuffling Allowed :**

Yes

**Is Section Default? :**

null

**Question Number : 260 Question Id : 640653451935 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) consisting of 16 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 :**

15

**Question Number :** 261 **Question Id :** 640653451937 **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 4 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 :**

1600

**Question Number :** 262 **Question Id :** 640653451954 **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 'Differential Backup' is done. In this scenario how many backup sets have to be loaded for complete recovery if the system failure occurs after Thursday's backup is completed?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

3

**Sub-Section Number :** 6

**Sub-Section Id :** 64065365013

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number :** 263 **Question Id :** 640653451936 **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),W3(A),W1(A)

According to the timestamp protocol, if the timestamps for transactions **T1,T2**, and **T3** are 7, 2, and 12 respectively, then choose the correct option.

**Options :**

6406531503977. ❌ No transaction needs Roll Back.

6406531503978. ❌ Transaction T3 needs to Roll Back.

6406531503979. ❌ Transaction T2 needs to Roll Back.

6406531503980. ✓ Transaction T1 needs to Roll Back.

**Question Number : 264 Question Id : 640653451939 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(  
roll\_no INT PRIMARY KEY,  
name VARCHAR(6) UNIQUE,  
age INT CHECK(age > 18)  
);
2. INSERT INTO employee VALUES(1, 'Hemanta', 20);
3. INSERT INTO employee( name, roll\_no, age) VALUES('Asim', 2, 21);
4. INSERT INTO employee VALUES(3, 'Samir', 22);
5. INSERT INTO employee(roll\_no, name, age) VALUES(4,'Aamir', 18);
6. INSERT INTO employee VALUES(5, 'Asim', 25);

What will be the output of the below SQL query?

SELECT roll\_no from employee;

**Options :**

| roll_no |
|---------|
| 1       |
| 2       |
| 3       |

6406531503986. ❌

| roll_no |
|---------|
| 1       |
| 2       |
| 3       |
| 4       |
| 5       |

6406531503987. ❌

| roll_no |
|---------|
| 1       |
| 3       |
| 4       |
| 5       |

6406531503988. ✘

| roll_no |
|---------|
| 2       |
| 3       |

6406531503989. ✓

**Question Number : 265 Question Id : 640653451948 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 256 bytes, 1500 tracks per surface, 60 sectors per track, and 4 double-sided platters. Find out the capacity of one surface of a platter.

[Note: 1KB = 1024 bytes]

**Options :**

6406531504022. ✘ 2,30,40,000 KB

6406531504023. ✓ 22,500 KB

6406531504024. ✘ 22,000 KB

6406531504025. ✘ 90,000 KB

**Question Number : 266 Question Id : 640653451958 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 4.

| roll_no | sname   | department  |
|---------|---------|-------------|
| 1       | Stevie  | Mechanical  |
| 2       | Rohn    | Civil Engg  |
| 3       | Tania   | Physics     |
| 4       | Henry   | Zoology     |
| 5       | Steward | Mathematics |

Figure 4: Table Student

Which among the following SQL statements will result in the output shown below?

| roll_no | sname   | department  |
|---------|---------|-------------|
| 1       | Stevie  | Mechanical  |
| 2       | Rohn    | IT          |
| 4       | Henry   | Zoology     |
| 5       | Steward | Mathematics |

**Options :**

SQL> SAVEPOINT SP1  
SQL> DELETE FROM Student WHERE roll\_no = 2  
SQL> SAVEPOINT SP2  
SQL> UPDATE Student SET department = 'IT' WHERE roll\_no = 3

6406531504052. ❌

SQL> SAVEPOINT SP1  
SQL> DELETE FROM Student WHERE roll\_no = 3  
SQL> SAVEPOINT SP2  
SQL> UPDATE Student SET department = 'IT' WHERE roll\_no = 2  
SQL> SAVEPOINT SP3  
SQL> DELETE FROM Student WHERE roll\_no = 2

6406531504053. ✓

6406531504054. ❌

```
SQL> SAVEPOINT SP1
SQL> DELETE FROM Student WHERE roll_no = 2
SQL> SAVEPOINT SP2
SQL> UPDATE Student SET department = 'IT' WHERE roll_no = 4
SQL> SAVEPOINT SP3
SQL> DELETE FROM Student WHERE roll_no = 1
SQL> ROLLBACK SP1
```

```
SQL> SAVEPOINT SP1
SQL> DELETE FROM Student WHERE roll_no = 2
SQL> SAVEPOINT SP2
SQL> UPDATE Student SET department = 'IT' WHERE roll_no = 1
SQL> SAVEPOINT SP3
SQL> DELETE FROM Student WHERE roll_no = 3
SQL> ROLLBACK SP2
```

6406531504055. \*

|                                     |             |
|-------------------------------------|-------------|
| <b>Sub-Section Number :</b>         | 7           |
| <b>Sub-Section Id :</b>             | 64065365014 |
| <b>Question Shuffling Allowed :</b> | Yes         |
| <b>Is Section Default? :</b>        | null        |

**Question Number : 267 Question Id : 640653451938 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.

$$\mathcal{F} = \{A \rightarrow B, AB \rightarrow C, D \rightarrow AC, DE \rightarrow AB\}$$

Which of the following functional dependency sets is equivalent to the given set of functional dependencies?

**Options :**

6406531503982. \*  $\mathcal{F} = \{A \rightarrow B, A \rightarrow C, D \rightarrow B\}$

6406531503983. \*  $\mathcal{F} = \{A \rightarrow B, A \rightarrow C, D \rightarrow B, E \rightarrow B\}$

6406531503984. ✘  $\mathcal{F} = \{A \rightarrow B, D \rightarrow C, DE \rightarrow C\}$

6406531503985. ✓  $\mathcal{F} = \{A \rightarrow B, A \rightarrow C, D \rightarrow A, DE \rightarrow B\}$

**Question Number : 268 Question Id : 640653451940 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: 44, 23, 89, 56, 24, 60, 99, 10, 78, 5. The resultant B tree must contain which of the following key values in the leaf nodes?

