

Notations :

1.Options shown in **green** color and with ✓ icon are correct.

2.Options shown in **red** color and with ✗ icon are incorrect.

Question Paper Name :

IIT M DIPLOMA AN2 EXAM QDD2 25 Feb
2024

Subject Name :

2024 Feb25: IIT M AN2 EXAM QDD2

Creation Date :

2024-02-16 15:32:01

Duration :

120

Total Marks :

765

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 : 64065316961
Group Maximum Duration : 0
Group Minimum Duration : 90
Show Attended Group? : No
Edit Attended Group? : No
Break time : 0
Group Marks : 765
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

CT

Section Id : 64065351349

Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107573
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 1 Question Id : 640653737258 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "[FOUNDATION LEVEL : COMPUTATIONAL THINKING \(COMPUTER BASED EXAM\)](#)"

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

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

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

Options :

6406532467568. ✓ YES

6406532467569. ✗ NO

Question Number : 2 Question Id : 640653737259 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

Scores

SeqNo	Name	Gender	DateOfBirth	TownCity	Mathematics	Physics	Chemistry	Total
0	Bhuvanesh	M	7 Nov	Erode	68	64	78	210
					■ ■ ■			

Words

SeqNo	Word	PartOfSpeech	LetterCount
0	It	Pronoun	2
			■ ■ ■

Library

SeqNo	Name	Author	Genre	Language	Pages	Publisher	Year
0	Igniting Minds	Kalam	Nonfiction	English	178	Penguin	2002
					■ ■ ■		

Olympics

SeqNo	Name	Gender	Nationality	Host country	Year	Sport	Medal
0	Karnam Malleswari	F	Indian	Australia	2000	Weightlifting	Bronze
- - -							
49	Michael Phelps	M	American	China	2008	Swimming	Gold

Three sample cards out of 30 for Shopping Bills dataset

Item List

SV Stores		Srivatsan		1
Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1.5	50	75
Soap	Toiletries	4	32	128
Tomatoes	Vegetables/Food	2	40	80
Bananas	Vegetables/Food	8	8	64
Socks	Footwear/Apparel	3	56	168
Curd	Dairy/Food	0.5	32	16
Milk	Dairy/Food	1.5	24	36
				567

Sun General		Vignesh		14
Item	Category	Qty	Price	Cost
Phone Charger	Utilities	1	230	230
Razor Blades	Grooming	1	12	12
Razor	Grooming	1	45	45
Shaving Lotion	Grooming	0.8	180	144
Earphones	Electronics	1	210	210
Pencils	Stationery	3	5	15
				656

Big Bazaar		Sudeep		2
Item	Category	Qty	Price	Cost
Baked Beans	Canned/Food	1	125	125
Chicken Wings	Meat/Food	0.5	600	300
Cocoa powder	Canned/Food	1	160	160
Capsicum	Vegetables/Food	0.8	180	144
Tie	Apparel	2	390	780
Clips	Household	0.5	32	16
				1525

Options :

6406532467570. ✓ Useful Data has been mentioned above.

6406532467571. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653107574

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 3 Question Id : 640653737260 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 following pseudocode is executed using the "Library" dataset. What will **B** represent at the end of execution?

```
1 A = 0
2 count = 0
3 while(Table 1 has more rows){
4     Read the first row X in Table 1
5     count = count + 1
6     if(X.Author != "Kalam" and X.Language != "English"){
7         A = A + 1
8     }
9     Move X to Table 2
10 }
11 B = count - A
```

Options :

6406532467572. ✘ Number of books written by author Kalam in English

6406532467573. ✘ Number of books not written by author Kalam in English

6406532467574. ✘ Number of English books written by authors other than Kalam

6406532467575. ✓ Number of books that are written by author Kalam or in English or both

Question Number : 4 Question Id : 640653737261 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 following pseudocode is executed using the "Scores" dataset. At the end of the execution of below pseudocode, if **count2** represents the number of male students whose Physics marks are less than or equal to Mathematics marks, then select the correct code fragment for **A** and **B**.

```

1 count1 = 0, count2 = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     if(...A.... or ....B....){
5         count1 = count1 + 1
6     }
7     else{
8         count2 = count2 + 1
9     }
10    Move X to Table 2
11 }
```

Options :

A: `x.Gender == 'F'`

6406532467576. ❌ B: `x.Mathematics > x.Physics`

A: `x.Gender == 'M'`

6406532467577. ❌ B: `x.Mathematics < x.Physics`

A: `x.Gender == 'F'`

6406532467578. ✓ B: `x.Mathematics < x.Physics`

A: `x.Gender == 'M'`

6406532467579. ❌ B: `x.Mathematics > x.Physics`

Question Number : 5 Question Id : 640653737266 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 following pseudocode is executed using the "Scores" dataset. What will **A** represent at the end of the execution?

```

1 A = 0
2 while(Pile 1 has more cards){
3     Read the top card x from Pile 1
4     A = A + isInSeq(x)
5     Move X to Pile 2
6 }
7
8 Procedure isInSeq(X)
9     if(X.Mathematics > X.Physics){
10         if(X.Physics < X.Chemistry){
11             return(1)
12         }
13     }
14     return(0)
15 End isInSeq

```

Options :

6406532467596. ✘ Number of students with highest marks in Mathematics among the three subjects

6406532467597. ✘ Number of students with highest marks in Mathematics and lowest marks in Physics

6406532467598. ✘ Number of students with highest marks in Chemistry among the three subjects

6406532467599. ✓ Number of students with lowest marks in Physics among the three subjects

Question Number : 6 Question Id : 640653737268 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 following pseudocode is executed using the "Words" dataset.

```

1 count = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     Move X to Table 2
5     i = 1, A = False, B = False
6     while(i ≤ X.LetterCount){
7         if(ith letter of X.Word is a vowel){
8             if(A){
9                 B = True
10            }
11            A = True
12        }
13        else{
14            A = False
15        }
16        i = i + 1
17    }
18    if(B){
19        count = count + 1
20    }
21 }
```

What will **count** represent at the end of execution?

Options :

6406532467604. ✓ Number of words with at least one pair of vowels occurring consecutively

6406532467605. ✗ Number of words with at most two pairs of vowels occurring consecutively

6406532467606. ✗ Number of words with at least two pairs of the same vowel occurring consecutively

6406532467607. ✗ Number of words with at most two pairs of the same vowel occurring consecutively

Sub-Section Number : 3

Sub-Section Id : 640653107575

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 7 Question Id : 640653737262 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 following pseudocode is executed using the "Words" table. At the end of the execution, **count** stores the number of pairs of nouns such that both nouns have either the same letter count or both end with a full stop. Choose the correct code fragment to complete the pseudocode.

```
1 count = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     Move X to Table 2
5     if(X.Partofspeech == "Noun"){
6         while(Table 1 has more rows){
7             Read the first row Y in Table 1
8             Move Y to Table 3
9             if(***(Statement 1****)){
10                 if(***(Statement 2****){
11                     count = count + 1
12                 }
13                 else{
14                     if(***(Statement 3****){
15                         count = count + 1
16                     }
17                 }
18             }
19         }
20         Move all rows from Table 3 to Table 1
21     }
22 }
```

Options :

6406532467580. ✓ Statement 1: **X.PartOfSpeech == Y.PartOfSpeech**

Statement 2: **X.LetterCount == Y.LetterCount**

Statement 3: **X.Word and Y.Word end with a full stop**

6406532467581. ✗ Statement 1: **X.Word and Y.Word end with a full stop**

Statement 2: **X.PartOfSpeech == Y.PartOfSpeech**

Statement 3: **X.LetterCount == Y.LetterCount**

6406532467582. ✗ Statement 1: **X.LetterCount == Y.LetterCount**

Statement 2: **X**.Word and **Y**.Word end with a full stop

Statement 3: **X**.PartOfSpeech == **Y**.PartOfSpeech

6406532467583. ✶ Statement 1: **X**.LetterCount == **Y**.LetterCount

Statement 2: **X**.PartOfSpeech == **Y**.PartOfSpeech

Statement 3: **X**.Word and **Y**.Word end with a full stop

Question Number : 8 Question Id : 640653737263 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 following pseudocode is executed using the "Scores" dataset. At the end of the execution, variable **Count** captures the number of students whose total marks are more than the class average (of total marks) but have scored below the subject average in at least one subject. Assume that the variable **AvgT** holds the value of the average total marks. Similarly, the variables **AvgP**, **AvgC** and **AvgM** hold the value of the average marks of Physics, Chemistry and Mathematics respectively. Choose the correct code fragment to complete the pseudocode.

```

1 Count = 0
2 while(Table 1 has more rows){
3     Read the first row X from Table 1
4     A = False, B = False, C = False, D = False
5     if(X.Total > AvgT){
6         A = True
7     }
8     if(X.Mathematics < AvgM){
9         B = True
10    }
11    if(X.Physics < AvgP){
12        C = True
13    }
14    if(X.Chemistry < AvgC){
15        D = True
16    }
17    *****
18    * Fill the code *
19    *****
20    Move X to Table 2
21 }
```

Options :

```

1 if(A and (B or C or D)){
2     Count = Count + 1
3 }
```

6406532467584. ✓

```

1 if(A or (B and C and D)){
2     Count = Count + 1
3 }
```

6406532467585. ✗

```

1 if(A and not(B and C and D)){
2     Count = Count + 1
3 }
```

6406532467586. ✗

```

1 if(A or not(B or C or D)){
2     Count = Count + 1
3 }
```

6406532467587. ✗

Question Number : 9 Question Id : 640653737264 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 following pseudocode is executed using the “Words” dataset. What will **A** represent at the end of the execution?

```
1 SumT = 0, CountT = 0, B = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     CountT = CountT + 1
5     SumT = SumT + X.LetterCount
6     Move X to Table 2
7 }
8 B = SumT / CountT
9
10 Sums = 0, Counts = 0, A = 0, C = 0
11 while(Table 2 has more rows){
12     Read the first row X in Table 2
13     Counts = Counts + 1
14     Sums = Sums + X.LetterCount
15     if(X.word ends with a full stop){
16         C = Sums / Counts
17         if(c < B){
18             A = A + 1
19         }
20         Sums = 0, Counts = 0
21     }
22     Move X to Table 1
23 }
```

Options :

6406532467588. ❗ Number of sentences with average letter count more than the average letter count of dataset

6406532467589. ✓ Number of sentences with average letter count less than the average letter count of dataset

6406532467590. ❖ Number of words with average letter count more than the average letter count per word of dataset

6406532467591. ❖ Number of words with average letter count less than the average letter count per word of dataset

Question Number : 10 Question Id : 640653737265 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

Procedure **miniSum** accepts three numbers as parameters and returns the sum of two smallest numbers.

Choose the correct code fragment to complete the procedure.

```
1 Procedure minisum(A, B, C)
2     Sum = 0
3     if(A > C and A > B){
4         Sum = B + C
5     }
6     ****
7     * Fill the code *
8     ****
9     return(Sum)
10 End minisum
```

Options :

```
1 else{
2     if(B > C and B > A){
3         Sum = A + C
4     }
5     else{
6         Sum = A + B
7     }
8 }
```

6406532467592. ✓

6406532467593. ❖

```
1 if(B > C and B > A){  
2     Sum = A + C  
3 }  
4 else{  
5     Sum = A + B  
6 }
```

```
1 else{  
2     Sum = A + B  
3 }  
4 if(C > B and B > A){  
5     Sum = A + C  
6 }  
7
```

6406532467594. *

```
1 else{  
2     Sum = A + B  
3 }  
4 if(C > B and B > A){  
5     Sum = B + C  
6 }
```

6406532467595. *

Question Number : 11 Question Id : 640653737267 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 following pseudocode is executed using the “Olympics” dataset. Procedure **doSomething** accepts a table of rows which contains rows of the same player. Assume that the player has won at least two medals and only one medal in any year. What will (**B - A**) represent at the end of the execution?

```

1 Procedure dosomething(Table T1)
2     A = 2030, B = 2030
3     while(Table T1 has more rows){
4         Read the first row z from Table T1
5         if(z.Year < A){
6             B = A
7             A = Z.Year
8         }
9         if(z.Year > A and z.Year < B){
10            B = Z.Year
11        }
12        Move the row z to Table T2
13    }
14    return((B - A))
15 End dosomething

```

Options :

6406532467600. ✓ Year gap between first and second medal won by a player

6406532467601. ✗ Year gap between first and latest medal won by a player

6406532467602. ✗ Year gap between latest and second latest medal won by a player

6406532467603. ✗ Year gap between first and second latest medal won by a player

Sub-Section Number : 4

Sub-Section Id : 640653107576

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 12 Question Id : 640653737269 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 given pseudocode is executed using the “Olympics” table. What will **count** represent at the end of the execution? Assume all players have distinct names.

```

1 count = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     Move X to Table 2
5     while(Table 1 has more rows){
6         Read the first row Y in Table 1
7         Move Y to Table 3
8         if(X.Name != Y.Name){
9             if(X.Nationality == Y.Nationality and X.Medal == Y.Medal){
10                count = count + 1
11            }
12        }
13    }
14    Move all rows from Table 3 to Table 1
15 }

```

Options :

6406532467608. ✘ The number of pairs of players having the same nationality or the same medal.

6406532467609. ✓ The number of pairs of players having the same nationality and same medal.

6406532467610. ✘ The number of players having the same nationality and same medal.

6406532467611. ✘ The number of players having the different name but of same nationality.

Sub-Section Number : 5

Sub-Section Id : 640653107577

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 13 Question Id : 640653737270 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The given pseudocode is executed using the “Shopping Bills” dataset. **frac** stores the ratio of the number of customers who purchased both “Bread” and “Milk” to the number of customers who purchased “Milk”. Choose the correct code fragment(s) of procedure **hasItem** to complete the pseudocode. (Assume there is at least one customer who has purchased “Milk”).

```

1 mCount = 0, bCount = 0
2 while(Pile 1 has more cards){
3     Read the top card X in Pile 1
4     if(hasItem(X, "Milk")){
5         mCount = mCount + 1
6         if(hasItem(X, "Bread")){
7             bCount = bCount + 1
8         }
9     }
10    Move X to Pile 2.
11 }
12 frac = bCount / mCount
13
14 Procedure hasItem (Y, A)
15 *****
16 * Fill the code *
17 *****
18 End hasItem

```

Options :

```

1 C = False
2 while(Card Y has more items){
3     Read an item Z from ItemList of card Y
4     if(Z.Item == A){
5         C = True
6     }
7     else{
8         C = False
9     }
10    Remove Z from ItemList of Y
11 }
12 return(C)

```

6406532467612. ✘

```

1 C = False
2 while(Card Y has more items){
3     Read an item Z from ItemList of card Y
4     if(Z.Item == A){
5         C = True
6     }
7     Remove Z from ItemList of Y
8 }
9 return(C)

```

6406532467613. ✓

```
1   C = True
2   while(card Y has more items){
3       Read an item z from ItemList of card Y
4       if(z.Item == A){
5           C = True
6       }
7       Remove z from ItemList of Y
8   }
9   return(c)
```

6406532467614. ❌

```
1   C = True
2   while(card Y has more items){
3       Read an item z from ItemList of card Y
4       if(z.Item == A){
5           C = False
6       }
7       Remove z from ItemList of Y
8   }
9   return not(c)
```

6406532467615. ✓

Question Number : 14 Question Id : 640653737271 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The given information represents a "Words" dataset and it may have some mistakes with respect to the sanity of data. Identify all rows with such mistakes.

Row no.	Field	Value
Row 1	Card number	"xyz"
Row 2	Word	1
Row 3	Part of Speech	"Noun"
Row 4	Letter Count	- 5

Options :

6406532467616. ✓ Row 1: Incorrect data type of card number

6406532467617. ✓ Row 2: Incorrect data type of Word

6406532467618. ✗ Row 3: Incorrect data type of Part of Speech

6406532467619. ✗ Row 3: Invalid value of Part of Speech

6406532467620. ✗ Row 4: Incorrect data type of Letter Count

6406532467621. ✓ Row 4: Invalid value of Letter Count

Question Number : 15 Question Id : 640653737272 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the "Scores" dataset. At the end of the execution, **count** captures the number of pairs of students having either same gender or from the same city but not both. But the pseudocode may have mistakes. Identify all such mistakes (if any). Assume that all statements not listed in the options below are free of errors.

```

1 count = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     Move X to Table 2
5     while(Table 1 has more rows){
6         Read the first row Y in Table 1
7         Move Y to Table 3
8         count = count + findPair(X, Y)
9     }
10    Move all rows from Table 3 to Table 1
11}
12 Procedure findPair(X, Y)
13    A = False, B = True
14    if(X.Gender == Y.Gender){
15        A = True
16    }
17    if(X.cityTown == Y.cityTown){
18        B = True
19    }
20    if((A and not B) and (not A and B)){
21        return(1)
22    }
23    return(0)
24 End findPair

```

Options :

6406532467622. ✓ Line 13: Incorrect initialisation of **B**

6406532467623. ✗ Line 18: Incorrect update of **B**

6406532467624. ✓ Line 20: Incorrect condition

6406532467625. ✗ Line 21: It should **return(0)**

Sub-Section Number : 6

Sub-Section Id : 640653107578

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 16 Question Id : 640653737273 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 following pseudocode is executed using a dataset similar to the "Words" dataset, based on the following paragraph.

"Surrounded by nature, Susan often takes a stroll, savoring the soothing sounds of chirping birds. Such moments underline the significance of embracing simple joys in life. Rustlings in the trees suggest squirrels beginning their day, searching for sustenance. Surely, the beauty of a sunrise holds unparalleled magic."

```
1 count = 0, flag = True
2 while(Table 1 has more rows){
3     Read the first row x in Table 1
4     Move x to Table 2
5     if(flag){
6         if(1st letter of x.word == 's'){
7             if(2nd letter of x.word == 'u'){
8                 count = count + 1
9             }
10        }
11    }
12    flag = False
13    if(x.word ends with full stop){
14        flag = True
15    }
16 }
```

What would be the value of **count** at the end of the execution of the above pseudocode? Assume that upper case and lower case are ignored during comparison of letters.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Maths1

Section Id :	64065351350
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107579
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 17 Question Id : 640653737274 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : MATHEMATICS FOR DATA SCIENCE I (COMPUTER BASED EXAM)"

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

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

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

Options :

6406532467627. ✓ YES

6406532467628. ✘ NO

Question Number : 18 Question Id : 640653737275 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

Instructions:

- There are some questions which have functions with discrete valued domains (such as day, month, year etc). For simplicity, we treat them as continuous functions.
- For NAT type question, enter only one right answer even if you get multiple answers for that particular question.

Options :

6406532467629. ✓ Useful Data has been mentioned above.

6406532467630. ✘ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653107580

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 19 Question Id : 640653737276 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following relations defined on the set of integers:

- $R_1 = \{(x, y) : x, y \in \mathbb{Z} \text{ and } |x - y| \leq 3\}$.
- $R_2 = \{(x, y) : x, y \in \mathbb{Z} \text{ and } 3 \text{ divides } x - y\}$.

Choose the correct option(s):

Options :

6406532467631. ✓ R_1 is reflexive and symmetric.

6406532467632. ✗ R_2 is symmetric but not transitive.

6406532467633. ✗ R_1 is an equivalence relation but R_2 is not an equivalence relation.

6406532467634. ✓ R_2 is an equivalence relation but R_1 is not an equivalence relation.

Question Number : 20 Question Id : 640653737277 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let $f(x) = |x^2 - 4| - 1$. Which of the following option(s) are true for f ?

Options :

6406532467635. ✓ f is defined for all $x \in \mathbb{R}$.

6406532467636. ✗ f is one-one

6406532467637. ✓ The range of f is $[-1, \infty)$.

6406532467638. ✗ The minimum value of f is 0.

Question Number : 21 Question Id : 640653737292 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider two polynomials $p(x) = -x^5 + 5x^4 - 7x - 2$ and $q(x) = -x^5 + 5x^4 - x^2 - 2$. Which of the following options is/are true?

Options :

6406532467665. ❌ $q(x) \rightarrow \infty$ as $x \rightarrow \infty$.

6406532467666. ✓ $p(x) \rightarrow -\infty$ as $x \rightarrow \infty$.

6406532467667. ✓ $p(x)$ has at most 4 turning points.

6406532467668. ✓ The quotient obtained while dividing $q(x)$ by $p(x)$ is a constant.

Sub-Section Number : 3

Sub-Section Id : 640653107581

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737278 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 : (22 to 23)

Question Label : Comprehension

Consider two triangles ABC and PAB with coordinates $A(4, 3)$, $B(2, 2)$, $C(8, 3)$ and $P(t, t^2)$. The area of triangle ABC is 4 times the area of the triangle PAB .

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 22 Question Id : 640653737279 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 area of the triangle ABC ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 23 Question Id : 640653737280 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose all the possible options for P .

Options :

6406532467640. ❌ (0, 0)

6406532467641. ❌ (2, 4)

6406532467642. ❌ (-2, 4)

6406532467643. ✓ (-1, 1)

6406532467644. ✓ (1, 1)

Sub-Section Number :

4

Sub-Section Id :

640653107582

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Id : 640653737281 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 : (24 to 25)

Question Label : Comprehension

Suppose that L_1 and L_2 are lines in the plane, with the x -intercepts of L_1 and L_2 are 2 and -1 , respectively, and that the respective y -intercepts are -3 and 2.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 24 Question Id : 640653737282 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

Choose the point where L_1 and L_2 intersect.