**Options :**

6406531503990. ✘ 10, 24, 56, 89

6406531503991. ✘ 10, 24, 56, 78, 99

6406531503992. ✓ 5, 10, 24, 56, 78, 99

6406531503993. ✘ 5, 24, 56, 60, 89

**Question Number : 269 Question Id : 640653451945 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 name of the customer who has ordered the product named 'Belts'.
2. Find the name and price of the product that was ordered by the customer whose name is 'Josh' and whose age is greater than 25.

TRC and DRC expressions

- a.  $\{ < b > | \exists a, b, c (< a, b, c > \in \text{customer}) \wedge \exists d, e, f (< d, e, f > \in \text{product}) \wedge e = \text{'Belts'} \wedge \exists g, h, i (< g, h, i > \in \text{order}) \wedge a = h \wedge d = i \}$
- b.  $\{ p | \exists c \in \text{customer} \exists p \in \text{product} \exists o \in \text{order} (c.cid = o.cid \wedge p.pid = o.pid \wedge p.pname = \text{'Belts'}) \}$
- c.  $\{ t | \exists c \in \text{customer} \exists p \in \text{product} \exists o \in \text{order} (t.pname = p.pname \wedge t.price = p.price \wedge c.age > 25 \wedge c.cname = \text{'Josh'}) \}$
- d.  $\{ < e, f > | \exists a, b, c (< a, b, c > \in \text{customer}) \wedge b = \text{'Josh'} \vee c > 25 \wedge \exists d, e, f (< d, e, f > \in \text{product}) \wedge \exists g, h, i (< g, h, i > \in \text{order}) \wedge a = h \wedge d = i \}$
- e.  $\{ t | \exists c \in \text{customer} \exists p \in \text{product} \exists o \in \text{order} (t.pname = p.pname \wedge t.price = p.price \wedge c.age > 25 \wedge c.cname = \text{'Josh'} \wedge c.cid = o.cid \wedge p.pid = o.pid) \}$

Match the above statements with their equivalent TRC or DRC expressions.

**Options :**

6406531504010. ✘ 1-a, 2-c

6406531504011. ✘ 1-b, 2-e

6406531504012. ✓ 1-a, 2-e

6406531504013. ✘ 1-b, 2-d

**Sub-Section Number :** 8

**Sub-Section Id :** 64065365015

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 270 Question Id : 640653451946 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 super key(s)?

**Options :**

6406531504014. ✓ *PQS*

6406531504015. ✗ *PS*

6406531504016. ✗ *QRU*

6406531504017. ✓ *QS*

**Sub-Section Number :** 9

**Sub-Section Id :** 64065365016

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 271 Question Id : 640653451947 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  | Amber   | Chicago | Austin ICICI bank    |
| 108  | John    | Seattle | Stockholm ICICI bank |
| 103  | Kendall | Boston  | California Axis bank |
| 108  | Stephen | Boston  | Queens SBI bank      |
| 241  | Andrew  | Denver  | Stockholm Axis bank  |
| 294  | Amber   | Austin  | Austin SBI bank      |
| 108  | Stephen | Seattle | Queens SBI bank      |
| 108  | John    | Boston  | Stockholm ICICI bank |

Figure 2: An instance of relation customer

Which among the following multivalued dependencies does this instance customer satisfy?

**Options :**

6406531504018. ❌  $c\_no \rightarrow\rightarrow cname$

6406531504019. ❌  $cname \rightarrow\rightarrow address, branch\_name$

6406531504020. ✓  $c\_no \rightarrow\rightarrow cname, branch\_name$

6406531504021. ❌  $c\_no \rightarrow\rightarrow cname, address$

**Sub-Section Number :** 10

**Sub-Section Id :** 64065365017

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653451949 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 : (272 to 274)**

**Question Label : Comprehension**

Consider the relational schema as shown in figure 3 and answer the subquestions.

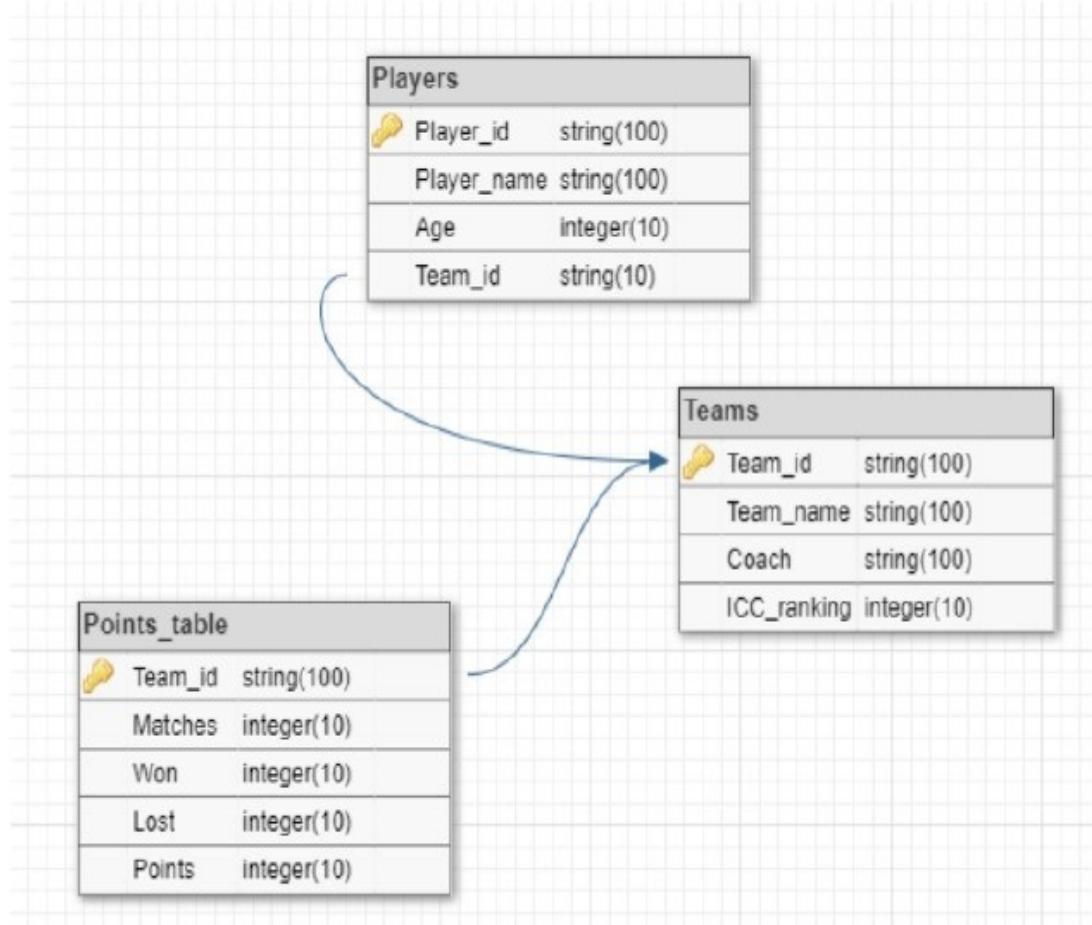


Figure 3: ICC T20 WC

### Sub questions

**Question Number : 272 Question Id : 640653451950 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 :**

6406531504026. ✓ 50

6406531504027. ✗ 500

6406531504028. ✗ 60

6406531504029. ✗ 10

**Question Number : 273 Question Id : 640653451951 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 :**

6406531504030. ✘ a → b → c

6406531504031. ✘ b → a → c

6406531504032. ✓ b → c → a

6406531504033. ✓ c → b → a

**Question Number : 274 Question Id : 640653451952 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 :**

CREATE VIEW as top\_team  
Select T.Team\_id, T.Team\_name from Points\_table P Cross Join Teams T  
6406531504034. ✘ where P.Points > 8

CREATE VIEW AS top\_team  
Select T.Team\_id, T.Team\_name from Points\_table P Natural Join Teams T  
6406531504035. ✘ where P.Points > 8

CREATE VIEW  
Select T.Team\_id, T.Team\_name from Points\_table P Natural Join Teams T  
6406531504036. ✘ where P.Points > 8 as top\_team

CREATE VIEW top\_team AS  
Select T.Team\_id, T.Team\_name from Points\_table P Cross Join Teams T  
6406531504037. ✓ where T.Team\_id = P.Team\_id and P.Points > 8

**Sub-Section Id :** 64065365018

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 275 Question Id : 640653451956 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 index entries must be kept in a single disk block. In each block, 20 entries can be accommodated. There are 4000 blocks at the innermost level (first-level index). How many blocks have 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 :**

5

## Business Analytics

**Section Id :** 64065329333

**Section Number :** 10

**Section type :** Online

**Mandatory or Optional :** Mandatory

**Number of Questions :** 22

**Number of Questions to be attempted :** 22

**Section Marks :** 50

**Display Number Panel :** Yes

|                                                                     |             |
|---------------------------------------------------------------------|-------------|
| <b>Group All Questions :</b>                                        | No          |
| <b>Enable Mark as Answered Mark for Review and Clear Response :</b> | Yes         |
| <b>Maximum Instruction Time :</b>                                   | 0           |
| <b>Sub-Section Number :</b>                                         | 1           |
| <b>Sub-Section Id :</b>                                             | 64065365019 |
| <b>Question Shuffling Allowed :</b>                                 | No          |
| <b>Is Section Default? :</b>                                        | null        |

**Question Number : 276 Question Id : 640653451959 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 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 :**

6406531504056. ✓ YES

6406531504057. ✗ NO

|                                     |             |
|-------------------------------------|-------------|
| <b>Sub-Section Number :</b>         | 2           |
| <b>Sub-Section Id :</b>             | 64065365020 |
| <b>Question Shuffling Allowed :</b> | Yes         |
| <b>Is Section Default? :</b>        | null        |

**Question Number : 277 Question Id : 640653451960 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 discrete data?

**Options :**

6406531504058. ✓ Number of courses you are crediting in this IIT Madras BSc Degree program

6406531504059. ✗ Average weight of your batch in this BSc program

6406531504060. ✓ Size of your batch in this BSc program

6406531504061. ✗ Average age of your batch in this BSc program

**Sub-Section Number :** 3

**Sub-Section Id :** 64065365021

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 278 Question Id : 640653451961 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

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 23, 22, 75 and 1 respectively. Then

**Options :**

6406531504062. ✓ The data is right-tailed

6406531504063. ✗ The data is left-tailed

6406531504064. ✗ The data is symmetric

6406531504065. ✗ Cannot say

**Question Number : 279 Question Id : 640653451982 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 :**

6406531504102. ❌ Max  $Y_{jk} * I_{jk}$

6406531504103. ✓ Max  $Y_{jk} * O_{jk}$

6406531504104. ❌ Max  $(1/Y_{jk}) * I_{jk}$

6406531504105. ❌ Max  $-(Y_{jk} * I_{jk})$

**Question Number : 280 Question Id : 640653451984 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 :**

6406531504110. ❌ After converting the ratio into the linear objective function

6406531504111. ❌ After normalizing the denominator

6406531504112. ❌ By setting a constraint on the efficiency of all DMUs to be lesser than or equal to 1

6406531504113. ✓ All of these

**Question Number : 281 Question Id : 640653451985 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 type of conjoint analysis to its method of administration

| <b>Conjoint Analysis Type</b>     | <b>Method of administration</b>                                                                                     |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 1. Choice-Based Conjoint Analysis | A. Questions are dynamically decided based on customer response                                                     |
| 2. Adaptive Conjoint Analysis     | B. All the options are presented to the customer, and their preference is sought                                    |
| 3. Full-profile Conjoint Analysis | C. Customer chooses their most preferred full-profile product among 3-4 options provided                            |
| 4. Menu-based Conjoint Analysis   | D. List of attributes and their prices are shown to customers, and they choose what they want in the ideal product. |

**Options :**

6406531504114. ✓ 1-C, 2-A, 3-B, 4-D

6406531504115. ✗ 1-A, 2-C, 3-B, 4-D

6406531504116. ✗ 1-B, 2-C, 3-A, 4-D

6406531504117. ✗ 1-C, 2-B, 3-C, 4-D

6406531504118. ✗ None of these

**Question Number : 282 Question Id : 640653451994 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 :**

6406531504131. ✗ Reject the null hypothesis

6406531504132. ✓ Fail to reject the null hypothesis

6406531504133. ✗ Sufficient evidence to accept the null hypothesis

6406531504134. ✗ both Fail to reject the null hypothesis and Sufficient evidence to accept the null hypothesis are correct

**Question Number : 283 Question Id : 640653451995 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 Multiple Linear Regression, if the explanatory variables are highly correlated, then that phenomenon is called

**Options :**

6406531504135. ❌ Normality

6406531504136. ❌ Singularity

6406531504137. ✓ Collinearity

6406531504138. ❌ Variation Inflation

**Sub-Section Number :** 4

**Sub-Section Id :** 64065365022

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 284 Question Id : 640653451962 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 Regression, Marginal slope and partial slope coincide, if the explanatory variables are dependent. Is the statement True or False?