Options :

6406532467645. ✘ (10, 18)

6406532467646. ✘ (5, 8)

6406532467647. ✓ (-10,-18)

6406532467648. ✘ (6, 6)

Question Number : 25 Question Id : 640653737283 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 θ is the angle between L_1 and L_2 , then $\tan \theta$ is equal to

Options :

6406532467649. ✓ $\frac{1}{8}$

6406532467650. ✗ $\frac{1}{6}$

6406532467651. ✗ $\frac{3}{8}$

6406532467652. ✗ $\frac{1}{4}$

Sub-Section Number : 5

Sub-Section Id : 640653107583

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737284 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 : (26 to 27)

Question Label : Comprehension

In a grocery store, 60 customers made a purchase on a specific day. 28 people bought bread, 37 people bought milk and 30 people bought fruits. All the customers bought at least one of the three items. 16 of them bought bread and fruits, 17 of them bought bread and milk and 9 of them bought all the three items.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 26 Question Id : 640653737285 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Find the number of customers who bought milk and fruits.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

11

Question Number : 27 Question Id : 640653737286 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Find the number of customers who bought milk and fruits but not bread.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number : 6

Sub-Section Id : 640653107584

Question Shuffling Allowed : Yes

Is Section Default? :

null

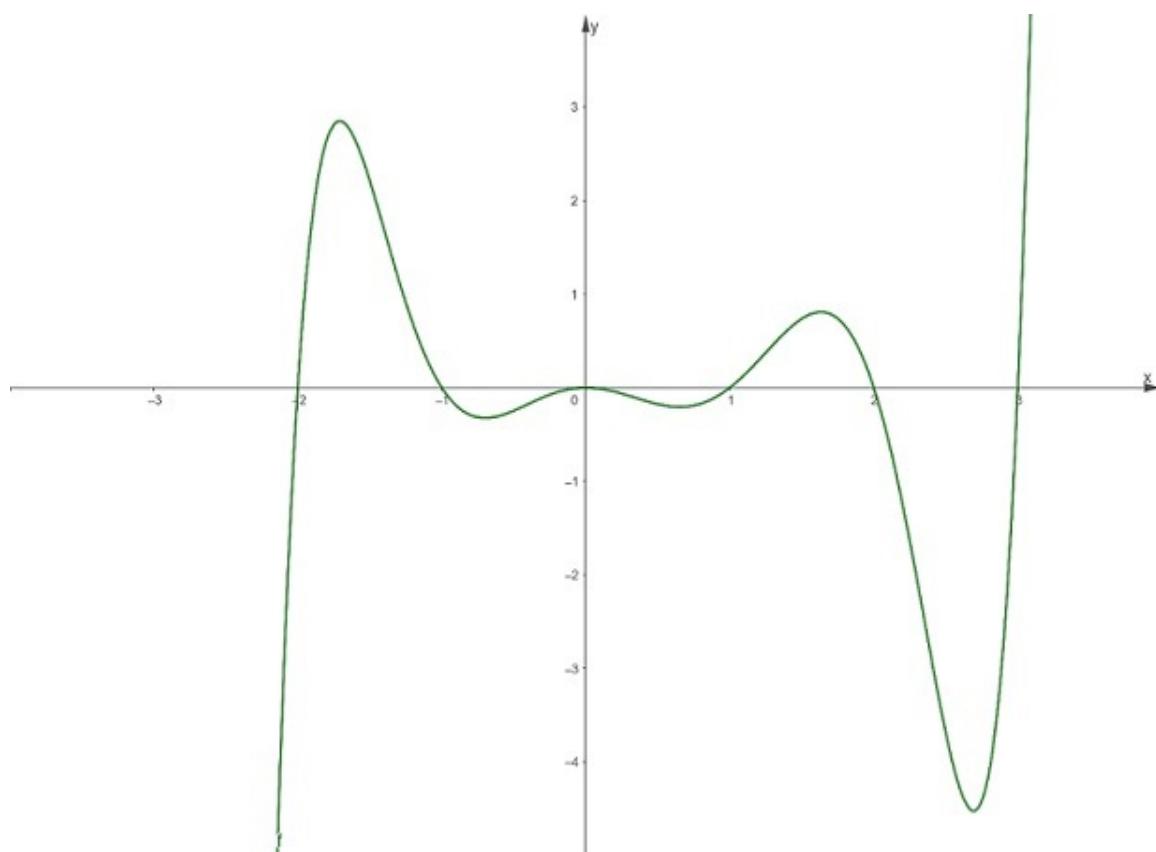
Question Number : 28 Question Id : 640653737287 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following polynomial $p(x)$ whose graph is given below:-



Which of the following options is/are correct.

Options :

6406532467655. ❌ Multiplicity of -1 and 1 must be same.

6406532467656. ✓ $p(x)$ is increasing in the interval $(3, \infty)$.

6406532467657. ✓ The total number of local minima is 3.

6406532467658. ❌ The number of turning points is 5.

Question Number : 29 Question Id : 640653737288 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

6406532467659. ✘ The point at which the slope of the equation $x^2 + 2x - 5$ equals 10 is (4,17)

6406532467660. ✘ $x = 2$ is the axis of symmetry of the quadratic function $f(x) = x^2 + 4x + 5$

If two different quadratic equations have same discriminant then
6406532467661. ✓ the roots of both equations can be same.

The point at which the slope of the equation $x^2 + 2x - 5$ equals
6406532467662. ✓ 10 is (4,19)

Sub-Section Number : 7

Sub-Section Id : 640653107585

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737289 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 : (30 to 31)

Question Label : Comprehension

If the slope of parabola $y = Ax^2 + Bx + C$, where $A, B, C \in \mathbb{R}$ at points (3, 2) and (2, 3) are 16 and 12 respectively.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 30 Question Id : 640653737290 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

Calculate the value of A

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 31 Question Id : 640653737291 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

Calculate the value of B

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number : 8

Sub-Section Id : 640653107586

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 32 Question Id : 640653737293 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

Ram and Shyam want to solve a quadratic equation. Ram made a mistake in writing down the constant term and ended up in getting roots as 3 and 4. Shyam made a mistake in writing down the coefficient of x and got the roots as 2 and 3. Consider the leading coefficient to be 1 in all cases. The correct roots of the quadratic equation are:

Options :

6406532467669. ✘ 1 and 5

6406532467670. ✘ 2 and 6

6406532467671. ✓ 1 and 6

6406532467672. ✘ 2 and 5

Statistics1

Section Id : 64065351351

Section Number : 3

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 13

Number of Questions to be attempted : 13

Section Marks : 40

Display Number Panel : Yes

Section Negative Marks : 0

Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107587
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 33 Question Id : 640653737294 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "[FOUNDATION LEVEL : STATISTICS FOR DATA SCIENCE I \(COMPUTER BASED EXAM\)](#)"

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

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

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

Options :

6406532467673. ✓ YES

6406532467674. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653107588
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 34 Question Id : 640653737295 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 teacher wants to know if the willingness of students to go for a school trip is associated with the gender of students. In this regard, the teacher collected the data from the school and plotted a 100% stacked bar chart as shown in Figure Q.1.

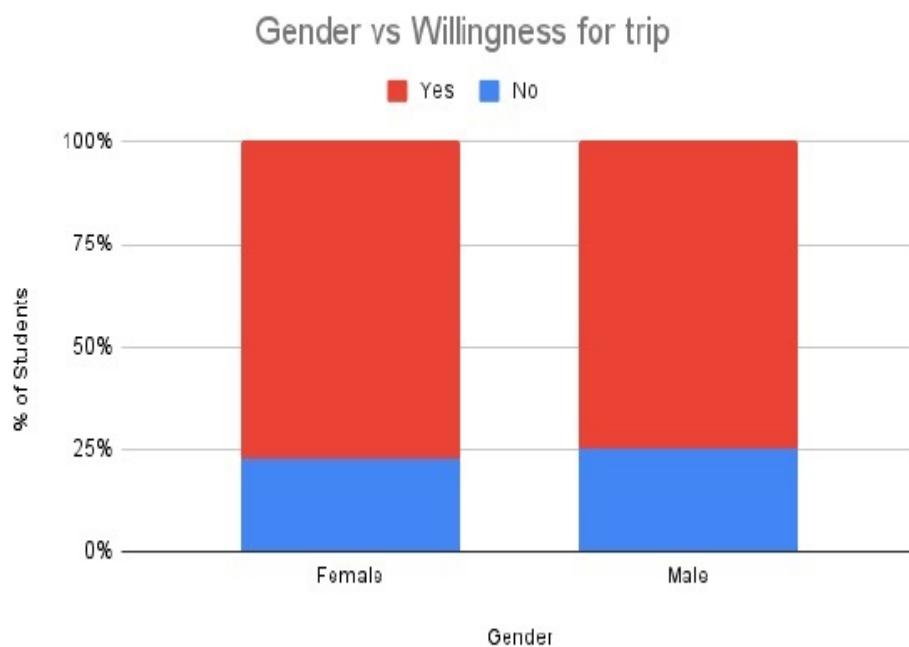


Figure Q.1: 100% Stacked bar chart of Gender vs willingness

What conclusion can you make about association between two variables “Gender” and “Willingness” by observing the plot?

Options :

6406532467675. ❌ There is an association between “Gender” and “Willingness” as row relative frequencies will be approximately same for all rows.

6406532467676. ✓ There is no association between “Gender” and “Willingness” as row relative frequencies will be approximately same for all rows.

6406532467677. ❌ There is an association between “Gender” and “Willingness” as row relative frequencies will be different for all rows.

6406532467678. ❌ There is no association between “Gender” and “Willingness” as row relative frequencies will be different for all rows.

Sub-Section Number :	3
Sub-Section Id :	640653107589
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 35 Question Id : 640653737296 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following stem and leaf diagram represent the marks (out of 50) obtained by 20 students in an A-level mathematics paper:

Stem	Leaf
0	0 5 6 8
1	0 0 2 6
2	0 3 5 8
3	3 5 8 8
4	4 9
5	0 0

Here, 0 | 5 represents 5 marks.

Based on the given information, select the correct options from the following:

Options :

6406532467679. ❌ There are 9 students who have scored greater than 20 marks.

6406532467680. ❌ The data is bimodal.

6406532467681. ✓ Mean is greater than the median.

6406532467682. ✓ Interquartile range is 28.

Sub-Section Number :	4
Sub-Section Id :	640653107590
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 36 Question Id : 640653737297 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

Table Q.1 shows the number of accidents on a highway over a period of n days:

Number of accidents	0	1	2	3	4	5
Frequency	10	4	b	4	1	2

Table Q.1

The average number of accidents is 1.6, then find the value of $b + n$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

39

Question Number : 37 Question Id : 640653737304 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

Table Q.3 represents the heights (in inches) of five fathers (X) and their sons (Y).

X	65	65	60	80	80
Y	60	60	55	75	75

Table Q.3 : Heights (in inches) of fathers and their sons

What is the value of population covariance between X and Y ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

70

Sub-Section Number : 5

Sub-Section Id : 640653107591

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 38 Question Id : 640653737298 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

To ensure the accuracy of conclusions drawn through inferential statistics, which of the following statement(s) must be true?

Options :

6406532467684. ❌ Sample should not be randomly selected.

6406532467685. ✓ Sample should be randomly selected.

6406532467686. ✓ Sample should be a good representative of the population.

6406532467687. ❌ Sample should not be representative of the population.

Question Number : 39 Question Id : 640653737299 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406532467688. ✖ The gross annual income for each of 1000 randomly chosen households in New York City for the year 2000 is a time series data.

6406532467689. ✖ Passenger Name Record (PNR) number has an ordinal scale of measurement.

6406532467690. ✓ Revenue generated by India through tea exports to 10 different countries in year 2010 is a cross-sectional data.

6406532467691. ✓ Shirt size is a categorical variable.

Sub-Section Number : 6

Sub-Section Id : 640653107592

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737300 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

An analyst conducted a survey to understand the opinions of college students regarding the quality of education at their institution. He collected the data from 10 students as:

"Fair", "Fair", "Excellent", "Poor", "Fair", "Excellent", "Poor", "Poor", "Excellent", and "Poor".

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 40 Question Id : 640653737301 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 mode of the given data?

Options :

6406532467692. ✳ Excellent

6406532467693. ✓ Poor

6406532467694. ✳ Fair

6406532467695. ✳ Mode is not defined for the given data

Question Number : 41 Question Id : 640653737302 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 median of the given data?

Options :

6406532467696. ✳ Poor

6406532467697. ✓ Fair

6406532467698. ✳ Excellent

6406532467699. ✳ Median is not defined for given data

Sub-Section Number : 7

Sub-Section Id : 640653107593

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 42 Question Id : 640653737303 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Table Q.2 shows the count of sales of shirts at a men's clothing retailer.

Size	Style		
	Button-down	Polo	Small Print
Small	25	35	40
Medium	50	20	30
Large	60	20	20

Table Q.2

Choose the correct option/s from the following:

Options :

6406532467700. ✓ Of all the shirts with Polo style, there are 26.67% shirts of Medium size.

6406532467701. ✗ Of all the shirts with Small size, there are 25% shirts of Small Print style.

6406532467702. ✗ There is no association between the size and style of shirts.

6406532467703. ✓ There is an association between the size and style of shirts.

Sub-Section Number : 8

Sub-Section Id : 640653107594

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 43 Question Id : 640653737305 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 a dataset of 50 items. Suppose $\sum_{i=1}^{50} (x_i - \bar{x})^2 = 8$ and $\sum_{i=1}^{50} x_i = 20$. Find the mean \bar{x} and population standard deviation σ of the dataset.

Options :

6406532467705. ✗ $\bar{x} = 20, \sigma = 8$

6406532467706. ✗ $\bar{x} = 1000, \sigma = 0.4$

6406532467707. ✓ $\bar{x} = 0.4, \sigma = 0.4$

6406532467708. ✗ $\bar{x} = 2.5, \sigma = 0.4$

Question Number : 44 Question Id : 640653737306 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

Select the correct statements from the following:

Options :

6406532467709. ✓ Two data sets with the identical frequency distributions will have identical relative frequency distributions.

6406532467710. ✗ A relative frequency is the number of observations belonging to a category.

6406532467711. ✗ Two data sets with the identical relative-frequency distributions will always have identical frequency distributions.

6406532467712. ✗ If all of the bars in a bar chart have the same length, then the categorical variable shown in the bar chart has no variation.

Sub-Section Number : 9

Sub-Section Id : 640653107595

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737307 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Question Numbers : (45 to 46)

Question Label : Comprehension

Figure Q.2 illustrates the proportional distribution of renewable energy consumption across various sources throughout the country. The total renewable energy consumption is given as 350 kWh.

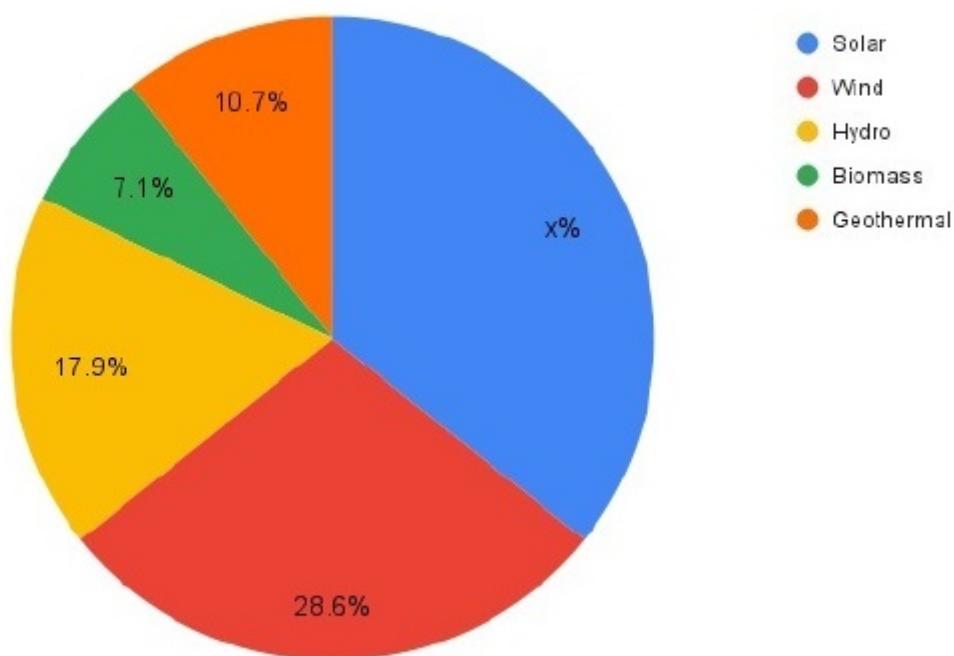


Figure Q.2: Distribution of renewable energy consumption

Based on the above information, answer the given subquestions:

Sub questions

Question Number : 45 Question Id : 640653737308 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Find the value of $10x$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 46 Question Id : 640653737309 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose the correct statement(s) from the following.

Options :

6406532467714. Mode of the data is solar energy.

6406532467715. Median of the data is wind energy.

6406532467716. The combined consumption of the hydro, biomass and geothermal energy is more than the wind energy consumption.

6406532467717. The consumption of solar energy is 120 kWh.

Sub-Section Number : 10

Sub-Section Id : 640653107596

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 47 Question Id : 640653737310 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Table Q.4 represents the details of six persons who visit an online Website to purchase few items.

Person	Household size	Region	Income Range	Age (in years)	Purchase
Person 1	6	North Central	less than 50k	23	Yes
Person 2	5	North Central	50k - 60k	30	No
Person 3	4	West	60k-70k	35	Yes
Person 4	4	East	70k-80k	28	No
Person 5	6	South	80k-90k	35	No
Person 6	3	North Central	more than 90k	29	Yes

Table Q.4 : Details of six person who visit an online Website

Choose the correct option(s) from the following:

Options :

6406532467718. ✓ Purchase and Region are categorical variables.

6406532467719. ✗ Income Range has nominal scale of measurement.

6406532467720. ✓ Age has a ratio scale of measurement.

6406532467721. ✓ Household size is a discrete numerical variable.

6406532467722. ✗ Purchase has an ordinal scale of measurement.

Maths2

Section Id : 64065351352

Section Number : 4

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions :	9
Number of Questions to be attempted :	9
Section Marks :	25
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107597
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 48 Question Id : 640653737311 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : MATHEMATICS FOR DATA SCIENCE II (COMPUTER BASED EXAM)"

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

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

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

Options :

6406532467723. ✓ YES

6406532467724. ✗ NO

Sub-Section Id :	640653107598
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653737312 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 : (49 to 50)

Question Label : Comprehension

Answer the given subquestions:

Sub questions

Question Number : 49 Question Id : 640653737313 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the determinant of $\begin{bmatrix} 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-1

Question Number : 50 Question Id : 640653737314 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the determinant of $\begin{bmatrix} a & b & 0 & c \\ d & e & 5 & f \\ g & h & 4 & i \\ 0 & 0 & -5 & 0 \end{bmatrix}$ given

the determinant of the matrix $\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$ is 2.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Id : 640653737327 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

Let $V = \{(x, y, 5) : x, y \in \mathbb{R}\}$. Let us define addition and scalar multiplication as follows:

Addition : $(x_1, y_1, 5) + (x_2, y_2, 5) = (x_1 + x_2, y_1 + y_2, 5); (x_1, y_1, 5), (x_2, y_2, 5) \in V$

Scalar multiplication : $c(x, y, 5) = (cx, cy, 5); (x, y, 5) \in V, c \in \mathbb{R}$

Answer the given subquestions with respect to the given information.

Sub questions

Question Number : 51 Question Id : 640653737328 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 the set V closed under addition?

Options :

6406532467743. ✓ Yes

6406532467744. ✗ No

Question Number : 52 Question Id : 640653737329 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 the set V closed under scalar multiplication?

Options :

6406532467745. ✓ Yes

6406532467746. ✗ No

Question Number : 53 Question Id : 640653737330 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is(are) correct?

Options :

V has no zero element with respect

6406532467747. ✗ to the given addition.

$(0, 0, 0)$ is the zero element of V with

6406532467748. ✗ respect to the given addition.

6406532467749. ✓

$(0, 0, 5)$ is the zero element of V with respect to the given addition.

For any real number c , we always have $c(0, 1, 5) = (0, 1, 5)$.
6406532467750. ✘

For each element of $v \in V$ and for
6406532467751. ✓ each pair $a, b \in \mathbb{R}$, $(a + b)v = av + bv$.

Sub-Section Number : 3

Sub-Section Id : 640653107599

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737315 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

Let $A = \begin{bmatrix} 1 & \frac{1}{3} \\ c & d \end{bmatrix}$ such that $A^2 = 0$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 54 Question Id : 640653737316 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Find the value of c .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-3

Question Number : 55 **Question Id :** 640653737317 **Question Type :** SA **Calculator :** None

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

Correct Marks : 1

Question Label : Short Answer Question

Find the value of d .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-1

Sub-Section Number : 4

Sub-Section Id : 640653107600

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737318 **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 : (56 to 57)

Question Label : Comprehension

Consider the following system of linear equations:

$$2x - y + 3z = 0$$

$$ax - y + z = 0$$

$$4x - 2y + 7z = 0$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 56 Question Id : 640653737319 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 there exist an a such that the system has infinitely many solutions? If yes, find the value of a , else write the answer as 100.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 57 Question Id : 640653737320 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

Does there exist an a such that the system has no solution? If yes, find the value of a , else write the answer as 100.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Id : 640653737322 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 : (58 to 60)

Question Label : Comprehension

Consider the following subsets of $M_{3 \times 3}(\mathbb{R})$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 58 Question Id : 640653737323 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

$$W_1 = \left\{ \begin{pmatrix} a & 0 & 0 \\ 0 & b & 0 \\ 0 & 0 & c \end{pmatrix} : a, b, c \in \mathbb{R} \text{ such that } a + b + c = 1 \right\}.$$

If W_1 is a subspace, find the dimension else write the answer as 0.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 59 Question Id : 640653737324 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

$$W_2 = \left\{ \begin{pmatrix} a & 0 & 0 \\ 0 & b & 0 \\ 0 & 0 & c \end{pmatrix} : a, b, c \in \mathbb{R} \text{ such that } a = b = c \right\}.$$

If W_2 is a subspace, find the dimension else write the answer as 0.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 60 Question Id : 640653737325 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

$$W_3 = \left\{ \begin{pmatrix} a & 0 & 0 \\ 0 & b & 0 \\ 0 & 0 & c \end{pmatrix} : a, b, c \in \mathbb{R} \right\}. \text{ If } W_3$$

is a subspace, find the dimension else write the answer as 0.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Id : 640653737331 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 : (61 to 63)

Question Label : Comprehension

Let $u = (1, 2, -1)^T$, $v = (2, 1, 0)^T$ and $w = (-1, 4, -3)^T$. Let $A \in M_{3 \times 3}(\mathbb{R})$ such that $Au = u$ and $Av = -v$. If $A^3w = (a, b, c)^T$, then answer the given subquestions.

Sub questions

Question Number : 61 Question Id : 640653737332 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

a is equal to

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Question Number : 62 Question Id : 640653737333 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

b is equal to

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Question Number : 63 **Question Id :** 640653737334 **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

c is equal to

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-3

Sub-Section Number : 5

Sub-Section Id : 640653107601

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 64 **Question Id :** 640653737321 **Question Type :** MSQ **Is Question**

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

Correct Marks : 3 **Max. Selectable Options :** 0

Question Label : Multiple Select Question

Select all true statements.

Options :

6406532467731. ✓ $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 0 \end{bmatrix}$ is in reduced row echelon form.

6406532467732. ✓ The reduced row echelon form of any square, invertible matrix is the identity matrix of the same order.

6406532467733. ✗ Elementary row operations can be performed only on square matrices.

6406532467734. ✗ If a matrix is in reduced row echelon form, its last row will always be a zero row.

Question Number : 65 Question Id : 640653737326 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the vectors $v_1 = (1, -1, 0)$, $v_2 = (2, 3, -1)$ and $v_3 = (a, b, c)$ in \mathbb{R}^3 . Choose the correct options from the following.

Options :

6406532467738. ✗ If $a = 5, b = 0, c = -1$, then the set $\{v_1, v_2, v_3\}$ forms a basis for \mathbb{R}^3 .

6406532467739. ✓ If $a = 5, b = 0, c = -1$, then the vectors $\{v_1, v_2, v_3\}$ are linearly dependent.

6406532467740. ✗ If $a = 5, b = 0, c = -1$ and A is the matrix with v_1, v_2 and v_3 as its columns, then $\text{rank}(A) = 3$.

If $a = 2, b = 3, c = 1$, then the subspace spanned by the vectors
6406532467741. ✓ $\{v_1, v_2, v_3\}$ has dimension 3.

If $a = 2, b = 3, c = 1$ and A is the matrix with v_1, v_2 and v_3
6406532467742. ✓ as its columns, then A is invertible.

Statistics2

Section Id :	64065351353
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107602
Question Shuffling Allowed :	No
Is Section Default? :	null

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : STATISTICS FOR DATA SCIENCE II (COMPUTER BASED EXAM)"

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

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

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

Options :

6406532467755. ✓ YES

6406532467756. ✗ NO

Question Number : 67 Question Id : 640653737336 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

Discrete random variables:

Distribution	PMF ($f_X(k)$)	CDF ($F_X(x)$)	$E[X]$	$\text{Var}(X)$
Uniform(A) $A = \{a, a+1, \dots, b\}$	$\frac{1}{n}, \quad x = k$ $n = b - a + 1$ $k = a, a+1, \dots, b$	$\begin{cases} 0 & x < 0 \\ \frac{k-a+1}{n} & k \leq x < k+1 \\ & k = a, a+1, \dots, b-1, b \\ 1 & x \geq n \end{cases}$	$\frac{a+b}{2}$	$\frac{n^2-1}{12}$
Bernoulli(p)	$\begin{cases} p & x = 1 \\ 1-p & x = 0 \end{cases}$	$\begin{cases} 0 & x < 0 \\ 1-p & 0 \leq x < 1 \\ 1 & x \geq 1 \end{cases}$	p	$p(1-p)$
Binomial(n, p)	${}^n C_k p^k (1-p)^{n-k}, \quad k = 0, 1, \dots, n$	$\begin{cases} 0 & x < 0 \\ \sum_{i=0}^k {}^n C_i p^i (1-p)^{n-i} & k \leq x < k+1 \\ & k = 0, 1, \dots, n \\ 1 & x \geq n \end{cases}$	np	$np(1-p)$
Geometric(p)	$(1-p)^{k-1} p, \quad k = 1, \dots, \infty$	$\begin{cases} 0 & x < 0 \\ 1 - (1-p)^k & k \leq x < k+1 \\ & k = 1, \dots, \infty \end{cases}$	$\frac{1}{p}$	$\frac{1-p}{p^2}$
Poisson(λ)	$\frac{e^{-\lambda} \lambda^k}{k!}, \quad k = 0, 1, \dots, \infty$	$\begin{cases} 0 & x < 0 \\ e^{-\lambda} \sum_{i=0}^k \frac{\lambda^i}{i!} & k \leq x < k+1 \\ & k = 0, 1, \dots, \infty \end{cases}$	λ	λ

Continuous random variables:

Distribution	PDF ($f_X(k)$)	CDF ($F_X(x)$)	$E[X]$	$\text{Var}(X)$
Uniform $[a, b]$	$\frac{1}{b-a}, a \leq x \leq b$	$\begin{cases} 0 & x \leq a \\ \frac{x-a}{b-a} & a < x < b \\ 1 & x \geq b \end{cases}$	$\frac{a+b}{2}$	$\frac{(b-a)^2}{12}$
Exp(λ)	$\lambda e^{-\lambda x}, x > 0$	$\begin{cases} 0 & x \leq 0 \\ 1 - e^{-\lambda x} & x > 0 \end{cases}$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$
Normal(μ, σ^2)	$\frac{1}{\sigma\sqrt{2\pi}} \exp\left(\frac{-(x-\mu)^2}{2\sigma^2}\right),$ $-\infty < x < \infty$	No closed form	μ	σ^2
Gamma(α, β)	$\frac{\beta^\alpha}{\Gamma(\alpha)} x^{\alpha-1} e^{-\beta x}, x > 0$		$\frac{\alpha}{\beta}$	$\frac{\alpha}{\beta^2}$
Beta(α, β)	$\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} x^{\alpha-1} (1-x)^{\beta-1}$ $0 < x < 1$		$\frac{\alpha}{\alpha+\beta}$	$\frac{\alpha\beta}{(\alpha+\beta)^2(\alpha+\beta+1)}$

1. Markov's inequality: Let X be a discrete random variable taking non-negative values with a finite mean μ . Then,

$$P(X \geq c) \leq \frac{\mu}{c}$$

2. Chebyshev's inequality: Let X be a discrete random variable with a finite mean μ and a finite variance σ^2 . Then,

$$P(|X - \mu| \geq k\sigma) \leq \frac{1}{k^2}$$

Options :

6406532467757. ✓ Useful Data has been mentioned above.

6406532467758. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653107603

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 68 Question Id : 640653737337 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

Naveen tosses a fair coin twice and Suman tosses another fair coin two times. Let the random variables X and Y denote the number of heads observed by Naveen and Suman respectively. Identify the correct joint PMF table of X and Y .

Options :

\backslash Y	0	1	2
0	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{8}$
1	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$
2	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{16}$

6406532467759. ✘

\backslash Y	0	1	2
0	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{16}$
1	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{8}$
2	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{16}$

6406532467760. ✓

\backslash Y	0	1	2
0	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{8}$
1	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{16}$
2	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{16}$

6406532467761. ✘

6406532467762. ✘

$X \backslash Y$	1	2
1	$\frac{1}{4}$	$\frac{1}{4}$
2	$\frac{1}{4}$	$\frac{1}{4}$

Question Number : 69 Question Id : 640653737341 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 X and Y are independent random variables with means 10 and 20, and variances 2 and 4, respectively. Find the value of $\text{Var}(XY)$.

Hint: If X and Y are independent, then X^2 and Y^2 are also independent.

Options :

6406532467768. ✘ 0

6406532467769. ✘ 40000

6406532467770. ✓ 1208

6406532467771. ✘ Cannot be determined

Question Number : 70 Question Id : 640653737343 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 CDF of a random variable X is given as

$$F_X(x) = \begin{cases} 1 - e^{-4x}, & x \geq 0, \\ 0, & \text{otherwise.} \end{cases}$$

What is the value of $P(-4 < X \leq 6)$?

Options :

6406532467773. ✘ $e^{-20} - e^{-24}$

6406532467774. ✓ $1 - e^{-24}$

6406532467775. ✘ $e^{-24} - e^{-20}$

6406532467776. ✘ e^{-24}

Sub-Section Number : 3

Sub-Section Id : 640653107604

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737338 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 : (71 to 72)

Question Label : Comprehension

An analyst is responsible for conducting emissions inspections on bikes. During the inspections, the analyst found that 10% of the bikes fail the inspection. Let X be a geometric variable which denotes the number of bikes the analyst inspects until a bike fails an inspection. Assume that the results of each inspection are independent.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 71 Question Id : 640653737339 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 range of X ?

Options :

6406532467763. ❌ $T_X = \{0, 1, 2, \dots\}$

6406532467764. ✓ $T_X = \{1, 2, \dots\}$

6406532467765. ❌ $T_X = \{1, 2, \dots, 100\}$

6406532467766. ❌ $T_X = \{0, 1\}$

Question Number : 72 Question Id : 640653737340 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 probability that the first failed inspection occurs on the analyst's 5th inspection? Enter the answer correct to three decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.046 to 0.086

Sub-Section Number : 4

Sub-Section Id : 640653107605

Question Shuffling Allowed : Yes

Is Section Default? : null

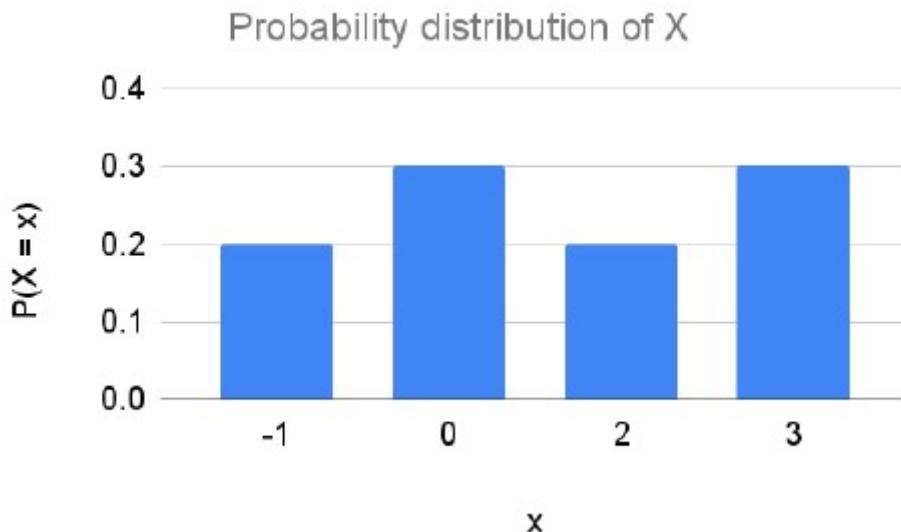
Question Number : 73 Question Id : 640653737342 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

The probability distribution of a discrete random variable X is given as below:



Calculate the expected value of X . Enter the 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 :

1.1

Sub-Section Number : 5

Sub-Section Id : 640653107606

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737344 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 : (74 to 75)

Question Label : Comprehension

Let X and Y be i.i.d. Uniform $\{-1, 0, 1\}$. Define a new random variable $Z = |X + Y|$, where $| \cdot |$ denotes the absolute value.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 74 Question Id : 640653737345 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

Find the PMF of Z .

Options :

z	0	1	2
$f(z)$	1/3	1/3	1/3

6406532467777. ✘

z	0	1	2
$f(z)$	1/3	4/9	2/9

6406532467778. ✓

z	0	1	2
$f(z)$	2/9	4/9	1/3

6406532467779. ✘

6406532467780. ✘

z	0	1
$f(z)$	1/2	1/2

Question Number : 75 Question Id : 640653737346 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Find the value of $P(X = 0 | Z = 1)$. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.4 to 0.6

Question Id : 640653737347 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 : (76 to 77)

Question Label : Comprehension

Kunal and Sanskriti are playing a game. Kunal will roll a fair six-sided die, and Sanskriti will flip a fair coin as many times as the number shown on the die. Let X represent the number displayed on the die, and Y represent the number of heads obtained by Sanskriti.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 76 Question Id : 640653737348 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

If $X = 5$, then which of the following options are true?

Options :

6406532467782. ❌ Range of $(Y|X = 5) = \{1, 2, 3, 4, 5, 6\}$

6406532467783. ✓ Range of $(Y|X = 5) = \{0, 1, 2, 3, 4, 5\}$

6406532467784. ❌ $(Y|X = 5) \sim \text{Binomial}\left(5, \frac{1}{6}\right)$

6406532467785. ✓ $(Y|X = 5) \sim \text{Binomial}\left(5, \frac{1}{2}\right)$

Question Number : 77 Question Id : 640653737349 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Find the value of $P(Y = 1|X = 5)$. Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

Question Id : 640653737350 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 : (78 to 79)

Question Label : Comprehension

A fair die is thrown two times independently. Let

X_1 represent the number obtained in the 1st throw,

X_2 represent the number obtained in the 2nd throw,

Define a new random variable Z such that

$$Z = \max(X_1, X_2)$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 78 Question Id : 640653737351 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

Find the value of $P(Z \leq 3)$.

Options :

6406532467787. ✓ $\frac{1}{4}$

6406532467788. ✗ $\frac{1}{2}$

6406532467789. ✗ $\frac{3}{4}$

6406532467790. * $\frac{1}{8}$

Question Number : 79 Question Id : 640653737352 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 $P(Z = 4) = \frac{a}{36}$, 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 :

7

Question Id : 640653737353 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

Suppose that a random variable X denotes the number of items produced in a factory during a week with mean 50 and variance 25.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 80 Question Id : 640653737354 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

Using Markov's inequality, find a bound on the probability that this week's production will exceed 74.

Options :

6406532467792. ❌ $P(X \geq 74) \geq \frac{25}{37}$

6406532467793. ❌ $P(X \geq 75) > \frac{2}{3}$

6406532467794. ✓ $P(X \geq 75) \leq \frac{2}{3}$

6406532467795. ❌ $P(X \geq 74) < \frac{25}{37}$

Question Number : 81 Question Id : 640653737355 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

Using Chebyshev's inequality, find a lower bound on the probability that this week's production will be between 40 and 60. Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.72 to 0.78

Question Id : 640653737356 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

The probability density function of a random variable X is given as

$$f_X(x) = \begin{cases} \frac{1}{10}, & 0 \leq x < 1, \\ kx, & 1 \leq x < 2, \\ \frac{3}{10}, & 2 \leq x < 3, \\ 0, & \text{otherwise.} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 82 Question Id : 640653737357 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the value of k . Enter the 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 : 83 Question Id : 640653737358 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 value of $P(1 < X < 2.5)$? Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.72 to 0.78

DBMS

Section Id : 64065351354

Section Number : 6

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 16

Number of Questions to be attempted : 16

Section Marks : 50

Display Number Panel : Yes

Section Negative Marks : 0

Group All Questions : No

Enable Mark as Answered Mark for Review and Clear Response : Yes

Maximum Instruction Time : 0

Sub-Section Number : 1

Sub-Section Id :	640653107607
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 84 Question Id : 640653737359 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 (COMPUTER BASED EXAM)"

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

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

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

Options :

6406532467799. ✓ YES

6406532467800. ✗ NO

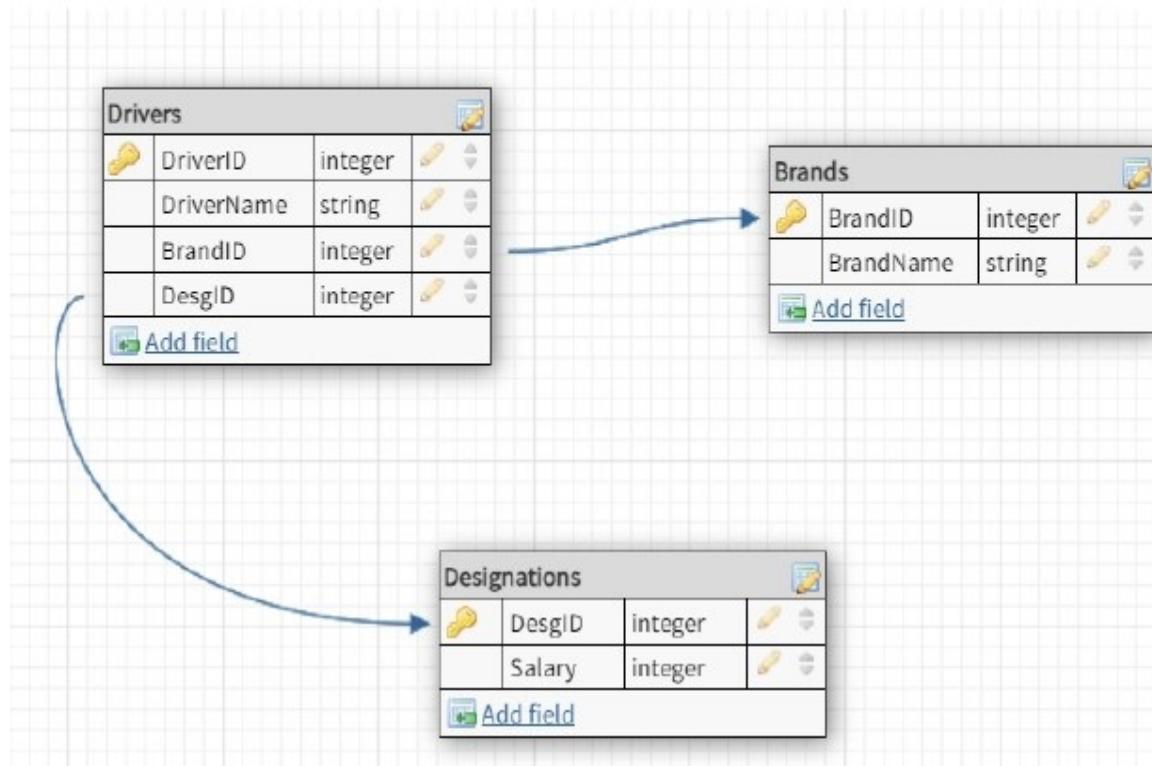
Sub-Section Number :	2
Sub-Section Id :	640653107608
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 85 Question Id : 640653737360 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 given below:



What will be the result of the following query?

```
SELECT DriverName FROM Drivers D NATURAL JOIN Designations T
WHERE T.Salary > ALL (SELECT salary
FROM Designations T, Brands B, Drivers D
WHERE T.DesgID = D.DesgID AND B.BrandID = D.BrandID
AND B.BrandName = 'Mercedes')
INTERSECT
SELECT DriverName FROM Drivers D NATURAL JOIN Designations T
WHERE T.Salary < ALL (SELECT salary
FROM Designations T, Brands B, Drivers D
WHERE T.DesgID = D.DesgID AND B.BrandID = D.BrandID
AND B.BrandName = 'Ferrari')
```

Options :

6406532467801. ✓ Names of all the drivers whose salary is greater than all Mercedes drivers but less than all Ferrari drivers

6406532467802. ✗ Names of all the drivers whose salary is less than all Mercedes drivers but greater than all Ferrari drivers

6406532467803. ✗ Names of all the drivers whose salary is greater than all Mercedes drivers as well as all Ferrari drivers

6406532467804. ✗ Names of all the drivers whose salary is less than all Mercedes drivers as well

as all Ferrari drivers

Question Number : 86 Question Id : 640653737362 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 player(*player_id, name, jersey_no, dob, team_id*).

Identify the correct SQL command to create a view *player_name*, by selecting two columns *name* and *team_id* from the *player* relation. Select those players having names containing at least 4 characters and jersey number as 9.

Options :

CREATE VIEW player_name(name,team_id) AS
SELECT name,team_id from player

6406532467809. ✘ Where name like '%___' AND jersey_no=9

CREATE VIEW player_name(name,team_id) AS
SELECT name,team_id from player

6406532467810. ✘ Where name like '____%' OR jersey_no=9

CREATE VIEW player_name(name,team_id) AS
SELECT name,team_id from player

6406532467811. ✓ Where name like '____%' AND jersey_no=9

CREATE VIEW player_name(name,team_id) AS
SELECT name,team_id from player

6406532467812. ✘ Where name like '___%' AND jersey_no=9

Question Number : 87 Question Id : 640653737365 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 relations:

`auto_part(pid, pname, color)`
`auto_suppliers(sid, sname, location)`
`catalog(pid, sid, price)`

Which of the TRC expression will return the sid of auto_suppliers and pname of auto_part, whose price is equal to 5000 and suppliers location is 'Mumbai'?

Options :

{ $x \mid \exists s \in \text{auto_suppliers} \exists c \in \text{catalog} (s.location = 'Mumbai' \wedge c.price = 5000 \wedge x.sid = c.sid \wedge s.sid = c.sid)$ }

{ $x \mid \exists s \in \text{auto_suppliers} \exists c \in \text{catalog} \exists p \in \text{auto_part} (s.location = 'Mumbai' \wedge c.price = 5000 \wedge s.sid = c.sid \wedge p.pid = c.pid)$ }

{ $x \mid \exists s \in \text{auto_suppliers} \exists c \in \text{catalog} \exists p \in \text{auto_part} (s.location = 'Mumbai' \wedge c.price = 5000 \wedge x.sid = c.sid \wedge x.pname = p.pname)$ }

{ $x \mid \exists s \in \text{auto_suppliers} \exists c \in \text{catalog} \exists p \in \text{auto_part} (s.location = 'Mumbai' \wedge c.price = 5000 \wedge x.sid = c.sid \wedge x.pname = p.pname \wedge s.sid = c.sid \wedge p.pid = c.pid)$ }

Sub-Section Number :

3

Sub-Section Id :

640653107609

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 88 Question Id : 640653737361 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 tables **FoodItems** and **ItemInfo** as shown below:

ItemName	Brand	Rating
Chocolate	Amul	5
Ice-cream	Nestle	4
Cake	Amul	5
Ice-cream	Keventers	3
Chocolate	Nestle	4
Candy	Amul	5
Cake	Nestle	4
Candy	Nestle	3

Brand	Rating
Amul	5
Nestle	4

Table 2: **ItemInfo**

Table 1: **FoodItems**

Which item name(s) will be returned by the operation $FoodItems \div ItemInfo$?

Options :

6406532467805. ✘ Chocolate

6406532467806. ✘ Chocolate, Candy

6406532467807. ✘ Chocolate, Ice-cream

6406532467808. ✓ Chocolate, Cake

Sub-Section Number : 4

Sub-Section Id : 640653107610

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 89 Question Id : 640653737363 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 two relations A and B.

A	B	C	D
1	2	3	4
5	6	7	8
1	2	3	4

Table 1

A	B	C
1	2	3
4	5	6
7	8	9
1	1	1

Table 2

How many columns will be there in the union of the above two relations?

Options :

6406532467813. ✘ 4

6406532467814. ✘ 6

6406532467815. ✘ 7

6406532467816. ✓ Union not possible

Question Number : 90 Question Id : 640653737364 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 relational schema *instructor(id, name, dept_name, salary)*.

To change the data type of *id*, which of the following categories of SQL command is used for this purpose?

Options :

6406532467817. ✘ DML

6406532467818. ✘ TCL

6406532467819. ✘ DCL

6406532467820. ✓ DDL

Sub-Section Number :

5

Sub-Section Id :

640653107611

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 91 Question Id : 640653737366 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the tables Instructor and Department as shown below:

ID	name	dept_name	salary
10101	Srinivasan	Comp. Sci.	65000
12121	Wu	Finance	90000
15151	Mozart	Music	40000
22222	Einstein	Physics	95000
32343	El Said	History	60000
33456	Gold	Physics	87000
45565	Katz	Comp. Sci.	75000
58583	Califieri	History	62000
76543	Singh	Finance	80000
76766	Crick	Biology	72000
83821	Brandt	Comp. Sci.	92000
98345	Kim	Elec. Eng.	80000

Figure 1: Instructor

dept_name	building	budget
Biology	Watson	90000
Comp. Sci.	Taylor	100000
Elec. Eng.	Taylor	85000
Finance	Painter	120000
History	Painter	50000
Music	Packard	80000
Physics	Watson	70000

Figure 2: Department

Which of the following queries will find out the names of all instructors whose department is Finance or whose department is in Watson or Taylor building?