**Options :**

6406531504066. ❌ TRUE

6406531504067. ✓ FALSE

**Question Number : 285 Question Id : 640653451963 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

VIF value less than 1 indicates that

**Options :**

6406531504068. ✘ Multicollinearity is very high

6406531504069. ✘ Multicollinearity is very low

6406531504070. ✓ Calculation error

6406531504071. ✘ None of these

**Question Number : 286 Question Id : 640653451973 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 can create a non-linear decision boundary.

**Options :**

6406531504088. ✓ TRUE

6406531504089. ✘ FALSE

**Question Number : 287 Question Id : 640653451980 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 B?

|              |   | Predicted Class |    |    |
|--------------|---|-----------------|----|----|
|              |   | A               | B  | C  |
| Actual Class | A | 100             | 0  | 10 |
|              | B | 10              | 80 | 10 |
|              | C | 30              | 0  | 70 |

**Options :**

6406531504095. ✓ 0

6406531504096. ✘ 10

6406531504097. ✘ 20

**Question Number : 288 Question Id : 640653451981 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 is productive efficiency?

**Options :**

6406531504099. ✓ It is an aspect of economic efficiency focussing on maximizing the output under given constraints (without worrying about optimal allocation, or choice of products)

6406531504100. ✎ Effective usage of technology for maximizing the profitability

6406531504101. ✎ 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 : 289 Question Id : 640653451989 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 :**

6406531504121. ✎ Minimize the distance between the attribute combination for the ideal product and the customer preferences

6406531504122. ✎ Minimize the distance between the attribute combination for the ideal product and the attribute combination for each possible variant

6406531504123. ✎ Minimize the distance between the possible customer preferences

6406531504124. ✓ None of these

**Sub-Section Number :**

5

**Sub-Section Id :**

64065365023

**Question Shuffling Allowed :**

No

**Is Section Default? :**

null

**Question Id : 640653451964 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 : (290 to 291)**

Question Label : Comprehension

You are solving a regression problem with 7 explanatory variables. The data has 50 observations and the R-square value was found to be 0.85. Then answer the given subquestions

**Sub questions**

**Question Number : 290 Question Id : 640653451965 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-squared (Round off to three decimal values)?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Range**

**Text Areas : PlainText**

**Possible Answers :**

0.825 to 0.830

**Question Number : 291 Question Id : 640653451966 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 one more explanatory variable to the dataset making a total of 8 variables. The

new R squared value is 0.862 adjusted R square value increases to 0.864. What does it signify?

**Options :**

6406531504073. ✘ The new variable does not improve the model

6406531504074. ✘ The new variable alone has high explanatory power

6406531504075. ✓ Adjusted R squared can never be greater than R squared. Calculation error

6406531504076. ✘ None of these

**Sub-Section Number :** 6

**Sub-Section Id :** 64065365024

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653451967 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 : (292 to 294)**

Question Label : Comprehension

You are given the following contingency table based on a sample data with people belonging to two cities (City A, City B) and their brand preferences. You perform a chi-squared test of independence to make inferences about the population from this sample. Then answer the given subquestions.

|        | Brand A | Brand B | Brand C | Brand D |
|--------|---------|---------|---------|---------|
| City A | 142     | 147     | 227     | 100     |
| City B | 75      | 114     | 103     | 85      |

**Sub questions**

**Question Number : 292 Question Id : 640653451968 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 belonging to City A preferring brand B?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

158 to 164

**Question Number :** 293 **Question Id :** 640653451969 **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 :**

13 to 19

**Question Number :** 294 **Question Id :** 640653451970 **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 :**

6406531504079. ✓ Reject the null hypothesis and conclude that the categorical variables are not independent

6406531504080. ❌ Fail to reject the null hypothesis and conclude that the categorical variables are not independent

6406531504081. ❌ Fail to reject the null hypothesis and conclude that the categorical variables are independent

6406531504082. ❌ Reject the null hypothesis and conclude that the categorical variables are independent

**Sub-Section Number :** 7

**Sub-Section Id :** 64065365025

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 295 Question Id : 640653451971 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 35% of total output comes from machine A, 40% of total output comes from machine B and 25% of total output comes from machine C. From the past data, it is known that 5% of products by machine A are defectives, 10% of products by machine B are defectives and 12% 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 :**

0.31 to 0.37

**Sub-Section Number :** 8

**Sub-Section Id :** 64065365026

**Question Shuffling Allowed :** Yes

**Is Section Default? :**

null

**Question Number : 296 Question Id : 640653451972 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

Select the correct option from below:

**Options :**

6406531504084. ❌ For inelastic product demand ( $\epsilon < 1$ ) the revenue can be increased by setting price close to zero.

6406531504085. ✓ For elastic product demand ( $\epsilon > 1$ ) the revenue can only be increased by setting price close to zero.