Options :

6406532467825. ✓

```
select name  
from instructor I, department D  
where D.dept_name = I.dept_name  
and (I.dept_name = 'Finance'  
or building in ('Watson','Taylor'));
```

```
select name  
from instructor I, department D  
where D.dept_name = 'Finance'  
or building in ('Watson','Taylor');  
6406532467826. ❌ or building in ('Watson','Taylor');
```

```
select name  
from instructor I, department D  
where D.dept_name = I.dept_name  
and (I.dept_name = 'Finance'  
and building in ('Watson','Taylor'));  
6406532467827. ❌
```

```
select name  
from instructor I Natural Join department D  
where I.dept_name = 'Finance'  
or building in ('Watson','Taylor');  
6406532467828. ✓ or building in ('Watson','Taylor');
```

Sub-Section Number : 6

Sub-Section Id : 640653107612

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 92 Question Id : 640653737367 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following SQL statement:

```
CREATE TABLE Cars(
CarID VARCHAR (8),
CarName VARCHAR (20),
CarColour VARCHAR (8),
YearOfPurchase INTEGER,
PRIMARY KEY (CarID),
CHECK (YearofPurchase IN ('2001', '2002', '2003', '2004'));
```

The following tuples have already been inserted:

CarID	CarName	CarColour	YearOfPurchase
C1	Ferrari	Red	2001
C2	Mercedes	Black	2002

Table 3: Cars

Which among the following will cause an integrity constraint violation in the Cars table?

Options :

6406532467829. ❌ `INSERT INTO Cars('C3', 'McLaren', 'Orange', 2003);`

6406532467830. ✓ `INSERT INTO Cars('C2', 'Alpine', 'Green', 2001);`

6406532467831. ❌ `INSERT INTO Cars('C4', 'Williams', 'Black', 2002);`

6406532467832. ✓ `INSERT INTO Cars('C5', 'AlphaTauri', 'Blue', 2005);`

Sub-Section Number : 7

Sub-Section Id : 640653107613

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 93 Question Id : 640653737368 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the ER Diagram as shown below:

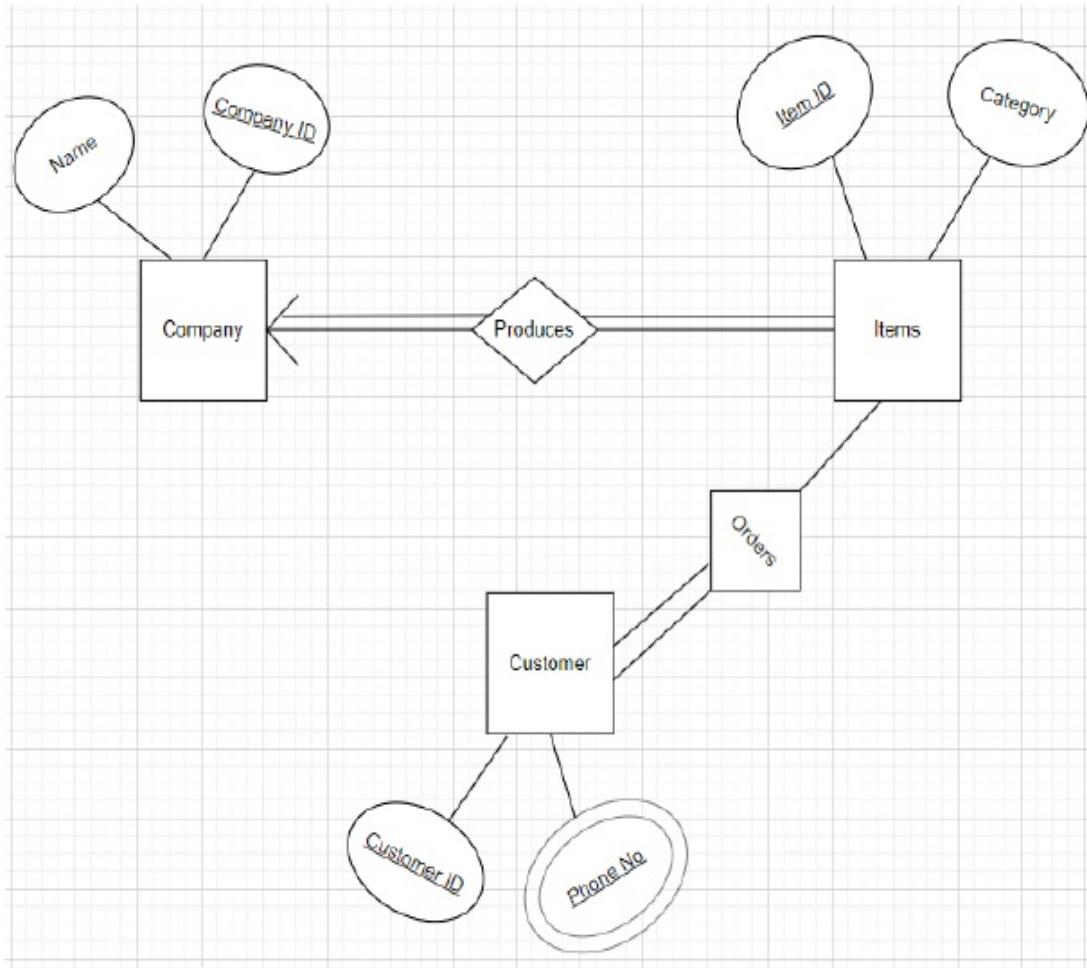


Figure 3: Instructor

Which of the following statement(s) is/are correct?

Options :

6406532467833. ❌ There might exist a company that has not produced any items

6406532467834. ✓ There might exist an item that has not been ordered by any customer

6406532467835. ❌ A company can produce at most one item

6406532467836. ✓ A customer can buy more than one item

Sub-Section Number :

8

Sub-Section Id :

640653107614

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 94 Question Id : 640653737369 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 relations X(A, B, C), Y(A, B, D), Z(A, F).

A	B	C
A ₁	B ₁	C ₁
A ₂	B ₂	C ₂
A ₃	B ₃	C ₃
A ₃	B ₁	C ₂
A ₄	B ₁	C ₁

Table 4: X

A	B	D
A ₁	B ₁	D ₂
A ₂	B ₃	D ₂
A ₁	B ₂	D ₃
A ₃	B ₁	D ₂

Table 5: Y

A	F
A ₂	F ₃
A ₁	F ₂
A ₃	F ₄

Table 6: Z

How many tuples will be returned by the following relational algebra query?

$$\Pi_A(\sigma_{((X.B=Y.B) \wedge (Y.D=D_2))}(X \times Y)) \cup \Pi_A(\sigma_{((Y.A=Z.A) \wedge (Z.F=F_3))}(Y \times Z))$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 95 Question Id : 640653737371 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 an entity relationship in which entity sets **student** and **course** have a many-to-many relationship. The attributes of **student** entity are *id*, *name*, *dept_name*, *email* and *mobile_no* where *id* is the primary key attribute, *mobile_no* and *email* are multi-valued attributes. The attributes of **course** entity are *c_id*, *name*, *dept_name* and *credits* where *c_id* is the primary key attribute.

What is the minimum number of tables needed to represent the above entity relationship?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Question Number : 96 Question Id : 640653737372 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 table **instructor** as shown below.

id	name	dept_name	salary
10101	Srinivasan	Comp. Sci.	65000
12121	Wu	Finance	90000
15151	Mozart	Music	40000
22222	Einstein	Physics	95000
32343	El Said	History	60000
33456	Gold	Physics	87000
45565	Katz	Comp. Sci.	75000
58583	Califieri	History	62000
76543	Singh	Finance	80000
76766	Crick	Biology	72000
83821	Brandt	Comp. Sci.	92000
98345	Kim	Elec. Eng.	80000

Table 9: **instructor**

What will be the output of the following query?

```
with dept_total (dept_name, value) as
  (select dept_name, sum(salary)
   from instructor
   group by dept_name),
dept_total_avg(value) as
  (select avg(value)
   from dept_total)
select count(*)
from dept_total, dept_total_avg
where dept_total.value > dept_total_avg.value
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 97 Question Id : 640653737373 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 relational schema given in Figure 4.

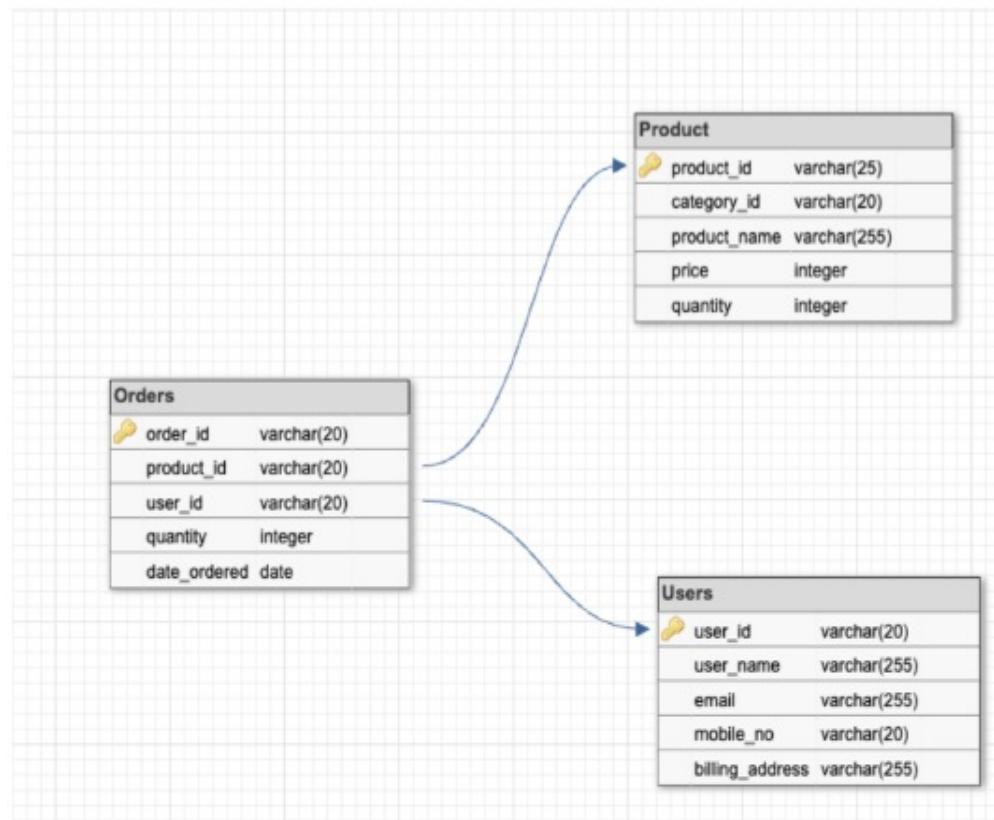


Figure 4: eshop Schema

If the relations **Orders**, **Product** and **Users** have 15, 6, 8 rows respectively,
(Note: Consider all the attributes are having NOT NULL constraint.)

Query:

```
SELECT * FROM Orders RIGHT OUTER JOIN Users  
ON orders.user_id = Users.user_id;
```

A = Maximum number of rows returned by the above query.

B = Minimum number of rows returned by the above query.

What is the value of A-B?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Sub-Section Number : 9
Sub-Section Id : 640653107615
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 98 Question Id : 640653737370 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 relation student as shown in Table 7

Roll_no	Name	Marks
1	Ram	50
2	Rakesh	65
3	Ram	45
4	Pranav	89
5	Rakesh	99
6	Emily	99
7	Grace	100
8	Lily	95
9	Lily	90
10	Rajib	90

Table 7: student

What is the number of tuples returned by the following relational algebra expression
 $\prod_{name}(\sigma_{marks > 50}(student))$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Sub-Section Number :	10
Sub-Section Id :	640653107616
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653737374 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 : (99 to 100)

Question Label : Comprehension

Consider the tables Players and Points as shown below and answer the given subquestions.

Player_ID	Name	Jersey_No
1	Harry	9
2	Jake	22
3	Louis	10
4	John	55
5	Joseph	6
6	Luke	4

Table 10: Players

Match_ID	Score	Player_ID
10	200	1
5	170	2
9	166	3
6	250	4

Table 11: Points

Sub questions

Question Number : 99 Question Id : 640653737375 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 rows will be returned by the output of below query?

```
select *
from Players left outer join Points
on Players.Player_ID=Points.Player_ID
where name like 'J%';
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 100 Question Id : 640653737376 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 of the following query?

```
select distinct name  
from Players  
except  
select t1.name  
from Players as t1, Players as t2  
where t1.Jersey_No < t2.Jersey_No
```

Options :

6406532467843. ❌ Name of the player having the lowest jersey number

6406532467844. ❌ Name of the player having the second highest jersey number

6406532467845. ✓ Name of the player having the highest jersey number

6406532467846. ❌ Name of the player having the second lowest jersey number

PDSA

Section Id : 64065351355

Section Number : 7

Section type : Online

Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107617
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 101 Question Id : 640653737377 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 \(COMPUTER BASED EXAM\)](#)"

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

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

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

Options :

6406532467847. ✓ YES

6406532467848. ✘ NO

Sub-Section Number :	2
Sub-Section Id :	640653107618
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 102 Question Id : 640653737378 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following functions:

- $f(n) = 102n^4 + 26n^3$
- $g(n) = 103n^3 + 20n^2$
- $h(n) = 110n^3 \log n + 36n^2$

Which of the following is/are **false**?

Options :

6406532467849. ✓ $f(n) = O(g(n))$

6406532467850. ✗ $g(n) = O(h(n))$

6406532467851. ✓ $f(n) = O(h(n))$

6406532467852. ✗ $h(n) = O(f(n))$

Question Number : 103 Question Id : 640653737382 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the below **Merge Sort** implementation

```
1 def merge(A,B): # Merge two sorted list A and B
2     (m,n) = (len(A),len(B))
3     (c,i,j) = ([],0,0)
4     #Case 1 :- When both lists A and B have elements for comparing
5     while i < m and j < n:
6         if A[i] <= B[j]:
7             c.append(A[i])
8             i += 1
9         else:
10            c.append(B[j])
11            j += 1
12     #Case 2 :- If list B is over, shift all elements of A to C
13     while i < m:
14         c.append(A[i])
15         i += 1
16     #Case 3 :- If list A is over, shift all elements of B to C
17     while j < n:
18         c.append(B[j])
19         j += 1
20     # Return sorted merged list
21     return c
22
23 def mergesort(L):
24     n = len(L)
25     if n <= 1:
26         return(L)
27     Left_Half = mergesort(L[:n//2])
28     Right_Half = mergesort(L[n//2:])
29     sorted_Merged_List = merge(Left_Half, Right_Half)
30     return(sorted_Merged_List)
```

Which of the following is/are true about given **Merge Sort** algorithm?

Options :

6406532467862. ✓ Worst case time complexity is $O(n \log n)$

6406532467863. ❌ Best case time complexity is $O(n)$

6406532467864. ❌ Worst case time complexity is $O(n^2)$

6406532467865. ✓ Recurrence relation of merge sort is $T(n) = 2T(n/2) + O(n)$

6406532467866. ✓ It is a stable sort algorithm

Question Number : 104 Question Id : 640653737383 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Unimodal List: A list $L[0 \dots n-1]$ of distinct elements is *unimodal* if it consists of a decreasing sequence followed by an increasing sequence. More precisely, there is an index $m \in [1, 2, \dots, n-2]$ such that:

- $L[i] > L[i + 1]$ for all $0 \leq i < m$, and
- $L[i] < L[i + 1]$ for all $m \leq i < n-1$.

Suppose the middle element of an unimodal list is x , and the elements to the left and right of x are p and q , respectively. Which of the following facts must be used to find the minimum element in $O(\log n)$ time?

Options :

6406532467867. ✓ If $p > x < q$, then x is the minimum in the list.

6406532467868. ✓ If $p < x < q$, then the minimum element is in the left half of the list.

6406532467869. ❌ If $p < x < q$, then the minimum element is in the right half of the list.

6406532467870. ❌ If $p > x > q$, then the minimum element is in the left half of the list.

6406532467871. ✓ If $p > x > q$, then the minimum element is in the right half of the list.

Question Number : 105 Question Id : 640653737385 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

```
1 class Node:  
2     def __init__(self,data):  
3         self.data = data  
4         self.next = None
```

Consider an implementation of a **singly linked list** where each node is created using the given class `Node`. Suppose we have a variable `head` that points to the first node of the linked list.

Which of the below operation **cannot** be performed in **constant time** with the above representation of the linked list?

Options :

6406532467876. ❌ Insertion of the new node at the front of the linked list.

6406532467877. ✓ Insertion of the new node at the end of the linked list.

6406532467878. ❌ Deletion of the first node of the linked list.

6406532467879. ✓ Deletion of the last node of the linked list.

6406532467880. ❌ Deletion of the second node (from starting) of the linked list.

Question Number : 106 Question Id : 640653737389 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are possible degree sequence(s) of vertices of a connected undirected graph with four vertices?

Note: Degree sequence is a series of positive integer a_1, a_2, \dots, a_n where each a_i is the degree of the i^{th} vertex of the graph.

Options :

6406532467887. ✘ 3, 2, 1, 1

6406532467888. ✘ 3, 3, 1, 1

6406532467889. ✓ 3, 3, 2, 2

6406532467890. ✓ 3, 3, 3, 3

Sub-Section Number : 3

Sub-Section Id : 640653107619

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 107 Question Id : 640653737379 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.

```
1 def fun(n):
2     total = 0
3     for i in range(n):
4         for j in range(n):
5             k = 1
6             while (k < n):
7                 total = total + 1
8                 k = k * 2
9     return total
```

What is the time complexity of the function `fun` in terms of `n`?

Options :

6406532467853. ✘ $O(n^2)$

6406532467854. ✘ $O(n \log n)$

6406532467855. ✓ $O(n^2 \log n)$

6406532467856. ✘ $O(n)$

Question Number : 108 Question Id : 640653737380 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

We have an input list of two-dimensional points `[(8, 1), (7, 5), (6, 1), (2, 5), (5, 2), (9, 0)]`. We sort these in ascending order by the second coordinate. Which of the following corresponds to a **stable sort** of this input?

Options :

6406532467857. ✘ `[(9, 0), (6, 1), (8, 1), (5, 2), (7, 5), (2, 5)]`

6406532467858. ✓ [(9, 0), (8, 1), (6, 1), (5, 2), (7, 5), (2, 5)]

6406532467859. ✗ [(9, 0), (8, 1), (6, 1), (5, 2), (2, 5), (7, 5)]

6406532467860. ✗ [(9, 0), (6, 1), (8, 1), (5, 2), (2, 5), (7, 5)]

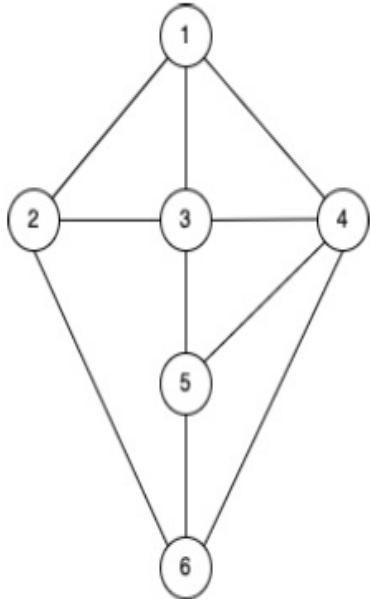
Question Number : 109 Question Id : 640653737390 Question Type : MCQ Is Question

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 graph



Which of the following vertex sequence is possible **BFS traversals** on the graph started from node 5? Assume that when a node has multiple neighbours, BFS would visit the numerically smaller valued node first.

Options :

6406532467891. ✗ 5, 4, 3, 6, 1, 2

6406532467892.

✓ 5, 3, 4, 6, 1, 2

6406532467893. ✖ 5, 3, 4, 6, 2, 1

6406532467894. ✖ 5, 6, 4, 3, 2, 1

Sub-Section Number : 4

Sub-Section Id : 640653107620

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 110 Question Id : 640653737384 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 below **Quick sort** algorithm to sort elements in ascending order using first element as pivot.

```
1 def partition(L,lower,upper):
2     # Select first element as a pivot
3     pivot = L[lower]
4     i = lower
5     for j in range(lower+1,upper+1):
6         if L[j] <= pivot:
7             i += 1
8             L[i],L[j] = L[j],L[i]
9     L[lower],L[i]= L[i],L[lower]
10    # Return the position of pivot
11    return i
12 def quicksort(L,lower,upper):
13     if(lower < upper):
14         pivot_pos = partition(L,lower,upper);
15         # call the quick sort on leftside part of pivot
16         quicksort(L,lower,pivot_pos-1)
17         # call the quick sort on rightside part of pivot
18         quicksort(L,pivot_pos+1,upper)
19     return L
```

Which of the below input sequence will require the **maximum** number of comparisons?

Options :

6406532467872. ✓ [22, 25, 56, 67, 89]

6406532467873. ✗ [52, 25, 76, 67, 89]

6406532467874. ✗ [22, 25, 76, 67, 50]

6406532467875. ✗ [52, 25, 89, 67, 76]

Question Number : 111 Question Id : 640653737386 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

Assume `s` is a stack and `q` is a queue. `Push` and `Pop` operations are usual stack operations, `Enqueue` and `Dequeue` are usual queue operations, and `isEmpty()` is a method that returns true if either the stack or the queue is empty. Assume that stack `s` and Queue `q` are empty initially.

```
1 for i in range(5,0,-1):
2     s.Push(i)
3     Q.Enqueue(i)
4
5 while not q.isEmpty():
6     s.Push(q.Dequeue())
7
8 while not s.isEmpty():
9     Q.Enqueue(s.Pop())
10
11 while not q.isEmpty():
12     print (q.Dequeue(),end = " ")
```

What is the output of the given code snippet?

Options :

6406532467881. ✘ 1 2 3 4 5 5 4 3 2 1

6406532467882. ✘ 5 4 3 2 1 1 2 3 4 5

6406532467883. ✘ 5 4 3 2 1 5 4 3 2 1

6406532467884. ✓ 1 2 3 4 5 1 2 3 4 5

Sub-Section Number : 5

Sub-Section Id : 640653107621

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 112 Question Id : 640653737392 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 G be a graph with n vertices and m edges. What is the tightest upper bound complexity of **Depth First search(DFS)** on graph G , when G is represented as an adjacency matrix?