6406531504086. ✓ For inelastic product demand ( $\epsilon < 1$ ) the revenue can be increased by simply increasing the prices

6406531504087. ❌ For elastic product demand ( $\epsilon > 1$ ) the revenue can only be increased by simply increasing the prices

**Question Number : 297 Question Id : 640653451983 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 4 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 :**

6406531504106. ❌ Business unit 4 may be inefficient

6406531504107. ✓ Business unit 4 will be efficient

6406531504108. ❌ Business unit 7 may be inefficient

|                                     |             |
|-------------------------------------|-------------|
| <b>Sub-Section Number :</b>         | 9           |
| <b>Sub-Section Id :</b>             | 64065365027 |
| <b>Question Shuffling Allowed :</b> | No          |
| <b>Is Section Default? :</b>        | null        |

**Question Id : 640653451974 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 : (298 to 302)**

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 : 298 Question Id : 640653451975 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 1'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 :**

74.60 to 75.00

**Question Number :** 299 **Question Id :** 640653451976 **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 1'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 :**

90.50 to 90.90

**Question Number :** 300 **Question Id :** 640653451977 **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 : 301 Question Id : 640653451978 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 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 :**

19

**Question Number : 302 Question Id : 640653451979 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 Number : 10**

**Sub-Section Id : 64065365028**

**Question Shuffling Allowed : No**

**Is Section Default? :**

null

**Question Id : 640653451986 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 : (303 to 304)**

Question Label : Comprehension

A manufacturer is going to make a product, and he is exploring possible variants (V1, V2, V3) for it. The variants of the products are determined by 5 attributes (A1, A2, A3, A4, A5). Pair-wise preference data will be collected from customers to perform the analysis. Using this information, answer the given subquestions.

### **Sub questions**

**Question Number : 303 Question Id : 640653451987 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 : 304 Question Id : 640653451988 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 :**

3

**Sub-Section Number :** 11

**Sub-Section Id :** 64065365029

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653451990 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

The BSc Team wanted to see if the live sessions get a uniform response across different terms.

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 the table below). Given this information, answer the given subquestions.

| Term     | Total Number of Participants across Live Sessions |
|----------|---------------------------------------------------|
| Jan-2022 | 12                                                |
| May-2022 | 14                                                |
| Sep-2022 | 12                                                |

**Sub questions**

**Question Number : 305 Question Id : 640653451991 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 statistical test needs to be carried out to see if the attendance is uniformly distributed across the terms?

**Options :**

6406531504125. ✓ Chi-squared Goodness of Fit Test

6406531504126. ✗ Chi-Squared Test of Independence

6406531504127. ✗ Chi-Square Test of variance

6406531504128. ✗ Test of Means (Z-Test or T-test)

**Question Number :** 306 **Question Id :** 640653451992 **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 :**

12.4 to 12.6

**Question Number :** 307 **Question Id :** 640653451993 **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 :** Set

**Text Areas :** PlainText

**Possible Answers :**

12.66

12.67

## AppDev2

|                                                                     |             |
|---------------------------------------------------------------------|-------------|
| <b>Section Id :</b>                                                 | 64065329334 |
| <b>Section Number :</b>                                             | 11          |
| <b>Section type :</b>                                               | Online      |
| <b>Mandatory or Optional :</b>                                      | Mandatory   |
| <b>Number of Questions :</b>                                        | 29          |
| <b>Number of Questions to be attempted :</b>                        | 29          |
| <b>Section Marks :</b>                                              | 100         |
| <b>Display Number Panel :</b>                                       | Yes         |
| <b>Group All Questions :</b>                                        | No          |
| <b>Enable Mark as Answered Mark for Review and Clear Response :</b> | Yes         |
| <b>Maximum Instruction Time :</b>                                   | 0           |
| <b>Sub-Section Number :</b>                                         | 1           |
| <b>Sub-Section Id :</b>                                             | 64065365030 |
| <b>Question Shuffling Allowed :</b>                                 | No          |
| <b>Is Section Default? :</b>                                        | null        |

**Question Number : 308 Question Id : 640653451996 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 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 :**

6406531504139. ✓ Yes

6406531504140. ✗ No

**Sub-Section Number :** 2

**Sub-Section Id :** 64065365031

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 309 Question Id : 640653452004 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 :**

6406531504169. ✓ ...mapState(['state\_1', 'state\_2', 'state\_3'])

6406531504170. ✗ mapState(['state\_1', 'state\_2', 'state\_3'])

6406531504171. ✗ Both ...mapState(['state\_1', 'state\_2', 'state\_3']) and mapState(['state\_1', 'state\_2', 'state\_3'])

6406531504172. ✗ A Vue component cannot access Vuex store state.

**Question Number : 310 Question Id : 640653452006 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 :**

6406531504177. ❌ I, III, II

6406531504178. ✓ III, I, II

6406531504179. ❌ I, II, III

6406531504180. ❌ The polling will be a better design.

**Question Number : 311 Question Id : 640653452009 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 true?

**Options :**

6406531504189. ❌ The CSRF protection is enforced by the flask framework, by default.

6406531504190. ❌ The data stored in local storage is synchronized across the devices for a given user.

6406531504191. ❌ A flask application returns CORS headers for cross domain javascript requests, by default.

6406531504192. ✓ None of these

**Question Number : 312 Question Id : 640653452012 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 :**

- 6406531504201. ✘ Local Storage
- 6406531504202. ✘ Session Storage
- 6406531504203. ✓ Cookie
- 6406531504204. ✘ Any of these can be used

**Question Number : 313 Question Id : 640653452014 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://origin1.com>. Which of the following origins the browser will allow while making a fetch call, by default?

**Options :**

- 6406531504209. ✘ <http://origin2.com>
- 6406531504210. ✘ <http://api.origin2.com>
- 6406531504211. ✓ <http://origin1.com/api/>
- 6406531504212. ✘ All of these

**Question Number : 314 Question Id : 640653452015 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 true regarding session cookies?

**Options :**

- 6406531504213. ✘ They get deleted once the user closes the browser's window.

6406531504214. ✓ They will be sent to the origin server with each request, by default.

6406531504215. ✗ They will not be sent to the origin server with each request, by default.

6406531504216. ✗ All of these.