Options :

6406532467896. ✘ $O(n)$

6406532467897. ✘ $O(n + m)$

6406532467898. ✓ $O(n^2)$

6406532467899. ✘ $O(m^2)$

Sub-Section Number :

6

Sub-Section Id :

640653107622

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 113 Question Id : 640653737381 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 Implementation for **Insertion sort**

```
1 def insertionsort(L):
2     n = len(L)
3     if n < 1:
4         return(L)
5     for i in range(n):
6         j = i
7         while(j > 0 and L[j] < L[j-1]):
8             (L[j],L[j-1]) = (L[j-1],L[j])
9             j = j-1
10    return(L)
```

Suppose a list $L=[1,3,2,6,5,8,7,9]$ is used as input parameter to above insertion sort. How many times will the while condition evaluate to true?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 114 **Question Id :** 640653737387 **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

Linear probing is an open addressing scheme in computer programming for resolving hash collisions in hash tables. Linear probing takes the original hash index and increments the value by 1 until a free slot is found.

A hash table contains 8 buckets indexed from 0 to 7 and uses linear probing to resolve collisions. The key values are integers and the hash function used is `key mod 8`. If key values 25, 87, 48, 64, 11 are inserted into the table in the given order, at what index would the key value 120 be inserted after them?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 115 **Question Id :** 640653737388 **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

An undirected graph G has 5 vertices. The maximum number of edges in G is ____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

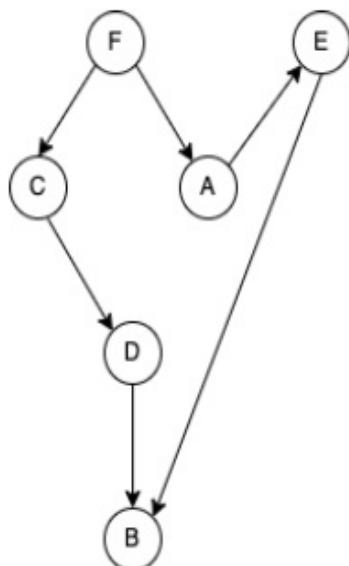
Question Number : 116 **Question Id :** 640653737391 **Question Type :** SA **Calculator :** None

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

Correct Marks : 4

Question Label : Short Answer Question

Consider the following DAG:



The number of different topological orderings of the vertices of the given graph is ____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

AppDev1

Section Id :	64065351356
Section Number :	8
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107623
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 117 Question Id : 640653737393 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 I (COMPUTER BASED EXAM)"

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

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

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

Options :

6406532467900. ✓ YES

6406532467901. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653107624

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 118 Question Id : 640653737394 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

Create a simple HTML document with the following requirements:

1. Include a heading with the text "My Web Page" using an `<h1>` tag.
2. Add a paragraph with the text "Welcome to the world of HTML!" using a `<p>` tag.
3. Create an unordered list with three list items. The list items should contain the text "Item 1", "Item 2" and "Item 3" respectively, using `` tags.
4. Include a link to "<https://www.example.com>" with the anchor text "Visit Example.com" using an `<a>` tag.

Which of the following HTML code is correct to fulfill these requirements?

Options :

6406532467902. ✗

```
<body>
  <h1>My Web Page</h1>
  <p>Welcome to the world of HTML!</p>
  <ol>
    <li>Item 1</li>
    <li>Item 2</li>
    <li>Item 3</li>
  </ol>
  <a href="https://www.example.com">Visit Example.com</a>
</body>
```

6406532467903. *

```
<body>
  <h1>My Web Page</h1>
  <p>Welcome to the world of HTML!</p>
  <ol>
    <li>Item 1</li>
    <li>Item 2</li>
    <li>Item 3</li>
  </ol>
  <a href="Visit Example.com">https://www.example.com</a>
</body>
```

6406532467904. *

```
<body>
  <h1>My Web Page</h1>
  <p>Welcome to the world of HTML!</p>
  <ul>
    <li>Item 1</li>
    <li>Item 2</li>
    <li>Item 3</li>
  </ul>
  <a href="Visit Example.com">https://www.example.com</a>
</body>
```

6406532467905. ✓

```
<body>
  <h1>My Web Page</h1>
  <p>Welcome to the world of HTML!</p>
  <ul>
    <li>Item 1</li>
    <li>Item 2</li>
    <li>Item 3</li>
  </ul>
  <a href="https://www.example.com">Visit Example.com</a>
</body>
```

Question Number : 119 Question Id : 640653737396 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 example.

```

```

Which of the following accessibility principle is followed in this example?

Options :

6406532467910. ✓ Perceivable

6406532467911. ✗ Operable

6406532467912. ✗ Understandable

6406532467913. ✗ Robust

Question Number : 120 Question Id : 640653737409 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 directory listing of a folder and the content of each of its files are given below.

Directory Listing:

```
my_dir-|  
|-- base.html  
|-- home.html  
|-- index.html
```

Filename: base.html

```
<body>  
    <h1>Hello from Base</h1>  
</body>
```

Filename: home.html

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

Filename: index.html

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

If a simple Python HTTP server is created for this directory, what will be rendered on the browser for base URL?

Options :

6406532467958. ❌ **Hello from Base**

6406532467959. ❌ **Hello from Home**

6406532467960. ✓ **Hello from Index**

6406532467961. ❌ **Directory listing for /**

Sub-Section Id : 640653107625

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 121 Question Id : 640653737395 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

An HTML code and CSS code is given below. Which of the following correctly represents its rendered output?

CSS Code:

```
.one{color: brown;}  
.two{color: yellow !important;}
```

HTML Code:

```
<!DOCTYPE html>  
<html>  
<head>  
    <title>Document</title>  
    <link href="style.css" rel="stylesheet">  
    <style>  
        h4{color: blue !important ;width: 90px;}  
        p,span{font-weight: bold;}  
    </style>  
</head>  
<body style="background-color:lightgray;">  
    <h4 style="color: yellow;"> Statement 1 </h4>  
    <p class="one"> Statement 2 </p>  
    <span class="two" style="color: blue;"> Statement 3 </span>  
    <span> Statement 4 </span>  
</body>  
</html>
```

Options :

Statement 1 Statement 2 Statement 3 Statement 4

6406532467906. *

Statement 1 Statement 2
Statement 3
Statement 4

6406532467907. *

Statement 1
Statement 2
Statement 3
Statement 4

6406532467908. *

Statement 1
Statement 2
Statement 3 Statement 4

6406532467909. ✓

Question Number : 122 Question Id : 640653737398 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 following Python code snippet generates the output on the terminal.

```
from string import Template
s = Template('$who lives in $where')
out1 = s.substitute(who='Karl', where='Chennai')
print(out1)

b = dict(who='Tim')
out2 = Template('$who likes $what').safe_substitute(b)
print(out2)

out3 = Template('$who likes $what').substitute(b)
print(out3)
```

Which of the following is the correct output?

Options :

Karl lives in Chennai
Tim likes \$what
Tim likes \$what

6406532467918. ✘

Karl lives in Chennai
Tim likes
Tim likes \$what

6406532467919. ✘

Karl lives in Chennai
KeyError: 'what'
Tim likes \$what

6406532467920. ✘

Karl lives in Chennai
Tim likes \$what
KeyError: 'what'

6406532467921. ✓

Question Number : 123 Question Id : 640653737399 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 python code snippet. What will be the rendered output?

```
from jinja2 import Template
data=[
    {"Course": "MAD-I", "ID": 101, "Name": "John"},  

    {"Course": "MAD-II", "ID": 161, "Name": "Karl"},  

    {"Course": "MAD-I", "ID": 120, "Name": "Kim"}  

]  
  
t="""
<ul>
{% for group in data|groupby('Course') %}
    <li>
        {{ group.grouper }}
        <ul>
            {% for person in group.list %}
                {% if person.Name|length == 4 %}
                    <li> {{ person.Name }} has ID {{ person.ID }} </li>
                {% endif %}
            {% endfor %}
        </ul>
    </li>
{% endfor %}
</ul>
"""
temp=Template(t)
print(temp.render(data = data))
```

Options :

- MAD-I
 - John has ID 101
 - Kim has ID 120
- MAD-II
 - Karl has ID 161

6406532467922. *

6406532467923.

- MAD-I
 - John has ID 101
 - Karl has ID 161
- MAD-II
 - Kim has ID 120

✖

- MAD-I
 - John has ID 101
- MAD-II
 - Karl has ID 161

6406532467924. ✓

- MAD-I
 - Karl has ID 101
- MAD-II
 - John has ID 161

6406532467925. ✖

Question Number : 124 Question Id : 640653737406 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 certain network connection with a bandwidth of 12 Mbps allows making 4000 requests to a server per second. If each request is modified to have an additional data of 6 Kb, what should be the additional bandwidth required to maintain the rate of 4000 requests per second?

Options :

6406532467946. ✖ 12 Mbps

6406532467947. ✓ 24 Mbps

6406532467948. ✖ 36 Mbps

6406532467949. ✖ 48 Mbps

Question Number : 125 Question Id : 640653737408 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 client sitting in a train is connected to a server through a network tower that has a range of 4.5 kilometers and a constant bandwidth of 5 Mbps. The train is at a negligible distance from the tower and is moving away from it at a speed of 180 kmph. How much data (in Megabytes) will be used by the client before the train completely moves out of the coverage area, assuming that the client is consuming the entire bandwidth?

Options :

6406532467954. ❌ 45 MB

6406532467955. ❌ 450 MB

6406532467956. ❌ 5.6 MB

6406532467957. ✓ 56.25 MB

Sub-Section Number : 4

Sub-Section Id : 640653107626

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 126 Question Id : 640653737397 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 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following HTML document.

```
<!DOCTYPE html>
<html>
<head>
    <title>Document</title>
    <style>
        h2{
            background-color: lightgray;
            color: red;
            width:25%;
            text-align: center;
            /* ===code1== */
        }
        #id {
            background-color: skyblue;
            border: 3px solid purple;
            color: red;
        }
        .class {
            color:blue ;
        }
    </style>
</head>
<body>
    <h2 class="class" id="id">Statement 1</h2>
    <h2 class="class">Statement 2</h2>
</body>
</html>
```

Which of the following is/are correct rendered output for given `====code1====`?

Options :

If `====code1====` is replaced by:

```
display:inline-block;
border: 2px solid purple;
```

Output:

Statement 1

Statement 2

6406532467914. ✓

6406532467915. ✘

If ===code1== is replaced by:

```
display:block;  
color: purple;
```

Output:

Statement 1

Statement 2

If ===code1== is replaced by:

```
color: blue;  
border: 2px solid purple;
```

Output :

Statement 1

Statement 2

6406532467916. ✓

If ===code1== is left blank:

Output:

Statement 1

Statement 2

6406532467917. ✓

Sub-Section Number :

5

Sub-Section Id :

640653107627

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 127 Question Id : 640653737400 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 python code snippet.

```
from jinja2 import Template as T1
from string import Template as T2

info = {'det1': 'Civil', 'Name': 'John', 'Civil': 'Mechanical', 'John': 'Sujoy'}

t1 = T1(" {{Name}} and {{Name}} are {{det1}} and {{det1}} engineer
respectively.")

out1 = t1.render(info)
out2 = T2(out1)
print(out2.substitute(info))
```

What is the generated output on the python console?

Options :

6406532467926. ✘ \$John and John are Civil and \$Civil engineer respectively.

6406532467927. ✘ John and Sujoy are Civil and Mechanical engineer respectively.

6406532467928. ✘ John and {{John}} are Civil and {{Civil}} engineer respectively.

6406532467929. ✓ Sujoy and John are Civil and Mechanical engineer respectively.

Question Number : 128 Question Id : 640653737407 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 equation:

$$1xy25_8 = 1ED5_{16} = x89y_{10}$$

Where x and y are unknowns. For what values of x and y does the above equation hold true?

Options :

6406532467950. ✘ x = 3 and y = 8

6406532467951. ✘ x = 6 and y = 4

6406532467952. ✓ x = 7 and y = 3

6406532467953. ✘ x = 1 and y = 2

Question Number : 129 Question Id : 640653737410 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 Python code snippet.

Filename: app.py

```
from flask import Flask, request
import sys
app = Flask(__name__)

@app.route('/home', methods = sys.argv[1])
def my_func():
    if request.method == 'GET':
        return "<h1>Hello from App Development</h1>"

    elif request.method == 'POST':
        return "<h1>Hello from POST</h1>"

    else:
        return "<h1>Please enter a valid HTTP method</h1>"

app.run(debug = True)
```

If the above flask app is run using the command `python app.py POST` in one terminal,
what will be the output on another terminal for command;

`curl http://127.0.0.1:5000/home ?`

Options :

6406532467962. ❌

<h1>Hello from App Development</h1>

6406532467963. ❌

<h1>Hello from App POST</h1>

6406532467964. ❌

<h1>Please enter a valid HTTP method</h1>

6406532467965. ✓

<h1>Method not Allowed</h1>

Sub-Section Id : 640653107628

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 130 Question Id : 640653737401 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following Python code snippet "code.py".

Filename: code.py

```
import sys
from jinja2 import Template
vars = sys.argv

course_technologies = {'python': 'backend', 'javascript': 'frontend'}
template = Template("This course focuses on {{ technology }} development.")

if len(vars) > 2 and vars[2] in course_technologies:
    course = vars[1]
    technology = course_technologies[course]
    print(template.render(technology=technology))
else:
    print("Please specify a valid course name!")
```

Which of the following will be the correct command line input to the terminal to get the

output: This course focuses on backend development. ?

Options :

6406532467930. ✘ python code.py course python

6406532467931. ✓ python code.py python javascript

6406532467932. ✓ python code.py python python

Question Number : 131 Question Id : 640653737402 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following statements and choose the correct options.

Statement I: An author can write multiple books, but each book is written by only one author.

Statement II: A publisher can publish multiple books, but each book is published by only one publisher.

Statement III: A book belongs to one genre, but a genre can have multiple books.

Options :

6406532467934. ✘ Statement I represents a many-to-many relationship between Author and Book.

6406532467935. ✓ Statement I represents a one-to-many relationship between Author and Book.

6406532467936. ✓ Statement II represents a one-to-many relationship between Publisher and Book.

6406532467937. ✓ Statement III represents a many-to-one relationship between Book and Genre.

Sub-Section Number : 7

Sub-Section Id : 640653107629

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737403 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 : (132 to 133)

Question Label : Comprehension

Answer the given subquestion.

Sub questions

Question Number : 132 Question Id : 640653737404 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 flask application.

app.py

```
from flask import Flask, render_template, request

app = Flask(__name__)

@app.route('/greet')
def greet():
    user_name = request.args.get('name', 'Guest')
    greeting_message = f"Hello, {user_name}!"

    ======code here=====

if __name__ == "__main__":
    app.run(debug=True)
```

Which of the following should replace “code here” to construct the HTML response with the greeting_message correctly?

Options :

6406532467938. ✘ return "<h1>{{ greeting_message }}</h1>"

6406532467939. ✓ return f"<h1>{greeting_message}</h1>"

6406532467940. ✘ return "<h1>{greeting_message}</h1>"

6406532467941. ✘ return "Hello, {user_name}!"

Question Number : 133 Question Id : 640653737405 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 URLs in column A with their correct rendered output in Column B with the correct app.py code for the flask application given in the previous question.

Column A	Column B
1. http://127.0.0.1:5000/greet?name=MADI&guest=MADII	a. Hello, Guest!
2. http://127.0.0.1:5000/greet?name=MADII&guest=MADI	b. Hello, MADII!
3. http://127.0.0.1:5000/greet?	c. Hello, Guest!
4. http://127.0.0.1:5000/greet?guest=MADI	d. Hello, MADI!

Options :

6406532467942. ✘ 1-b, 2-d, 3-a, 4-c

6406532467943. ✘ 1-b, 2-a, 3-c, 4-d

6406532467944. ✓ 1-d, 2-b, 3-a, 4- c

6406532467945. ✘ 1-d, 2-a, 3-c, 4-b

MLF

Section Id : 64065351357

Section Number : 9

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 11

Number of Questions to be attempted :	11
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107630
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 134 Question Id : 640653737411 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 \(COMPUTER BASED EXAM\)](#)"

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

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

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

Options :

6406532467966. ✓ YES

6406532467967. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653107631

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Id : 640653737412 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 : (135 to 136)

Question Label : Comprehension

Let $A = \begin{pmatrix} 1 & 2 & 3 \\ -1 & -2 & -3 \\ 2 & 5 & 6 \end{pmatrix}$ be an 3×3 matrix. Based on this information,

answer the given subquestions:

Sub questions

Question Number : 135 Question Id : 640653737413 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

Find the row space of matrix A.

Options :

6406532467968. ✘ $\text{span} \left\{ \begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix}, \begin{pmatrix} 2 \\ -2 \\ 5 \end{pmatrix} \right\}$

6406532467969. ✓ $\text{span} \left\{ \begin{pmatrix} 1 \\ 0 \\ 3 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} \right\}$

6406532467970. ✘ $\text{span} \left\{ \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} \right\}$

6406532467971. ✘ $\text{span} \left\{ \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}, \begin{pmatrix} -1 \\ -2 \\ -3 \end{pmatrix}, \begin{pmatrix} 2 \\ 5 \\ 6 \end{pmatrix} \right\}$

Question Number : 136 Question Id : 640653737414 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

Find the column space of matrix A.

Options :

6406532467972. ✓ $\text{span} \left\{ \begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix}, \begin{pmatrix} 2 \\ -2 \\ 5 \end{pmatrix} \right\}$

6406532467973. ✘ $\text{span} \left\{ \begin{pmatrix} 1 \\ 0 \\ 3 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} \right\}$

6406532467974. ✘ $\text{span} \left\{ \begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix}, \begin{pmatrix} 2 \\ -2 \\ 5 \end{pmatrix}, \begin{pmatrix} 3 \\ -3 \\ 6 \end{pmatrix} \right\}$

6406532467975. ✘ $\text{span} \left\{ \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}, \begin{pmatrix} -1 \\ -2 \\ -3 \end{pmatrix}, \begin{pmatrix} 2 \\ 5 \\ 6 \end{pmatrix} \right\}$

Sub-Section Number : 3

Sub-Section Id : 640653107632

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 137 Question Id : 640653737417 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 $A = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix}$. Find a matrix P such that $P^{-1}AP$ is diagonal.

Options :

6406532467984. ❌ $\begin{bmatrix} 1 & 0 \\ 2 & 3 \end{bmatrix}$

6406532467985. ✓ $\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix}$

6406532467986. ❌ $\begin{bmatrix} 1 & 1 \\ -1 & 0 \end{bmatrix}$

6406532467987. ❌ $\begin{bmatrix} -2 & -2 \\ 0 & 0 \end{bmatrix}$

Question Number : 138 Question Id : 640653737423 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following is the best approximation of $\sqrt[4]{16.1}$? (Use linear approximation around 16).

Options :

6406532468005. ❌ 2.1

6406532468006. ✓ 2.003125

6406532468007. ✘ 2.031

6406532468008. ✘ 1.9968

Sub-Section Number : 4

Sub-Section Id : 640653107633

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 139 Question Id : 640653737418 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

Find the best fit line for the dataset given below using least squares method.

x	0	2	3	6	8
y	-2	5	3	1	-3

Options :

6406532467988. ✘ $\hat{y} = 0.6x - 3.2$

6406532467989. ✓ $\hat{y} = -0.6x + 3.2$

6406532467990. ✘ $\hat{y} = -x + 2.8$

6406532467991. ✘ $\hat{y} = -0.4x + 2.8$

Question Number : 140 Question Id : 640653737419 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 $f : \mathbb{R}^2 \rightarrow \mathbb{R}$ be a multivariable scalar-valued continuous function, such that

$$\frac{\partial f}{\partial x} = 2x + 1 \text{ and } \frac{\partial f}{\partial y} = 2y + 1.$$

Suppose $\lim_{(x,y) \rightarrow (0,0)} f(x,y) = 5$.

Find out the directional derivative of f at the point $(0,0)$ in the direction of the vector $(1,1)$.

Options :

6406532467992. ✓ $\sqrt{2}$

6406532467993. ✗ $2\sqrt{2}$

6406532467994. ✗ $-2\sqrt{2}$

6406532467995. ✗ $-\sqrt{2}$

Sub-Section Number : 5

Sub-Section Id : 640653107634

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 141 Question Id : 640653737421 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are supervised learning task(s)?

Options :

6406532467997. ✓ Predicting future sales of a product based on the past sales data.

6406532467998. ❌ Reducing the dimensionality of images while retaining essential features, enabling efficient storage and transmission.

6406532467999. ✓ Recognizing and interpreting handwritten characters or words, often used in digit recognition or reading handwritten text.

6406532468000. ✓ Categorizing text documents into predefined classes, such as spam or non-spam emails.

Sub-Section Number : 6

Sub-Section Id : 640653107635

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 142 Question Id : 640653737415 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a matrix $B = A^4 - 3A - 2I$, where $A = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 2 & 1 \\ 0 & 0 & 3 \end{bmatrix}$. Which of the following options is/are true?

Options :

6406532467976. ✓ Eigenvalues of A are 1, 2, and 3.

6406532467977. ❌ Eigenvalues of A are 1, 2, and 2.

6406532467978. ❌ Eigenvalues of B are 2, 20, and 78.

6406532467979. ✓ Matrix B is diagonalizable.

Question Number : 143 Question Id : 640653737416 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let A and B be symmetric matrices such that $AB = BA$. Then which of the following options is/are true?

Options :

6406532467980. ✓ AB is a symmetric matrix.

6406532467981. ✓ AB is orthogonally diagonalizable.

6406532467982. ✓ BA has real eigenvalues.

6406532467983. ✗ AB is not a symmetric matrix.

Question Number : 144 Question Id : 640653737422 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a function $f : \mathbb{R} \rightarrow \mathbb{R}$ defined as $f(x) = |x(x - 2)|$

Which of the following options is/are true?

Options :

6406532468001. ✓ $\lim_{x \rightarrow 2^+} f(x) = \lim_{x \rightarrow 2^-} f(x)$.

6406532468002. ✗ f is differentiable at $x = 0$.

6406532468003. ✓ $f'(3) = 4$.

6406532468004. ✓ f is continuous at $x = 0$.

Sub-Section Number :

7

Sub-Section Id :

640653107636

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 145 Question Id : 640653737420 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 an encoder-decoder pair used for dimensionality reduction, where the encoder function is denoted as $f(x_1, x_2, x_3) = (x_1 + x_2 - x_3, x_1 + x_3)$ and the decoder function is denoted as $g(u) = (u_1, u_2, u_1 + u_2)$

Compute the reconstruction error $\left(R(f, g) = \frac{1}{n} \sum_{i=1}^n \|X_i - g(f(X_i))\|^2 \right)$ for the following dataset:

$$X_1 = [1, 2, 3], \quad X_2 = [0, 2, 2], \quad X_3 = [1, 0, -1]$$

Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

3.12 to 3.20

Java

Section Id : 64065351358

Section Number : 10

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
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107637
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 146 Question Id : 640653737424 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

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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 :

6406532468009. ✓ YES

6406532468010. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653107638
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 147 Question Id : 640653737425 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is/are true about activation records?

Options :

6406532468011. ❌ All the variables on the stack (in any activation record) are said to be in scope.

6406532468012. ❌ The lifetime of a variable is the duration that it spends in the topmost activation record in the stack.

6406532468013. ✓ Every activation record has a control link that points to start of previous record.

6406532468014. ✓ Every activation record has a return value link that points to where to store return value.

Question Number : 148 Question Id : 640653737426 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the statements given below.

Statement 1 : Type 2DShape has method : getArea().

Statement 2 : Type 3DShape has two methods : getArea() and getVolume().

Choose the correct option(s) regarding subtyping and inheritance with respect to type 2DShape and type 3DShape.

Options :

6406532468015. ✓ 3DShape can be a subtype of 2DShape.

6406532468016. ❌ 2DShape can be a subtype of 3DShape.

6406532468017. ✓ 3DShape can be a subclass of 2DShape.

6406532468018. ✗ 2DShape can be a subclass of 3DShape.

Sub-Section Number : 3

Sub-Section Id : 640653107639

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 149 Question Id : 640653737430 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the code given below.

```
class Athlete {  
    public void perform() {  
        System.out.println("Athlete performs");  
    }  
    public void perform(String activity) {  
        System.out.println("Athlete performs " + activity);  
    }  
}  
class Gymnast extends Athlete {  
    public void perform(String move) {  
        System.out.println("Gymnast performs " + move);  
    }  
}  
public class TestAthlete {  
    public static void main(String[] args) {  
        Athlete a = new Gymnast(); // LINE 1  
        a.perform();  
        a.perform("backflip"); // LINE 2  
    }  
}
```

Choose the correct option.

Options :

LINE 1 generates compilation error because a variable of type **Athlete** cannot refer to an object of type **Gymnast**.
6406532468031. ❌

This code generates the below output followed by runtime Error at LINE 2 because there is ambiguity in which **perform()** method is being invoked.

6406532468032. ❌ **Athlete** performs

This code generates the output:

Athlete performs

6406532468033. ❌ **Athlete** performs backflip

This code generates the output:

Athlete performs

Gymnast performs backflip

6406532468034. ✓

Question Number : 150 Question Id : 640653737434 Question Type : MCQ Is Question

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

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Vehicle {  
    public final void startEngine() {  
        System.out.println("Starting the engine of a vehicle");  
    }  
}  
class Car extends Vehicle {  
    public final void startEngine() {  
        System.out.println("Starting the engine of a car");  
    }  
}  
public class TestVehicles {  
    public static void main(String[] args) {  
        Vehicle vehicle = new Car();  
        vehicle.startEngine();  
    }  
}
```

Choose the correct option regarding the given code.

Options :

This code generates output:

Starting the engine of a vehicle

6406532468047. ✘ Starting the engine of a car

This code generates output:

6406532468048. ✘ Starting the engine of a vehicle

This code generates output:

6406532468049. ✘ Starting the engine of a car

This code generates a compilation error because
the method `startEngine` cannot be overridden
6406532468050. ✓

Question Number : 151 Question Id : 640653737436 Question Type : MCQ Is Question

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

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Readable {  
    default void read() {  
        System.out.println("reads");  
    }  
}  
class Book implements Readable { //LINE 1  
}  
class Newspaper implements Readable {  
    public void read() {  
        System.out.println("reads news");  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        Readable r1 = new Book();  
        r1.read(); // LINE 2  
        Readable r2 = new Newspaper();  
        r2.read();  
    }  
}
```

Choose the correct option.

Options :

6406532468055. ✖ LINE 1 generates compilation error because class Book is not abstract

This code generates the output:

reads

6406532468056. ✓ reads news

This code generates the output:

reads

6406532468057. ✘ reads

LINE 2 generates runtime error because method `read()` is not defined in class

Book

6406532468058. ✘

Question Number : 152 Question Id : 640653737437 Question Type : MCQ Is Question

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

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Playable {  
    default void play() {  
        System.out.println("Plays");  
    }  
}  
  
interface Pauseable {  
    default void pause() {  
        System.out.println("Pauses");  
    }  
}  
  
class MediaPlayer implements Playable, Pauseable{ //LINE 1  
    public void play(){  
        System.out.println("Plays media player");  
    }  
}  
  
public class Test {  
    public static void main(String[] args) {  
        Playable p1 = new MediaPlayer();  
        p1.play();  
        p1.pause(); //LINE 2  
    }  
}
```

Choose the correct option.

Options :

LINE 1 generates compilation error because the class MediaPlayer is not declared as abstract.
6406532468059. ❌

LINE 2 generates compilation error because p1 of type Playable cannot invoke method pause().
6406532468060. ✓

This code generates the output:

Plays media player

6406532468061. ❌ Pauses

This code generates the output:

Plays

Pauses

6406532468062. ❌

Question Number : 153 Question Id : 640653737438 Question Type : MCQ Is Question

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

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the code given below.

```
interface PaymentMethod {  
    void processPayment();  
}  
class Payment {  
    public CreditCard getPaymentMethod1() {  
        return new CreditCard();  
    }  
    public PayPal getPaymentMethod2() {  
        return new PayPal();  
    }  
    private class CreditCard implements PaymentMethod {  
        public void processPayment() {  
            System.out.println("Processing credit card payment");  
        }  
    }  
    private class PayPal extends CreditCard {  
        public void processPayment() {  
            System.out.println("PayPal payment started");  
        }  
    }  
}  
public class PrivateTest {  
    public static void main(String[] args) {  
        Payment p = new Payment();  
        // CODE BLOCK  
        obj1.processPayment();  
        obj2.processPayment();  
    }  
}
```

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

Processing credit card payment
PayPal payment started

Options :

CreditCard obj1 = new CreditCard();
6406532468063. ✘ PayPal obj2 = new PayPal();

PaymentMethod obj1 = p.getPaymentMethod1();
6406532468064. ✓ PaymentMethod obj2 = p.getPaymentMethod2();

CreditCard obj1 = p.getPaymentMethod1();
6406532468065. ✶ PayPal obj2 = p.getPaymentMethod2();

PaymentMethod obj1 = new CreditCard();
6406532468066. ✶ PaymentMethod obj2 =new PayPal();

Sub-Section Number : 4

Sub-Section Id : 640653107640

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 154 Question Id : 640653737427 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

Consider the Java code given below.

```
public class PatternSwitchExample {  
    public static void displayPattern(int value) {  
        switch (value) {  
            case 1:  
                System.out.print("A ");  
                break;  
            case 2:  
                System.out.print("B ");  
                break;  
            case 3:  
                System.out.print("C ");  
                break;  
            default:  
                System.out.print("X ");  
                break;  
        }  
    }  
    public static void main(String[] args) {  
        for (int i = 3; i >= 1; i--) {  
            for (int j = 1; j <= i; j++) {  
                displayPattern(i);  
            }  
            System.out.println();  
        }  
    }  
}
```

What will the output be?

Options :

C C C
B B B

6406532468019. ✘ A A A

A
B B

6406532468020. ✘ C C C

C C C
B B

6406532468021. ✓ A

X X X
C B

6406532468022. * A

Question Number : 155 Question Id : 640653737428 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

Consider the Java code given below.

```
class Student {  
    private String name;  
    private int age;  
    public Student(String n, int a) {  
        name = n;  
        age = a;  
    }  
    public Student(Student s) {  
        this.name = s.name;  
        this.age = s.age;  
    }  
    public void setName(String n) {  
        name = n;  
    }  
    public void setAge(int a) {  
        age = a;  
    }  
    public int getAge() {  
        return age;  
    }  
    public String getName() {  
        return name;  
    }  
}  
public class StudentDemo {  
    public static void main(String[] args) {  
        Student s1 = new Student("Alice", 20);  
        Student s2 = s1;  
        s1.setAge(25);  
        s1.setName("Emily");  
        System.out.println("s2:name: " + s2.getName() + ", age: " + s2.getAge());  
    }  
}
```

What will the output be?

Options :

6406532468023. ✓ s2:name: Emily, age: 25

6406532468024. ✗ s2:name: Emily, age: 20

6406532468025. ✘ s2:name: Alice, age: 25

6406532468026. ✘ s2:name: Alice, age: 20

Question Number : 156 Question Id : 640653737429 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

Consider the Java code given below.

```
class Car {  
    private String model;  
    private int year;  
    public Car(String m, int y) {  
        model = m;  
        year = y;  
    }  
    ***-----***  
    * CODE SEGMENT *  
    ***-----***  
}  
public class CarTest {  
    public static void main(String[] args) {  
        Car car1 = new Car("Toyota", 2022);  
        Car car2 = new Car("Ford", 2020);  
        System.out.println(car1 + "\n" + car2);  
    }  
}
```

Choose the correct option to fill in the CODE SEGMENT so that the output is:

Toyota : 2022

Ford : 2020

Options :

```
    public String toString(){  
        return model + " : " + year;  
    }
```

6406532468027. ✓ }

```
public String toString(Object ob){  
    return ob.model + " : " + ob.year;
```

6406532468028. *

```
String toString(){  
    return model + " : " + year;
```

6406532468029. *

```
void String toString(Object ob){  
    System.out.println(ob.model + " : " + ob.year);
```

6406532468030. *

Question Number : 157 Question Id : 640653737431 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

Consider the following code:

```
class Animal {  
    public void makeSound() {  
        System.out.println("Animal makes a sound");  
    }  
}  
class Dog extends Animal {  
    public void makeSound(String s) {  
        makeSound();  
        System.out.println("Dog " + s);  
    }  
}  
public class TestAnimals {  
    public static void main(String[] args) {  
        Animal myPet = new Dog();  
        //CODE SEGMENT  
    }  
}
```

Choose the correct option to fill in the CODE SEGMENT so that the output is:

Animal makes a sound
Dog barks

Options :

6406532468035. ✘ myPet.makeSound();

6406532468036. ✘ myPet.makeSound("barks");

6406532468037. ✘ Animal a = (Animal)myPet;
a.makeSound("barks");

6406532468038. ✓
Dog d = (Dog)myPet;
d.makeSound("barks");

Question Number : 158 Question Id : 640653737433 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

Consider the code given below that checks whether two Persons are the same. Method `equals` is overridden to compare two Person objects as follows. If two Persons have the same name and age, then they are the same. Based on the given information, answer the question that follows.

```
class Person {  
    private String name;  
    private int age;  
  
    // Constructor to initialize instance variables  
  
    public String toString() {  
        return name + " (" + age + " years old)";  
    }  
    public boolean equals(Object obj) {  
        //CODE BLOCK  
    }  
}  
public class TestPerson {  
    public static void main(String[] args) {  
        Person person1 = new Person("Alice", 25);  
        Person person2 = new Person("Alice", 25);  
        if (person1.equals(person2)){  
            System.out.println(person1 + " and " + person2 + " are the same");  
        }  
        else{  
            System.out.println(person1 + " and " + person2 + " are different");  
        }  
    }  
}
```

Choose the correct option to fill in place of CODE BLOCK so that the output is:
Alice (25 years old) and Alice (25 years old) are the same

Options :

```
if(obj instanceof Person) {  
    if(this.age.equals(obj.age) && this.name.equals(obj.name))  
        return true;  
    }  
    return false;
```

6406532468043. *

6406532468044. *

```
if(this.age.equals(obj.age) && this.name.equals(obj.name))
    return true;
return false

if(obj instanceof Person){
    Person otherPerson = (Person) obj;
    if(this.age == otherPerson.age && this.name.equals(otherPerson.name)){
        return true;
    }
}
6406532468045. ✓ return false;
```

```
if(obj instanceof Person) {
    Person otherPerson = obj;
    if(this.age == otherPerson.age && this.name.equals(otherPerson.name))
        return true;
}
6406532468046. ✘ return false;
```

Question Number : 159 Question Id : 640653737435 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

Consider the Java code given below.

```
1 interface Switchable {  
2     public void turnOn();  
3     public void turnOff();  
4 }  
5 interface SpeedAdjustable {  
6     public void adjustSpeed();  
7     default void displaySpeed() {  
8         System.out.println("Speed is adjustable.");  
9     }  
10 }  
11 class Fan implements Switchable,SpeedAdjustable {  
12     public void turnOn() {  
13         System.out.println("Fan is turned on.");  
14     }  
15     public void turnOff() {  
16         System.out.println("Fan is turned off.");  
17     }  
18 }
```

Choose the correct option regarding the above code.

Options :

LINE 7 generates compilation error because the method `displaySpeed` is not abstract.
6406532468051. ❌

LINE 11 generates compilation error because class `Fan` cannot implement two interfaces.
6406532468052. ❌

LINE 11 generates compilation error because class `Fan` is not declared as abstract.
6406532468053. ✓

LINE 2, LINE 3 & LINE 6 generate compilation errors because the methods `turnOn`, `turnOff` and `adjustSpeed` are not abstract.
6406532468054. ❌

Sub-Section Number :

5

Sub-Section Id :

640653107641

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 160 Question Id : 640653737432 Question Type : MCQ Is Question

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

Correct Marks : 8

Question Label : Multiple Choice Question

Consider the code given below.

```
class Shape {  
    public void draw() {  
        System.out.println("Drawing a shape");  
    }  
}  
  
class Rectangle extends Shape {  
    public void draw() {  
        System.out.println("Drawing a rectangle");  
    }  
}  
  
class Square extends Rectangle {  
    public void draw() {  
        System.out.println("Drawing a square");  
    }  
    public void color() {  
        System.out.println("Square is colorful");  
    }  
}  
  
public class TestShapes {  
    public static void main(String[] args) {  
        Shape s = new Rectangle();  
        Rectangle r = new Square(); // LINE 1  
        s.draw();  
        r.color(); // LINE 2  
    }  
}
```

Choose the correct option.

Options :

LINE 1 generates compilation error because a variable of type Rectangle can-
not refer to an object of type Square.
6406532468039. *

6406532468040.

This code generates the output:

- Drawing a shape
- ✖ Square is colorful

LINE 2 generates compilation error because the method color() is not defined in class Rectangle.

6406532468041. ✓

This code generates the output:

Drawing a rectangle

✖ Square is colorful

6406532468042. ✖

Question Number : 161 Question Id : 640653737439 Question Type : MCQ Is Question

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

Correct Marks : 8

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Discountable {
    public default void isDiscountable() {
        System.out.println("Item eligible for discount");
    }
}
class Product {
    double price;
    public Product(double price) {
        this.price = price;
    }
    public void isDiscountable() {
        if (price <= 500.0) {
            System.out.println("Item not eligible for discount");
        } else {
            System.out.println("Discount granted");
        }
    }
}
class SaleItem extends Product implements Discountable {
    public SaleItem(double price) {
        super(price);
    }
}
public class TestClass {
    public static void main(String[] args) {
        Discountable i1 = new SaleItem(600.0);
        i1.isDiscountable();
        Discountable i2 = new SaleItem(300.0);
        i2.isDiscountable();
    }
}
```

Choose the correct option.

Options :

6406532468067. ✘ This program generates no output.

This code generates the output:

Item eligible for discount

6406532468068. ✘ Item not eligible for discount

This code generates the output:

Discount granted

6406532468069. ✓ Item not eligible for discount

This code generates the output:

Item not eligible for discount

Discount granted

6406532468070. ✖

AppDev2

Section Id :	64065351359
Section Number :	11
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107642
Question Shuffling Allowed :	No
Is Section Default? :	null

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 II (COMPUTER BASED EXAM)"

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

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

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

Options :

6406532468071. ✓ YES

6406532468072. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653107643

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 163 Question Id : 640653737441 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 to the console once the code is executed?

```
function checkThis() {  
    return this.name  
}  
const Obj1 = {  
    name: 'Obj1',  
    checkThis: checkThis,  
}  
const Obj2 = {  
    name: 'Obj2',  
    checkThis: checkThis,  
}  
console.log(Obj2.checkThis(), Obj1.checkThis.call(Obj2))
```

Options :

6406532468073. ❌ Obj1 Obj1

6406532468074. ❌ Obj1 Obj2

6406532468075. ❌ Obj2 Obj1

6406532468076. ✓ Obj2 Obj2

Sub-Section Number : 3

Sub-Section Id : 640653107644

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 164 Question Id : 640653737442 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 code. What will be logged on to the console once the code is executed?

```
const stateManager = function () {
  let defaultState = false
  function alterState() {
    defaultState = !defaultState
  }
  return {
    currentState() {
      return defaultState
    },
    changeState() {
      alterState()
    },
  }
}

const sm1 = stateManager()
sm1.changeState()
const sm2 = stateManager()

console.log(sm1.currentState(), sm2.currentState())
```

Options :

6406532468077. ✘ true true

6406532468078. ✓ true false

6406532468079. ✘ false true

6406532468080. ✘ false false

Sub-Section Number : 4

Sub-Section Id : 640653107645

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 165 Question Id : 640653737443 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 JavaScript code. What will be logged on to the console once the code is executed?

```
const player = {  
    name: 'Rohit',  
    state: 'Maharastra',  
}  
  
const batsman = Object.create(player)  
  
console.log(batsman.name)
```

Options :

6406532468081. ✓ Rohit

6406532468082. ✗ undefined

6406532468083. ✗ null

6406532468084. ✗ None of these

Question Number : 166 Question Id : 640653737444 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 JavaScript code. What will be logged on to the console once the code is executed?

```
const emails = [
  'user1@study.iitm.ac.in',
  'user2@gmail.com',
  'user3@study.iitm.ac.in',
]

const studentsEmail = emails.filter((email) =>
  email.endsWith('study.iitm.ac.in')
)
console.log(studentsEmail)
```

Options :

6406532468085. ✖ [[user1@study.iitm.ac.in](#), [user2@gmail.com](#), [user3@study.iitm.ac.in](#)]

6406532468086. ✓ [[user1@study.iitm.ac.in](#), [user3@study.iitm.ac.in](#)]

6406532468087. ✖ [[user2@gmail.com](#), [user3@study.iitm.ac.in](#)]

6406532468088. ✖ [[user2@gmail.com](#)]

Sub-Section Number : 5

Sub-Section Id : 640653107646

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 167 Question Id : 640653737445 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 app.js

index.html

```
<body>
  <div id="app"></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',
  template: `
<div>
  {{text}}
  <div>
    <input type="text" v-model="userInput" />
    <div id="match">
      {{hasMatched?"Not Matched":"Matched"}}
    </div>
  </div>
</div>`,
  data: {
    text: 'This is text',
    userInput: null,
  },
  computed: {
    hasMatched() {
      return this.text.startsWith(this.userInput)
    },
  },
})
```

Suppose the application is running on "<http://localhost:8080/>". If the User inputs "This" in the input box. What will be rendered inside the div with id "match"?

Options :

6406532468089. ✓ Not Matched

6406532468090. ✖ Matched

6406532468091. ✘ undefined

6406532468092. ✘ null

Sub-Section Number : 6

Sub-Section Id : 640653107647

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 168 Question Id : 640653737446 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 app.js

index.html

```
<body>
  <div id="app"></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',
  template: `<div>
<div id="holiday">{{isHoliday?"Holiday":"Not Holiday"}}</div>
<button @click="increeseCount">Increese Count</button>
</div>`,
  data: {
    count: 1,
    isHoliday: false,
  },
  watch: {
    count() {
      if (this.count % 5 == 0) {
        this.isHoliday = true
      }
    },
  },
  methods: {
    increeseCount() {
      this.count += 6
    },
  },
})
```

Suppose the application is running on “<http://localhost:8080>” if the user clicks on button “Increese Count” 5 times. What will be rendered inside the div with id “holiday”?

Options :

6406532468093. ✓ Holiday

6406532468094. ✗ Not Holiday

6406532468095. ✗ true

6406532468096. ✗ false

Sub-Section Number :

7

Sub-Section Id :

640653107648

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 169 Question Id : 640653737447 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 to the console once the code is executed?

```
class Album {
    constructor(creator, albumName) {
        this.creator = creator
        this.albumName = albumName
        this.songs = []
    }
    addSong(song) {
        this.songs.push(song)
    }
}

class Song {
    constructor(name, duration) {
        this.name = name
        this.duration = duration
        this.album = null
    }
    addAlbum(album) {
        this.album = album
    }
}

a1 = new Album('creator1', 'Album1')
s1 = new Song('Song1')

a1.addSong(s1)
console.log(a1.songs.length)
```

Options :

6406532468097. ✘ 0

6406532468098. ✓ 1

6406532468099. ✘ 2

6406532468100. ✘ None of these

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 to the console once the code is executed?

```
class Album {  
    constructor(creator, albumName) {  
        this.creator = creator  
        this.albumName = albumName  
        this.songs = []  
    }  
    addSong(song) {  
        this.songs.push(song)  
    }  
}  
  
class Song {  
    constructor(name, duration) {  
        this.name = name  
        this.duration = duration  
        this.album = null  
    }  
    addAlbum(album) {  
        this.album = album  
    }  
}  
  
a1 = new Album('creator1', 'Album1')  
s1 = new Song('Song1')  
  
s1.addAlbum(a1)  
console.log(a1.songs.length)
```

Options :

6406532468101. ✓ 0

6406532468102. ✘ 1

6406532468103.

* 2

6406532468104. * None of these

Sub-Section Number :	8
Sub-Section Id :	640653107649
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 171 Question Id : 640653737449 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are true regarding JavaScript language?

Options :

6406532468105. * Any variable declared using "var" keyword has a global scope.

6406532468106. ✓ Any variable declared using "let" keyword has a block based scope.

6406532468107. ✓ The language supports the concept of arrays.

6406532468108. ✓ The language uses a call stack to execute the functions in the program.

Sub-Section Number :	9
Sub-Section Id :	640653107650
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 172 Question Id : 640653737450 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.

```
const obj = [{  
    id: "1"  
}, {  
    id: "2"  
}, {  
    id: "3"  
}, {  
    id: "4"  
}, {  
    id: "5"  
}];  
const finalObj = obj.map((element) => element.id).map((element) =>  
element.trim()).map((element) => parseInt(element)).filter((element) =>  
element % 2);  
console.log(finalObj, finalObj.length);
```

What will be the output of the above program, if executed?

Options :

6406532468109. ✘ ['1', '3', '5'] 3

6406532468110. ✘ ['2', '4'] 2

6406532468111. ✓ [1, 3, 5] 3

6406532468112. ✘ [2, 4] 2

6406532468113. ✘ ['1', '2', '3', '4', '5'] 5

6406532468114. ✘ [1, 2, 3, 4, 5] 5

Sub-Section Number : 10

Sub-Section Id : 640653107651

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 173 Question Id : 640653737451 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are example(s) of application state (i.e., system as seen by an individual

user)?