**Sub-Section Number :** 3

**Sub-Section Id :** 64065365032

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 315 Question Id : 640653451998 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 (var i=1; i<4; i+=2)
 setTimeout(() => console.log(i), 0)
```

**Options :**

6406531504145. ✗ 1

3

6406531504146. ✗ 1

2

3

6406531504147. ✓ 5

5

6406531504148. ✗ 5

5

5

**Question Number : 316 Question Id : 640653452016 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 :**

6406531504217. ❌ Cross Site Scripting

6406531504218. ✓ Cross Site Request Forgery

6406531504219. ❌ Session Hijacking

6406531504220. ❌ None of these

**Question Number : 317 Question Id : 640653452017 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('Hello')
p1.then((data) => {
 result.push(data)
 return promiseFactory('World')
}).then((data) => {
 result.push(data)
})
console.log(result)
```

**Options :**

6406531504221. ✓ []

6406531504222. ✗ ['Hello', 'World']

6406531504223. ✗ ['World', 'Hello']

6406531504224. ✗ ['Hello']

**Question Number : 318 Question Id : 640653452018 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('Rohit', 'Mumbai', '277403')
console.log(per1.getAddress())
```

**Options :**

6406531504225. ❌ Name: , City: , Pin:

6406531504226. ❌ Name: Rohit, City: Mumbai, Pin: 277403

6406531504227. ✓ Name: Rohit, City: Mumbai, 277403

6406531504228. ❌ None of these

**Question Number : 319 Question Id : 640653452019 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(true)
bringTea
 .then((data) => {
 console.log(data)
 })
 .catch((data) => {
 console.log(data)
 })
console.log('Boiling Water')
```

**Options :**

6406531504229. ❌ Boiling Water ....

6406531504230. ✓ Boiling Water ....

Making Coffee

6406531504231. ❌ Boiling Water ....

Making Tea

6406531504232. ❌ Making Coffee

Boiling Water ....

**Question Number : 320 Question Id : 640653452023 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: red;
 }
 </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: false },
 { seatNo: 2, isBooked: true },
 { 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 :

6406531504241. ✘ Red, Red

6406531504242. ✘ Red, White

6406531504243. ✘ White, White

6406531504244. ✓ White, Red

**Sub-Section Number :**

4

**Sub-Section Id :**

64065365033

**Question Shuffling Allowed :**

Yes

**Is Section Default? :**

null

**Question Number : 321 Question Id : 640653452002 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 = ['quiz1', 'quiz2', 'enterm']

new Promise((rej, res) => {
 let count = 2
 let a = setInterval(() => {
 count += 3;
 exams.pop();
 if (count % 2) {
 exams.push('endterm')
 }
 else if (count % 7 == 0) {
 clearInterval(a);
 rej();
 }
 }, 2000)
}).then(d => console.log("Rejected", exams)
).catch(e => console.log("Resolved", exams))
```

**Options :**

6406531504161. ❌ Rejected ['quiz1']

Minimum Time taken: 10 seconds

6406531504162. ✓ Rejected ['quiz1']

Minimum Time taken: 8 seconds

6406531504163. ❌ Resolved ['quiz1']

Minimum Time taken: 8 seconds

6406531504164. ✘ Resolved [‘quiz1’]

Minimum Time taken: 10 seconds

**Question Number : 322 Question Id : 640653452003 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 += "2";
 this.marks = localStorage.marks + 20;
 }
 else {
 this.subject += "1";
 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 :**

6406531504165. ✎ AppDev1, 80

6406531504166. ✘ AppDev2, 80

6406531504167. ✓ AppDev1, 70

6406531504168. ✘ AppDev2, 70

**Question Number : 323 Question Id : 640653452010 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" twice. What will be rendered inside the element with ID "total" and "player", respectively?

#### Options :

6406531504193. ❌ Total Run: 24, M.S. Dhoni: 14

6406531504194. ✅ Total Run: 28, M.S. Dhoni: 14

6406531504195. ❌ Total Run: 24, M.S. Dhoni: 18

6406531504196. ❌ Total Run: 28, M.S. Dhoni: 18

**Question Number : 324 Question Id : 640653452011 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") arg1(5)
 else arg2(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", e+6);
 return e * 5;
}).finally(d => {
 console.log("Checkpoint 6", d);
 return d * 5;
}).then(d => {
 console.log("Checkpoint 2", d);
 return d * 5;
})
```

**Options :**

6406531504197. ✓ Checkpoint 4 11

Checkpoint 6 undefined

Checkpoint 2 25

6406531504198. ✗ Checkpoint 4 11

Checkpoint 6 25

Checkpoint 2 125

6406531504199. ✗ Checkpoint 3 5

Checkpoint 4 Error

Checkpoint 6 undefined

Checkpoint 2 NaN

6406531504200. ✘ Checkpoint 3 5

Checkpoint 4 Error

Checkpoint 6 NaN

Checkpoint 2 NaN

**Sub-Section Number :** 5

**Sub-Section Id :** 64065365034

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 325 Question Id : 640653452005 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 true in the context of point-to-point communication and message broker?

**Options :**

6406531504173. ✘ In point-to-point communication, the number of connections grow with the order of O(nlogn).

6406531504174. ✘ If a central message broker is used, the number of connections grow with the order of O(logn).

6406531504175. ✓ If a central message broker is used, the number of connections grow with the order of O(n).

6406531504176. ✓ A message broker makes the network more scalable, if compared with point-to-point communication.

**Question Number : 326 Question Id : 640653452007 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 true regarding caching?

**Options :**

6406531504181. ❌ A shared cache is generally suitable for storing the personalized responses.

6406531504182. ✓ A private cache is usually tied to a specific client.

6406531504183. ✓ The caching helps in improving the performance of a web application.

6406531504184. ❌ All of these

**Sub-Section Number :** 6

**Sub-Section Id :** 64065365035

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 327 Question Id : 640653451997 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 javascript language?

**Options :**

6406531504141. ✓ JavaScript is a high level programming language.

6406531504142. ❌ JavaScript moves the declaration of all the arrow functions to the top of their scope.

6406531504143. ❌ The language does not allow the global declaration of user defined functions.

6406531504144. ✓ A function can be invoked inside another function in the language.

**Question Number : 328 Question Id : 640653451999 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 most appropriate option(s).

```
<div v-bind:class="[isClassA ? classA : '', classB]"></div>
```

**Options :**

6406531504149. ❌ The classes, namely “classA” and “classB” will always be applied to the div element.

6406531504150. ✓ The class, namely “classB” will always be applied to the div element.

6406531504151. ✓ The class, namely “classA” will only be applied to the div element, if the variable “isClassA” evaluates to true.

6406531504152. ❌ The class, namely “classB” will only be applied to the div element, if no variable with name “isClassA” exists.