Options :

6406532468115. ✓ Shopping cart of an e-commerce application

6406532468116. ✗ Loading icons

6406532468117. ✗ Currently selected tab in a multipage / document

6406532468118. ✓ Followed news items in a news app

Sub-Section Number : 11

Sub-Section Id : 640653107652

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 174 Question Id : 640653737452 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406532468119. ✓ The computed properties are auto triggered when any of the reactive dependencies changes.

6406532468120. ✓ The computed properties are cached based on their reactive dependencies.

6406532468121. ✗ The watchers need to be manually triggered when the watched property is assigned a new value.

6406532468122. ✗ The watchers can be defined globally, and apply to all instances of a Vue component.

Sub-Section Number : 12

Sub-Section Id : 640653107653

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 175 Question Id : 640653737453 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 a valid function definition to return the sum of 2 numbers passed as parameter?

Options :

6406532468123. ❌ let add = (x, y) => x + y

6406532468124. ❌ let add = (x, y) => { x + y; }

6406532468125. ❌ function add (x, y) { return x + y; }

6406532468126. ✓ All of these

Sub-Section Number : 13

Sub-Section Id : 640653107654

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 176 Question Id : 640653737454 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.

```
const property1 = 10;
const obj1 = {
    property1: 20,
    property2: function () {
        console.log(property1, this.property1);
        return this.property1;
    }
}

const obj2 = {
    property1: 30,
    property2: () => {
        console.log(property1, this.property1);
        console.log(this.property2);
    }
}
obj2.property2();
```

What will be the output of the above program, if executed?

Options :

6406532468127. ✘ 10 30

20

6406532468128. ✘ 10 30

undefined

6406532468129. ✘ 10 undefined

30

6406532468130. ✓ 10 undefined

undefined

6406532468131. ✘ 10 30

10 20

20

6406532468132. ✘ 10 undefined

10 undefined

undefined

Sub-Section Number :	14
Sub-Section Id :	640653107655
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 177 Question Id : 640653737455 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 not a valid Vue directive?

Options :

6406532468133. ❌ v-model

6406532468134. ✓ v-click

6406532468135. ❌ v-if

6406532468136. ❌ v-show

Sub-Section Number :	15
Sub-Section Id :	640653107656
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 178 Question Id : 640653737456 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 below javascript program.

```
const a = 2;
const b = "";

const obj1 = {
    property1: 10,
    property2: 20
}

const obj2 = {
    a: 1,
    b: 2,
    ...(a && !b && { obj1 })
};

console.log(obj2);
```

What will be the output of the above program, if executed?

Options :

6406532468137. ❌ { a: 1, b: 2, property1: 10, property2: 20 }

6406532468138. ✓ { a: 1, b: 2, obj1: { property1: 10, property2: 20 } }

6406532468139. ❌ { property1: 10, property2: 20 }

6406532468140. ❌ { a: 1, b: 2 }

MLT

Section Id :	64065351360
Section Number :	12
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	50
Display Number Panel :	Yes

Section Negative Marks :

0

Group All Questions :

No

Enable Mark as Answered Mark for Review and

Yes

Clear Response :

Maximum Instruction Time :

0

Sub-Section Number :

1

Sub-Section Id :

640653107657

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Number : 179 Question Id : 640653737457 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 (COMPUTER BASED EXAM)"

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

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

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

Options :

6406532468141. ✓ YES

6406532468142. ✗ NO

Sub-Section Number :

2

Sub-Section Id :

640653107658

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 180 Question Id : 640653737458 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Suppose a dataset lies in \mathbb{R}^4 and undergoes Principal Component Analysis (PCA) after being centered. The resulting first and second principal components are given by:

$$\frac{1}{\sqrt{3}} \cdot \begin{bmatrix} 1 \\ -1 \\ 0 \\ 1 \end{bmatrix}, \quad \frac{1}{\sqrt{3}} \cdot \begin{bmatrix} 1 \\ 0 \\ 1 \\ -1 \end{bmatrix}$$

Which of the following could be the third principal component?

Options :

$$\frac{1}{\sqrt{2}} \cdot \begin{bmatrix} 1 \\ 1 \\ 0 \\ 0 \end{bmatrix}$$

6406532468143. *

$$\frac{1}{\sqrt{3}} \cdot \begin{bmatrix} 1 \\ 1 \\ 1 \\ 0 \end{bmatrix}$$

6406532468144. *

$$\frac{1}{\sqrt{2}} \cdot \begin{bmatrix} -1 \\ -1 \\ 0 \\ 0 \end{bmatrix}$$

6406532468145. *

$$\frac{1}{\sqrt{3}} \cdot \begin{bmatrix} 0 \\ 1 \\ 1 \\ 1 \end{bmatrix}$$

6406532468146. ✓

Question Number : 181 Question Id : 640653737462 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 $\sin(x_1) \cos(x_2)k(x_1, x_2)$ a valid kernel? Here, $x_1, x_2 \in \mathbb{R}$?

Options :

6406532468149. ✘ Yes

6406532468150. ✓ No

Question Number : 182 Question Id : 640653737463 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 kernel:

$$k : R^2 \times R^2 \rightarrow R$$
$$k(x, y) = (x^T y)^2 + 1$$

Which of the following transformation mapping ϕ may correspond to the kernel k ?

Options :

6406532468151. ✓ $\phi([x_1, x_2]^T) = [x_1^2, \sqrt{2}x_1x_2, x_2^2, 1]^T$

6406532468152. ✘ $\phi([x_1, x_2]^T) = [x_1^2, x_1 + x_2, x_2^2, 1]^T$

6406532468153. ✘ $\phi([x_1, x_2]^T) = [x_1, \sqrt{2}x_1^2x_2^2, x_2, 1]^T$

6406532468154. ✘ $\phi([x_1, x_2]^T) = [x_1, x_1x_2, x_2, 1]^T$

Question Number : 183 Question Id : 640653737464 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 a dataset consisting of 1000 samples in a 20-dimensional space. You apply Kernel PCA with a polynomial kernel of degree 3 to reduce the dimensionality of the data. Which of the following statements regarding Kernel PCA is true?

Options :

6406532468155. ❌ Kernel PCA always results in a lower-dimensional representation of the data compared to standard PCA.

6406532468156. ❌ Kernel PCA can only be applied to datasets that are linearly separable.

6406532468157. ✓ Choosing a higher degree polynomial kernel in Kernel PCA can lead to increased flexibility in capturing non-linear relationships.

6406532468158. ❌ None of these.

Sub-Section Number : 3

Sub-Section Id : 640653107659

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737459 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 : (184 to 185)

Question Label : Comprehension

Standard PCA has been performed on a centered dataset in \mathbb{R}^3 . The first two principal components are given below:

$$\mathbf{w}_1 = \frac{1}{\sqrt{3}} \cdot \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}, \quad \mathbf{w}_2 = \frac{1}{\sqrt{2}} \cdot \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix}$$

Consider the data point in the dataset: $[2 \ 1 \ -1]^T$. (a, b) is the representation of this point in the coordinate system formed by the two principal components given above. The first and second coordinates correspond to PC-1 and PC-2 respectively.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 184 Question Id : 640653737460 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

What is the value of a ? Enter your answer correctly to three decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1.10 to 1.20

Question Number : 185 Question Id : 640653737461 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

What is the value of b ? Enter your answer correctly to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.65 to 0.75

Question Id : 640653737466 Question Type : COMPREHENSION Sub Question Shuffling

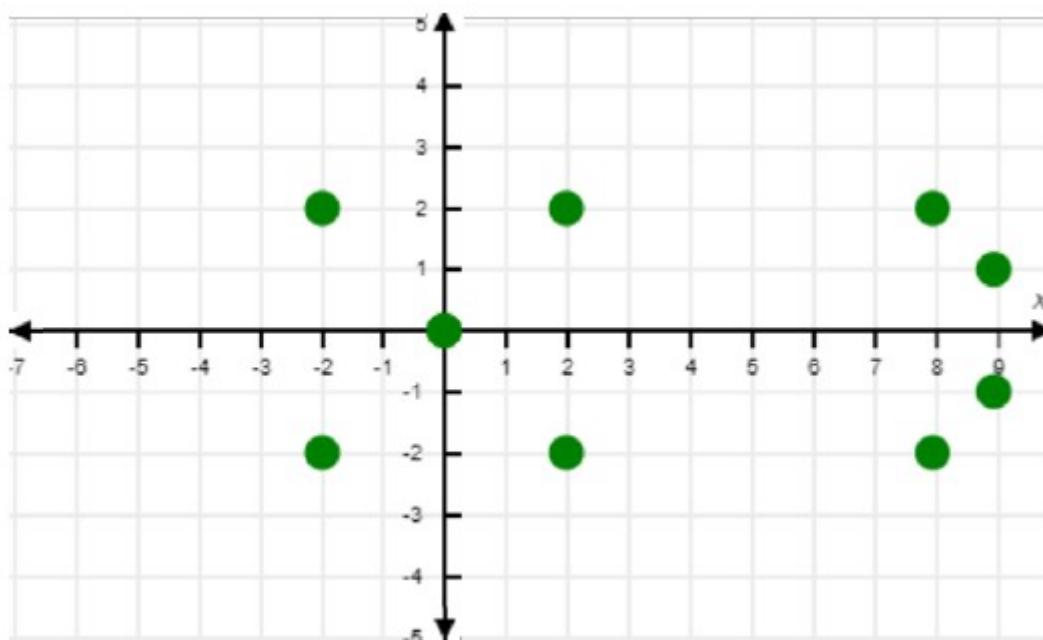
Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (186 to 187)

Question Label : Comprehension

Consider the data points shown in the following image:



Based on the above data, answer the given subquestions.

Sub questions

Question Number : 186 Question Id : 640653737467 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

Perform K-means clustering with $K = 2$ and initial cluster centers at $(0, 0)$ and $(6, 0)$. What are the final means of clusters after convergence?

Options :

6406532468163. ✘ (2, 0) and (8, 0)

6406532468164. ✘ (2, 0) and (8.5, 0)

6406532468165. ✘ (0, 0) and (8, 0)

6406532468166. ✓ (0, 0) and (8.5, 0)

6406532468167. ✘ None of these

Question Number : 187 Question Id : 640653737468 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

After introducing a new data point $(7, 0)$, the cluster centers were updated. Enter the sum of the updated x-coordinates for both cluster centers accurately, rounding your answer to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

8.18 to 8.22

Sub-Section Number : 4

Sub-Section Id : 640653107660

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737470 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 : (188 to 189)

Question Label : Comprehension

Assume that you have a dataset of six points $\{x_1, x_2, x_3, x_4, x_5, x_6\}$, all of which are non-negative. You hypothesise that the data points are iid random variables with the following density:

$$f(x; \lambda) = \begin{cases} \lambda e^{-\lambda x}, & x \geq 0 \\ 0, & x < 0 \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 188 Question Id : 640653737471 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 log-likelihood of this dataset under this distribution? In represents the natural logarithm or \log_e .

Options :

6406532468170. ❌ $\prod_{i=1}^6 \lambda e^{-\lambda x_i}$

6406532468171. ❌ $\sum_{i=1}^6 \lambda e^{-\lambda x_i}$

6406532468172. ❌ $\prod_{i=1}^6 [\ln(\lambda) - \lambda x_i]$

6406532468173. ✓

$$\sum_{i=1}^6 [\ln(\lambda) - \lambda x_i]$$

Question Number : 189 Question Id : 640653737472 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

You are given the actual values of these observations:

$$x_1 = 1, \quad x_2 = 2, \quad x_3 = 3, \quad x_4 = 4, \quad x_5 = 5, \quad x_6 = 6$$

What is the maximum likelihood estimate for λ ? Enter your answer correct to three decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.25 to 0.35

Sub-Section Number : 5

Sub-Section Id : 640653107661

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 190 Question Id : 640653737465 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider Lloyd's algorithm used for k-means clustering and choose the correct statements:

Options :

6406532468159. ✓ K-means algorithm may get stuck at local minima.

6406532468160. ✗ It guarantees finding the optimal clustering (global minimum) in every run.

6406532468161. ✗ In practice, k should be as large as possible.

6406532468162. ✓ If the resources are limited and the data set is huge, it will be good to prefer K-means over K-means++.

Question Number : 191 Question Id : 640653737473 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

For the given Beta distribution, choose the correct option.

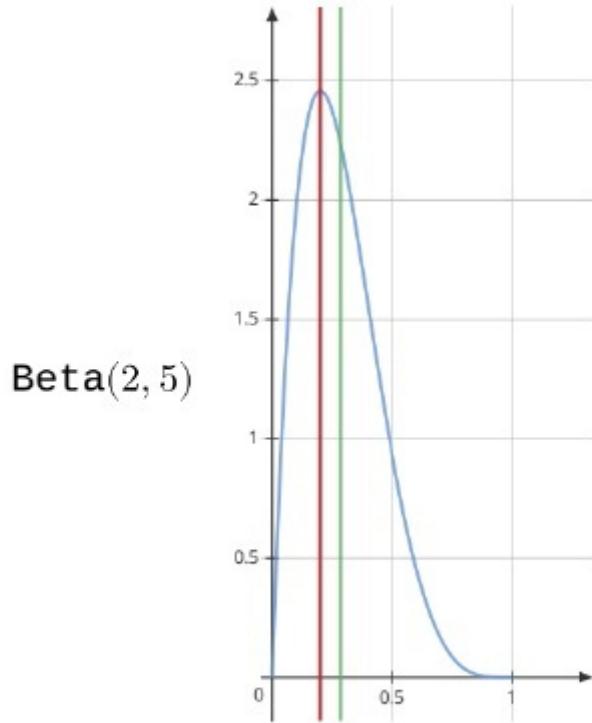


Figure 1: Beta(2,5)

Options :

6406532468175. ✗ Red line denotes the mean for the given Beta distribution, i.e. mean = $\frac{2}{7}$

6406532468176. ✓ Green line denotes the mean for the given Beta distribution, i.e. mean = $\frac{2}{7}$

6406532468177. ✓ Red line denotes the mode for the given Beta distribution, i.e. mode = $\frac{1}{5}$

6406532468178. ✘ Green line denotes the mode for the given Beta distribution, i.e. mode = $\frac{1}{5}$

Sub-Section Number : 6

Sub-Section Id : 640653107662

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 192 Question Id : 640653737469 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 dataset with 100 total data points. Each data point is classified as either type A or type B. We model this using a Bernoulli distribution, where p is the probability of a data point being type A. If the maximum likelihood estimate (MLE) of p based on the dataset is 0.4, how many data points of type B are there in this dataset?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

MLP

Section Id :	64065351361
Section Number :	13
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	21
Number of Questions to be attempted :	21
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107663
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 193 Question Id : 640653737474 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

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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 :

6406532468179. ✓ YES

6406532468180. ✘ NO

Sub-Section Number : 2

Sub-Section Id : 640653107664

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737475 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 : (194 to 198)

Question Label : Comprehension

```
>>> import pandas as pd  
>>> df = pd.read_csv('titanic.csv')  
>>> print(df)
```

	sex	age	sibsp	parch	fare	class	embark_town	alive	alone
0	male	22.0	1	0	7.2500	Third	Southampton	no	False
1	female	38.0	1	0	71.2833	First	Cherbourg	yes	False
2	female	26.0	0	0	7.9250	Third	Southampton	yes	True
3	female	35.0	1	0	53.1000	First	Southampton	yes	False
4	male	35.0	0	0	8.0500	Third	Southampton	no	True
5	male	NaN	0	0	8.4583	Third	Queenstown	no	True
6	male	54.0	0	0	51.8625	First	Southampton	no	True
7	male	2.0	3	1	21.0750	Third	Southampton	no	False
8	female	27.0	0	2	11.1333	Third	Southampton	yes	False
9	female	14.0	1	0	30.0708	Second	Cherbourg	yes	False
10	female	4.0	1	1	16.7000	Third	Southampton	yes	False
11	female	58.0	0	0	26.5500	First	Southampton	yes	True
12	male	20.0	0	0	8.0500	Third	Southampton	no	True
13	male	39.0	1	5	31.2750	Third	Southampton	no	False
14	female	14.0	0	0	7.8542	Third	Southampton	no	True
15	female	55.0	0	0	16.0000	Second	Southampton	yes	True

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 194 Question Id : 640653737476 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

Choose the correct options to determine the count of NULL values in each column of a pandas DataFrame named 'df'

Options :

6406532468181. ✓ df.isnull().sum()

6406532468182. ❌ df.null().sum()

6406532468183. ❌ df.NA().sum()

6406532468184. ❌ df.isNAN().sum()

Question Number : 195 Question Id : 640653737477 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 option will help in selecting data of **odd indexed** columns only? (ie. age, parch are odd indexed 1 and 3 respectively)

Options :

6406532468185. ❌ df.iloc[1::2]

6406532468186. ✓ df.iloc[:,1::2]

6406532468187. ❌ df[:,1::2]

6406532468188. ❌ df.loc[:,1:2]

Question Number : 196 Question Id : 640653737478 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 datatype of sex column in the given titanic dataset

Options :

6406532468189. ✘ number

6406532468190. ✘ bool

6406532468191. ✘ str

6406532468192. ✓ object

Question Number : 197 Question Id : 640653737479 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 option will help in filtering data to find **females who are alive** after titanic incident?

Options :

6406532468193. ✓ df[(df['sex'] == 'female') & (df['alive'] == 'yes')]

6406532468194. ✘ df.select[((df['sex'] == 'female') & (df['alive'] == 'yes'))]

6406532468195. ✘ df.isin[(df['sex'] == 'female') & (df['alive'] == 'yes')]

6406532468196. ✘ df.group((df['sex'] == 'female') & (df['alive'] == 'yes'))

Question Number : 198 Question Id : 640653737480 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 given code below trying to accomplish for the given titanic dataset ?

```
>>> def is_adult (age):
...     if age > 18:
...         return True
...     return False
>>> df['isAdult'] = df['age'].apply(is_adult)
```

Options :

6406532468197. ✘ It will print the rows which have age greater than 18.

6406532468198. ✘ It will throw an error since while calling the function input variable is not given.

6406532468199. ✓ A new column named 'isAdult' will be added to the dataframe which will contain True and False based on age column.

6406532468200. ✘ None of these

Sub-Section Number : 3

Sub-Section Id : 640653107665

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 199 **Question Id :** 640653737491 **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 will be the output of the following code:

```
from sklearn.feature_extraction import DictVectorizer
X = [{'feature_1': 3, 'feature_2': 1}, {'feature_1': 2, 'feature_3': 3}]
extractor = DictVectorizer(sparse= False)
print(extractor.fit_transform(X))
```

Options :

[[3. 1.]

6406532468245. ✘ [2. 3.]]

[[3. 1.]

6406532468246. ✘ [3. 0.]]

[[3. 1. 0.]

6406532468247. ✓ [2. 0. 3.]]

[[3. 1. 0.]

6406532468248. ✘ [2. 3. 0.]

Sub-Section Number :

4

Sub-Section Id :

640653107666

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 200 Question Id : 640653737481 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 working on a machine learning project that aims to predict housing prices based on various features of the houses. As the first step, you decide to perform exploratory data analysis and visualize the data to understand its structure and relationships. Which of the following visualization techniques or principles is LEAST likely to provide meaningful insights for this kind of

regression problem?

Options :

6406532468201. ❌ Plotting a heatmap of the correlation matrix to understand the linear relationship between the numeric features.

6406532468202. ❌ Using a scatter plot to visualize the relationship between the square footage of a house and its price.

6406532468203. ✓ Visualizing the distribution of housing prices using a pie chart.

6406532468204. ❌ Creating box plots for housing prices, grouped by the number of bedrooms, to detect outliers and understand the distribution across different categories.

Question Number : 201 Question Id : 640653737482 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 company collects 40000 samples (examples) to build a Machine Learning model for an application. They decide to use 30% of the total samples for testing (to be stored in the variable **testset**) and the rest 70% for training (to be stored in the variable **trainset**). They also want to sample the same set of samples across multiple runs. Which of the following line (statement) achieves this task? Assume that all samples are stored in the variable **data**.

Options :

6406532468205. ❌ `testset, trainset = train_test_split(data, test_size=0.3,random_state=42)`

6406532468206. ❌ `trainset, testset = train_test_split(data, test_size=0.3)`

6406532468207. ✓ `trainset, testset = train_test_split(data, test_size=0.3,random_state=42)`

6406532468208. ❌ `testset, trainset = train_test_split(data, test_size=0.3)`

Question Number : 202 Question Id : 640653737483 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

Choose the option based on the following statements:

Statement 1: The train-test split allows us to simulate the model's performance on new data by reserving a portion of the dataset for testing.

Statement 2: Separating the dataset into training and testing sets helps prevent data leakage, where information from the test set unintentionally influences the model during training. This ensures a fair assessment of the model's generalization capabilities.

Options :

6406532468209. ❌ Statement 1 is True and statement 2 is False

6406532468210. ❌ Statement 1 is False and statement 2 is True

6406532468211. ❌ Both the statements are False

6406532468212. ✓ Both the statements are True

Question Number : 203 Question Id : 640653737484 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

In which of the following scenarios is data cleaning most required?

Options :

6406532468213. ✓ Data has missing values and categorical string data.

6406532468214. ❌ Data consists a lot of outliers based on values in target(y) column

6406532468215. ✘ The data consists solely of numerical values and are on a similar scale.

6406532468216. ✘ None of the choices

Question Number : 204 Question Id : 640653737486 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 code:

```
data = [[-3, 1],  
        [-3, 1],  
        [ 3, 5],  
        [ 3, 5]]  
  
from sklearn.preprocessing import StandardScaler  
ss = StandardScaler()  
print(ss.fit_transform(data))
```

What will be the output of the code snippet given above?

Options :

[[0, -1],
 [0, -1],
 [1, 1],
 [1, 1]]

6406532468221. ✘

[[-0.5, -2],
 [-0.5, -2],
 [1, 2],
 [1, 2]]

6406532468222. ✘

[[0, 1],
 [0, 1],
 [0, 1],
 [0, 1]]

6406532468223. ✘

6406532468224.

[[[-1, -1],
[-1, -1],
[1, 1],
[1, 1]]



Question Number : 205 Question Id : 640653737487 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 metrics indicate higher their value, better the regression model's performance?