**Question Number : 329 Question Id : 640653452001 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 an application is entirely built on the client end using javascript (without a database). Which of the following statements is/are false?

**Options :**

6406531504157. ✓ All the progress will always be lost on the force reload of the page.

6406531504158. ❌ All the progress may not necessarily be lost on the force reload of the page.

6406531504159. ✓ The application will not allow force reload of the page.

6406531504160. ✓ The progress made in a machine can be accessed on another machine.

**Question Number : 330 Question Id : 640653452008 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 in the context of scaling a web application?

**Options :**

6406531504185. ✓ Scaling out is always a preferred choice when the network traffic is growing.
6406531504186. ✗ 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.
6406531504187. ✗ The horizontal partitioning splits a given table into multiple tables, with each table having the same structure.
6406531504188. ✓ The diagonal scaling refers to cloning the application first, and then scaling up the different servers to meet the requirements.

**Question Number : 331 Question Id : 640653452013 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?

**Options :**

6406531504205. ✗ A flask application runs in a threaded mode by default.
6406531504206. ✗ A fetch API call always returns a promise.
6406531504207. ✓ The promise returned by fetch API resolves to an HTTP response status 500, with the "ok" property of the response set to true.
6406531504208. ✓ A headless CMS aims to manage both the content and frontend via APIs.

**Sub-Section Number :** 7

**Sub-Section Id :** 64065365036

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 332 Question Id : 640653452000 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 javascript program, and predict the output, if executed as a script.

```
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 :

6406531504153. ✘ This : 39 , Normal : 39

6406531504154. ✓ This : undefined , Normal : 39

6406531504155. ✘ This : undefined , Normal : 50

6406531504156. ✘ This : 39 , Normal : 50

**Sub-Section Number :** 8

**Sub-Section Id :** 64065365037

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653452024 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: true },
 },
 methods: {
 book() {
 this.slot.status = !this.slot.status
 },
 },
 components: {
 'book-slot': bookSlot,
 },
})
```

## Sub questions

**Question Number : 333 Question Id : 640653452025 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 :**

- 6406531504245. ✓ Slot ID: 1, Slot Status: Booked
- 6406531504246. ✗ Slot ID: 1, Slot Status: Not Booked
- 6406531504247. ✗ Slot ID: 1
- 6406531504248. ✗ Slot Status: Booked

**Question Number : 334 Question Id : 640653452026 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 :**

- 6406531504249. ✗ Slot ID: 1, Slot Status: Booked
- 6406531504250. ✓ Slot ID: 1, Slot Status: Not Booked
- 6406531504251. ✗ Slot ID: 1
- 6406531504252. ✗ Slot Status: Booked

**Question Id : 640653452030 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,
})
```

Based on the above data, answer the given subquestions.

### Sub questions

**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/#/>'?

**Options :**

6406531504261. ✓ Page not Found

6406531504262. ✗ Booked Slots

6406531504263. ✗ Unbooked Slots

6406531504264. ✗ None of these

**Question Number : 336 Question Id : 640653452032 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/#/booked>'?

**Options :**

6406531504265. ✗ Page not Found

6406531504266. ✗ Booked Slots

6406531504267. ✓ Unbooked Slots

6406531504268. ✗ None of these

**Sub-Section Number :**

9

**Sub-Section Id :**

64065365038

**Question Shuffling Allowed :**

No

**Is Section Default? :**

null

**Question Id : 640653452020 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()}}
 </div>
 <div id="status">
 <li v-for="slot in booked">{{slot.id}}
 </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: false },
 { id: 2, date: new Date('December 17'), status: true },
],
 },
 computed: {
 recent() {
 return this.slots.sort((a, b) => {
 return b.date - a.date
 })
 },
 booked() {
 return this.slots.filter((slot) => {
 return slot.status
 })
 },
 },
})
```

## Sub questions

**Question Number : 337 Question Id : 640653452021 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 :**

6406531504233. ✓ 19

17

6406531504234. ✗ 19

6406531504235. ✗ 17

6406531504236. ✗ 17

19

**Question Number : 338 Question Id : 640653452022 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 :**

6406531504237. ✗ 1

2

6406531504238. ✗ 1

6406531504239. ✓ 2

6406531504240. ✗ None of these

**Sub-Section Number :** 10

**Sub-Section Id :** 64065365039

**Question Shuffling Allowed :** No

**Is Section Default? :**

null

**Question Id : 640653452027 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>

 <li v-for='slot in availableSlots'> {{slot.description}}

 </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 : 640653452028 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>'.](http://127.0.0.1:8080/#/slot/true)

What will be rendered by the browser  
inside the "router-view"?

**Options :**

6406531504253. ✓ 1. Slot1

2. Slot2

6406531504254. ✗ 1. Slot2

2. Slot3

6406531504255. ✗ 1. Slot1

6406531504256. ✗ 1. Slot2

**Question Number : 340 Question Id : 640653452029 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>'](http://127.0.0.1:8080/#/slot/true?offset=1),

what will be rendered inside the  
'router-view'?

**Options :**

6406531504257. ✗ 1. Slot1

2. Slot2

6406531504258. ✗ 1. Slot2

2. Slot3

6406531504259. ✗ 1. Slot1

6406531504260. ✓ 1. Slot2

# **MLF**

<b>Section Id :</b>	64065329335
<b>Section Number :</b>	12
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	20
<b>Number of Questions to be attempted :</b>	20
<b>Section Marks :</b>	50
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	64065365040
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 341 Question Id : 640653452033 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 :**

6406531504269. ✓ YES

6406531504270. ✘ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 64065365041

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 342 Question Id : 640653452034 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  $(x^i, y^i) = [(1, 1), (2, 2), (3, 4), (4, 5), (5, 5)]$ ,  $i = 1$  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 :**

0.4

**Question Number : 343 Question Id : 640653452036 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?

$$f(x) = x \times \sin\frac{1}{x}, x \neq 0$$

(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 :**

1

**Question Number :** 344 **Question Id :** 640653452048 **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  $\frac{\text{Length}}{\text{Breadth}}$  ?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

1

**Question Number :** 345 **Question Id :** 640653452052 **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  $\mu$  and standard deviation  $\sigma$ . A random sample of 15 learners gave the following heights.

149, 143, 133, 160, 166, 172, 177, 161, 142, 144, 152, 148, 138, 149, 180

Based on the available information, find the maximum likelihood estimator of  $\mu$ , 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 :**

152 to 157

**Sub-Section Number :** 3

**Sub-Section Id :** 64065365042

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 346 Question Id : 640653452035 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 :**

6406531504272. ✓ If a function  $f$  is continuous at  $a$ , then  $|f|$  is also continuous at  $a$

6406531504273. ✓ If  $f$  is a continuous function at  $x = a$  and  $g$  is a continuous function at  $f(a)$  then  $g \circ f$  is a continuous function at  $a$

6406531504274. If functions  $f$  and  $g$  be continuous at  $a$ , then  $f + g$  is continuous at  $a$

6406531504275. If functions  $f$  and  $g$  be continuous at  $a$ , then  $fg$  is continuous at  $a$

**Question Number : 347 Question Id : 640653452038 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?

**Options :**

6406531504278. A  $3 \times 3$  matrix can have same column space and null space.

6406531504279. A  $6 \times 6$  matrix can have same column space and null space.

6406531504280. Dimension of column space is always equal to the dimension of row space.

6406531504281. Column space and row space of a matrix are the same.

**Question Number : 348 Question Id : 640653452039 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?

**Options :**

6406531504282. Rank of a  $n \times n$  Hermitian matrix is always equal to  $n$ .

6406531504283. Rank of a  $n \times n$  unitary matrix is always equal to  $n$ .

6406531504284. If  $A$  is a Hermitian matrix, then  $A^T$  is hermitian.

6406531504285. Zero can be one of the eigen values of a unitary matrix.

**Question Number : 349 Question Id : 640653452047 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 not true about the function  $f(x) = x^2 + y^2 + 2xy$  ?

**Options :**

6406531504307. ❌ It is Convex function.

6406531504308. ✓ Its Hessian matrix is indefinite.

6406531504309. ❌ (0, 0) is a local minima of this function.

6406531504310. ✓ (0, 0) is a local maxima of this function.

**Sub-Section Number :** 4

**Sub-Section Id :** 64065365043

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 350 Question Id : 640653452037 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  $4 \times 4$  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 :** 64065365044

**Question Shuffling Allowed :**

Yes

**Is Section Default? :**

null

**Question Number : 351 Question Id : 640653452046 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 : 640653452049 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 :** 640653452051 **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  $[0, 200]$ . Pick a real number from  $[0, 200]$ , 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 :**

66 to 67

**Sub-Section Number :** 6

**Sub-Section Id :** 64065365045

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number :** 354 **Question Id :** 640653452040 **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 :**

6406531504286. ✘ 0

6406531504287. ✘ 1

6406531504288. ✓ 4

6406531504289. ✘ 2

**Question Number : 355 Question Id : 640653452053 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  $X \sim \text{Exponential}(\lambda)$ , then the upper bound for  $P(X \geq k)$  where  $k > 0$  using Markov's inequality is

**Options :**

6406531504319. ✘  $\lambda k$

6406531504320. ✘  $\frac{1}{k}$

6406531504321. ✓  $\frac{1}{\lambda k}$

6406531504322. ✘  $\frac{1}{\lambda}$

**Sub-Section Number :** 7

**Sub-Section Id :** 64065365046

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 356 Question Id : 640653452041 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 :**

6406531504290. ✓ Minima

6406531504291. ✗ Maxima

6406531504292. ✗ Saddle

6406531504293. ✗ It can be either maxima or minima

**Question Number : 357 Question Id : 640653452050 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 :**

6406531504313. ✗  $(\frac{2}{3}, \frac{4}{3})$

6406531504314. ✗  $(\frac{4}{3}, \sqrt{\frac{1}{2}})$

6406531504315. ✗  $(\frac{2}{3}, \frac{1}{3})$

6406531504316. ✓  $(\frac{4}{3}, \sqrt{\frac{2}{3}})$

<b>Sub-Section Number :</b>	8
<b>Sub-Section Id :</b>	64065365047
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 358 Question Id : 640653452054 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 :**

6406531504323. ❌  $g_{YZ}(y, z) = \begin{cases} \frac{3z}{\sqrt{y}}, & 0 < y < 1, 0 < z < 1 \\ 0, & \text{otherwise} \end{cases}$

6406531504324. ❌  $g_{YZ}(y, z) = \begin{cases} -\frac{3z}{\sqrt{y}}, & w^2 < y < 1, 0 < z < 1 \\ 0, & \text{otherwise} \end{cases}$

6406531504325. ✓

6406531504325. ✓  $g_{YZ}(y, z) = \begin{cases} \frac{3z}{\sqrt{y}}, & w^2 < y < 1, 0 < z < 1 \\ 0, & \text{otherwise} \end{cases}$

6406531504326. ❌  $g_{YZ}(y, z) = \begin{cases} 6\sqrt{yz}, & w^2 < y < 1, 0 < z < 1 \\ 0, & \text{otherwise} \end{cases}$

**Sub-Section Id :** 64065365048

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 359 Question Id : 640653452042 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 :**

6406531504294. ✓ All principal components are orthogonal to each other

6406531504295. ✓ The number of principal components for  $n$ -dimensional data are at most  $n$

6406531504296. ✓ The first principal component accounts for most of the possible variability of the original data i.e, maximum possible variance.

6406531504297. ✓ The first principal component is the eigenvector of the covariance matrix corresponding to the maximum eigenvalue.

**Sub-Section Number :** 10

**Sub-Section Id :** 64065365049

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653452043 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 : 640653452044 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 :

6406531504298. ✓ max  $12x + 16y$

6406531504299. ✗ max  $50x + 15y$

6406531504300. ✗ min  $12x - 16y$

6406531504301. ✗ max  $50x - 15y$

**Question Number : 361 Question Id : 640653452045 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 :

6406531504302. ✓  $x \geq 0, y \geq 0$

6406531504303. ✓  $y \leq \frac{x}{2}$

6406531504304. ✓  $x - 3y \leq 600$

6406531504305. ✓  $x + y \leq 1200$