Options :

6406532468225. ✘ RMSE

6406532468226. ✓ R2

6406532468227. ✘ Mean absolute error

6406532468228. ✘ Mean squared error

Question Number : 206 Question Id : 640653737488 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

How many models with different combinations of parameter values will get trained in the following code?

```
from sklearn.model_selection import GridSearchCV
from sklearn.linear_model import SGDRegressor
from sklearn.datasets import load_diabetes

X, y = load_diabetes(return_X_y=True)

params = [
    {'alpha': [0.01, 0.1, 1], 'learning_rate': ['constant', 'optimal']},
    {'loss': ['squared_error', 'huber'], 'alpha':
     [0.0001, 0.001], 'learning_rate': ['constant', 'invscaling']}]

grid = GridSearchCV(estimator=SGDRegressor(),
                     param_grid=params,
                     scoring='neg_mean_squared_error',
                     return_train_score=True,
                     verbose=2,
                     n_jobs=-1
                    )

grid.fit(X, y)
```

Options :

6406532468229. ✘ 10

6406532468230. ✘ 12

6406532468231. ✓ 14

6406532468232. ✘ 16

Question Number : 207 Question Id : 640653737489 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 purpose of the *tol* parameter of the `SGDRegressor()` in the given code below?

```
from sklearn.linear_model import SGDRegressor
model = SGDRegressor(early_stopping=True,
                      validation_fraction=0.2,
                      tol=0.001,
                      n_iter_no_change=5)
model.fit(X, y)
```

Options :

- 6406532468233. ✘ It controls the learning rate of the stochastic regressor during training.
- 6406532468234. ✘ It determines the maximum number of iterations for the training process.
- 6406532468235. ✘ It defines the fraction of the validation set used for early stopping.
- 6406532468236. ✓ It specifies the tolerance level for early stopping based on the change in the validation error.

Question Number : 208 Question Id : 640653737490 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 code:

```
from sklearn.datasets import make_regression
from sklearn.datasets import make_classification
from sklearn.linear_model import LinearRegression
from sklearn.linear_model import LogisticRegression

X_r, y_r = make_regression()
lr = LinearRegression()
lr.fit(X_r, y_r)
score1 = lr.score(X_r, y_r)

X_c, y_c = make_classification()
logr = LogisticRegression()
logr.fit(X_c, y_c)
score2 = logr.score(X_c, y_c)

print(score1)
print(score2)
```

Which metrics will be contained in score1 and score2 respectively?

Options :

6406532468237. ✘ Accuracy, Accuracy

6406532468238. ✘ R2 score, R2 score

6406532468239. ✘ Accuracy, R2 score

6406532468240. ✓ R2 score, Accuracy

6406532468241. ✘ F1 score, Precision

6406532468242. ✘ Precision, Recall

6406532468243. ✘ MAE, MSE

6406532468244. ✘ The code will result in an error.

Sub-Section Number : 5

Sub-Section Id : 640653107667

Question Shuffling Allowed : Yes

Is Section Default? : null

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

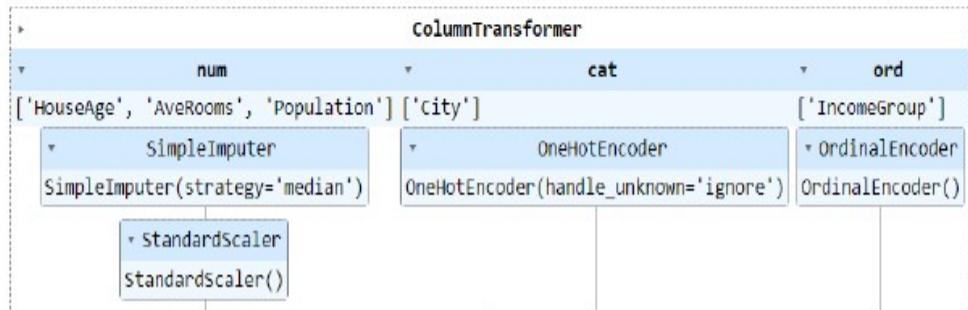
Consider following dataset:

HouseAge	AveRooms	Population	City	IncomeGroup
41.0	6.98	322.0	Delhi	Low
21.0	6.23	2401.0	Kolkata	High
52.0	8.28	496.0	Agra	Medium
52.0	-	558.0	Kolkata	Medium
52.0	6.28	565.0	Mumbai	Medium

Which one of the following code snippets will correctly preprocess above data? Assume necessary imports. The data is stored in a dataframe named X.

Options :

```
1 num_tranform = Pipeline(steps= [("imputer", SimpleImputer(strategy="median")),
2                                 ("scaler", StandardScaler())])
3 cat_transom = OneHotEncoder(handle_unknown="ignore")
4 ordinal_encoder = OrdinalEncoder()
5 preprocessor = ColumnTransformer(transformers=[
6     ("num", num_tranform, ['HouseAge','AveRooms','Population']),
7     ("cat", cat_transom, ['City']),
8     ("ord", ordinal_encoder, ['IncomeGroup'])])
9 preprocessor
```



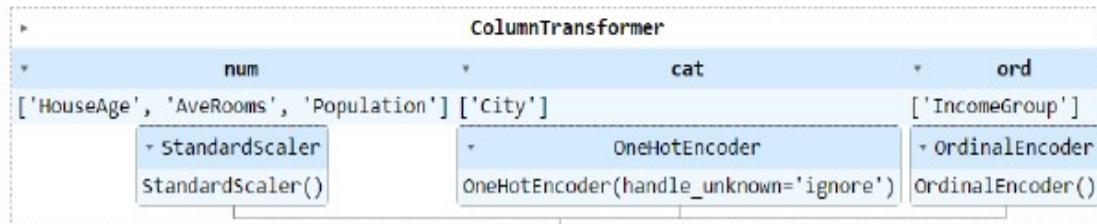
6406532468217. ✓

6406532468218. ✗

```

1 num_tranform = Pipeline(steps=[("scaler", StandardScaler())])
2 cat_transform = OneHotEncoder(handle_unknown="ignore")
3 ordinal_encoder = OrdinalEncoder()
4
5 preprocessor = ColumnTransformer(transformers=
6     [ ("num", num_tranform, ['HouseAge', 'AveRooms', 'Population']),
7      ("cat", cat_transform, ['City']),
8      ("ord", ordinal_encoder, ['IncomeGroup'])])
9 preprocessor

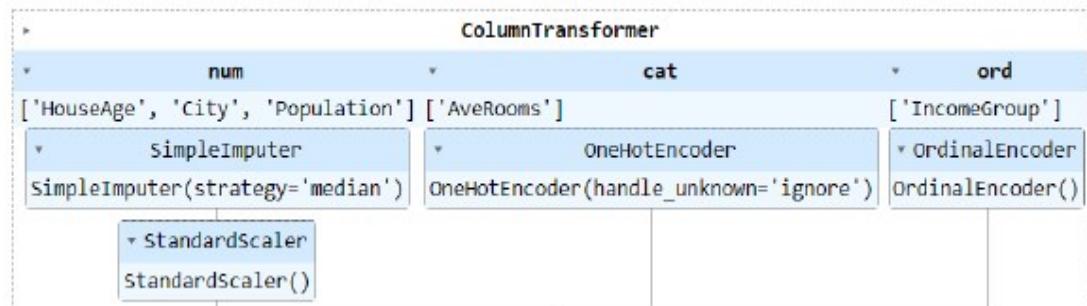
```



```

1 num_tranform = Pipeline(
2     steps=[("imputer", SimpleImputer(strategy="median")),
3            ("scaler", StandardScaler())])
4
5 cat_transform = OneHotEncoder(handle_unknown="ignore")
6 ordinal_encoder = OrdinalEncoder()
7 preprocessor = ColumnTransformer(transformers=
8     [ ("num", num_tranform, ['HouseAge', 'City', 'Population']),
9      ("cat", cat_transform, ['AveRooms']),
10     ("ord", ordinal_encoder, ['IncomeGroup'])])
11 preprocessor

```



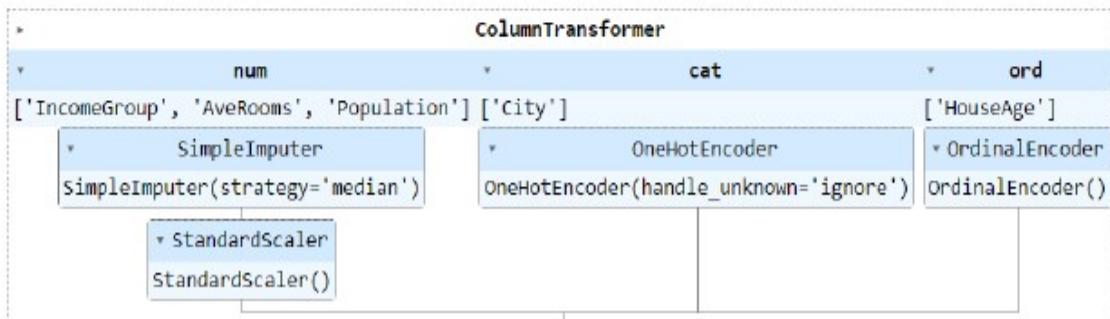
6406532468219. *

6406532468220. *

```

1 num_transform = Pipeline(
2     steps=[("imputer", SimpleImputer(strategy="median")),
3             ("scaler", StandardScaler())]
4 )
5
6 cat_transform = OneHotEncoder(handle_unknown="ignore")
7 ordinal_encoder = OrdinalEncoder()
8
9 preprocessor = ColumnTransformer(transformers=
10    [("num", num_transform, ['IncomeGroup','AveRooms','Population']),
11     ("cat", cat_transform, ['City']),
12     ("ord", ordinal_encoder, ['HouseAge'])]
13   ]
14 )

```



Sub-Section Number :

6

Sub-Section Id :

640653107668

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 210 Question Id : 640653737492 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Suppose that we plot the histogram of numerical features in a data set. This reveals which of the following information?

Options :

6406532468249. ✓ Scale of the features

6406532468250. ✓ (left or right) Skew of the distribution

6406532468251. ✓ Modes in the distribution

6406532468252. ✗ Missing values

Question Number : 211 Question Id : 640653737493 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose the correct option(s) for the below code

```
import numpy as np
from sklearn.datasets import fetch_california_housing
house = fetch_california_housing(as_frame=True)
```

Options :

6406532468253. ✗ **house.data.shape** will give the count of number of rows and columns for features and labels(target) both

6406532468254. ✓ **house.target_names** will give the name of the target column

6406532468255. ✗ **house.data.head()** will show last 5 rows of the data

6406532468256. ✓ **house.feature_names** will give a list of names of the columns of the feature matrix

Question Number : 212 Question Id : 640653737494 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following are valid loss functions for SGDClassifier?

Options :

6406532468257. ✗ Squared Loss

6406532468258. ✓ Hinge Loss

6406532468259. ✓ Log Loss

6406532468260. ✗ Mean Absolute Error

Question Number : 213 Question Id : 640653737495 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which columns will not be included in the selected data within the code below?

```
import numpy as np
from sklearn.feature_selection import VarianceThreshold

data = np.array([[ 95,  0.332,   112,     1,    0.56 ],
                [ 146,  0.332,   177,     1,    9.2  ],
                [ -96,  0.332,  -139,     1,   -0.82 ],
                [ 116,  0.332,   117,     1,    4.8  ],
                [ -87,  0.332,   -63,     1,   -1.1  ]])

vf = VarianceThreshold(threshold=0)

selected_data = vf.fit_transform(data)
selected_data
```

Options :

6406532468261. ✗ Column indexed at 0

6406532468262. ✓ Column indexed at 1

6406532468263. ✗ Column indexed at 2

6406532468264. ✓ Column indexed at 3

6406532468265. ✗ Column indexed at 4

6406532468266. ✗ No columns

Question Number : 214 Question Id : 640653737498 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following Evaluation metrics can be used in a regression problem?

Options :

6406532468277. ✓ Mean Squared Error

6406532468278. ✗ Accuracy

6406532468279. ✗ F1-Score

6406532468280. ✓ Mean Absolute Error

6406532468281. ✗ credit score

6406532468282. ✗ CGPA

Sub-Section Number : 7

Sub-Section Id : 640653107669

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 215 Question Id : 640653737496 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the below code :

keep following symbols in mind:

- >>> : Represents input code
- # : Represents comment in a code
- ... : Represents code continuation
- Without any symbols at the beginning of a line then it is output of just above input line of code.
- arrow pointing towards right is code continuation to another line.

```
>>> from sklearn.feature_selection import SelectKBest, chi2
>>> from sklearn.datasets import load_wine
>>> X,y = load_wine(return_X_y=True,as_frame=True)
>>> print(X.shape)
(178, 13)

>>> print(X.columns)
['alcohol', 'malic_acid', 'ash', 'alcalinity_of_ash', 'magnesium',
 'total_phenols', 'flavanoids', 'nonflavanoid_phenols', 'proanthocyanins',
 'color_intensity', 'hue', 'od280/od315_of_diluted_wines', 'proline']

>>> skb = SelectKBest(chi2, k=3)
>>> X_selected = skb.fit_transform(X, y)

>>> print(skb.scores_)
[5.44, 28.06, 0.74, 29.38, 45.02, 15.62, 63.33, 1.81,
 9.36, 109.01, 5.18, 23.38, 16540.06]

>>> print(skb.pvalues_)
[6.56e-02, 8.03e-07, 0.68, 4.16e-07, 1.66e-10, 4.05e-04,
 1.76e-14, 0.40, 9.24e-03, 2.12e-24, 0.074, 8.33e-06, 0]

>>> print(skb.pvalues_.argsort())
[12, 9, 6, 4, 3, 1, 11, 5, 8, 0, 10, 7, 2]
```

Which of the following feature(s) will be selected in X_selected from X ?

Options :

6406532468267. ✘ malic_acid

6406532468268. ✘ magnesium

6406532468269. ✓ flavanoids

6406532468270. ✘ proanthocyanins

6406532468271. ✓ color_intensity

6406532468272. ✓ proline

Question Number : 216 Question Id : 640653737497 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Given the following code snippet, which statement is true regarding the use of LabelEncoder?

```
from sklearn.preprocessing import LabelEncoder  
  
data = ["cat", "dog", "fish", "cat", "bird", "dog", "bird"]  
  
encoder = LabelEncoder()  
encoded_data = encoder.fit_transform(data)  
  
print(encoded_data)
```

Options :

6406532468273. ✓ encoded_data will contain only the values 0, 1, 2, and 3.

If ["elephant"] is passed to encoder.transform(), it will be successfully transformed to
6406532468274. ✗ an integer.

6406532468275. ✗ LabelEncoder assigns higher integer values to more frequently occurring labels.

6406532468276. ✓ After calling encoder.inverse_transform([2]), the result will be "dog".

Sub-Section Number : 8

Sub-Section Id : 640653107670

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 217 Question Id : 640653737499 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 output of the following code ?

```
data = [['apple', 120],  
        ['apple', 125],  
        ['grapes',120]]  
  
from sklearn.preprocessing import OneHotEncoder  
ohe = OneHotEncoder(sparse_output=False)  
ohe.fit(data)  
print(ohe.transform(data).shape[1])
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Business Analytics

Section Id : 64065351362

Section Number : 14

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 10

Number of Questions to be attempted : 10

Section Marks : 20

Display Number Panel : Yes

Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107671
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 218 Question Id : 640653737500 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 (COMPUTER BASED EXAM)"

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

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

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

Options :

6406532468284. ✓ YES

6406532468285. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653107672
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 219 Question Id : 640653737505 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 Figure-1, which of the below statements are true?

Global Average Temperature Vs. Number of Pirates

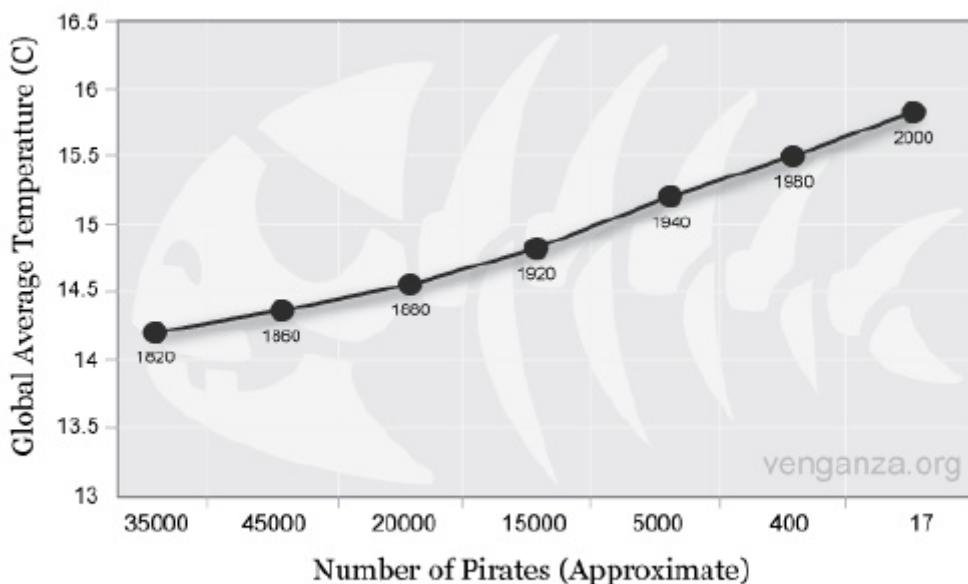


Figure-1

Options :

6406532468292. ✖ There is a positive correlation between the number of pirates and the global average temperature increase

6406532468293. ✖ There is no correlation between the number of pirates and the global average temperature increase

6406532468294. ✖ More data is required to arrive at a conclusion

6406532468295. ✓ None of these

Question Number : 220 Question Id : 640653737515 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 p-value of the chi-square goodness of fit test represents _____

Options :

6406532468312. ❌ None of these

6406532468313. ❌ The chance of observing the sample when the alternative hypothesis is true

6406532468314. ❌ The chance of observing the sample at the specified level of significance

6406532468315. ✓ The chance of observing the sample when the null hypothesis is true

Sub-Section Number : 3

Sub-Section Id : 640653107673

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 221 Question Id : 640653737504 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following distributions is/are symmetric in nature (select all that are applicable)?

Options :

6406532468288. ✓ Standard normal distribution

6406532468289. ❌ Exponential distribution

6406532468290. ✓ Uniform distribution between [-1 to +1]

6406532468291. ❌ Poisson distribution

Sub-Section Number : 4

Sub-Section Id : 640653107674

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 222 Question Id : 640653737514 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

A data set with 450 data points provides information on 13 variables. Chi-square goodness of fit test is conducted on a variable in the data-set, to see if it follows a normal distribution. If the dataset is binned into 15 bins, then how many degrees of freedom does the chi-square statistic have?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

12

Sub-Section Number : 5

Sub-Section Id : 640653107675

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737501 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 : (223 to 224)

Question Label : Comprehension

The linear demand response for a product-X is modelled as a simple linear regression represented as $D(P) = 5000 - 20*P$, where $D(P)$ is the demand at price-P. Then, answer the given subquestions.

Sub questions

Question Number : 223 Question Id : 640653737502 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 elasticity of this curve when the price is Rs.100?

(Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23". DO NOT ENTER PERCENTAGE VALUES)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.65 to 0.67

Question Number : 224 Question Id : 640653737503 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 satiating price for this curve?

(Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23". DO NOT ENTER PERCENTAGE VALUES)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

250

Question Id : 640653737521 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 : (225 to 228)

Question Label : Comprehension

Using the excel regression output given in Figure-2 answer the given sub questions.

SUMMARY OUTPUT				
Regression Statistics				
Multiple R	0.966016			
R Square	0.933186			
Adjusted R Square	0.926505			
Standard Error	363.8778			
Observations	X1			

ANOVA				
	df	SS	MS	F
Regression	1	X2		X4
Residual	10	1324070.51	X3	
Total		19817291.7		

Figure-2

Sub questions

Question Number : 225 Question Id : 640653737522 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5

Question Label : Short Answer Question

What is the value of "X1"?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

12

Question Number : 226 Question Id : 640653737523 Question Type : SA Calculator : None

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

Correct Marks : 0.5

Question Label : Short Answer Question

What is the value of "X2"? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

18493221 to 18493222

Question Number : 227 Question Id : 640653737524 Question Type : SA Calculator : None

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

Correct Marks : 0.5

Question Label : Short Answer Question

What is the value of "X3"? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

132407 to 132408

Question Number : 228 Question Id : 640653737525 Question Type : SA Calculator : None

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

Correct Marks : 0.5

Question Label : Short Answer Question

What is the value of "X4"?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

138 to 140

Sub-Section Number : 6

Sub-Section Id : 640653107676

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737510 Question Type : COMPREHENSION Sub Question Shuffling

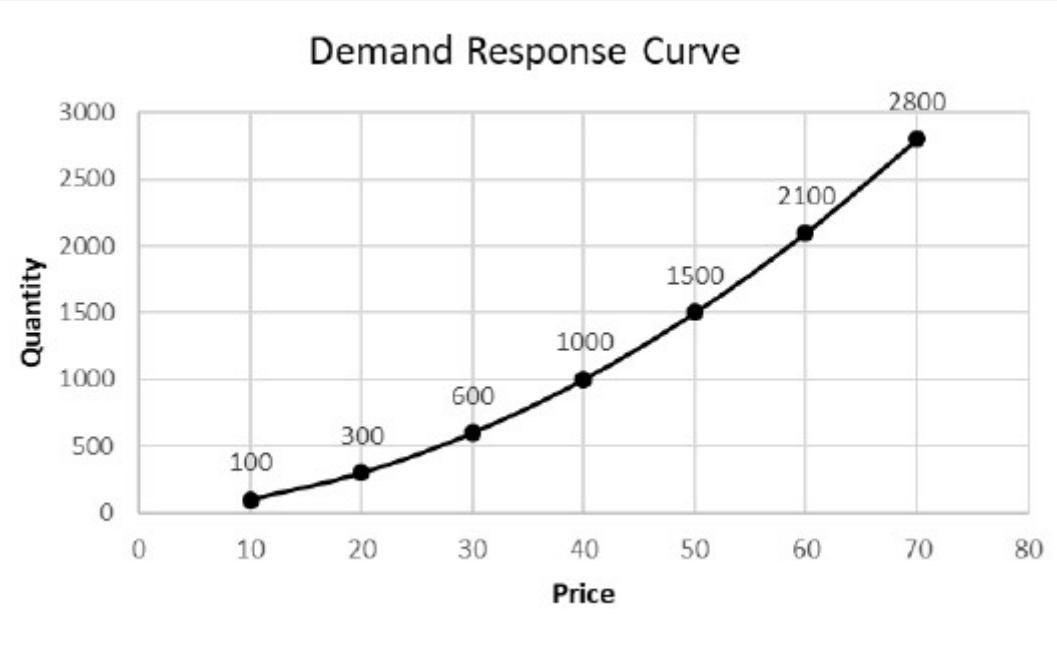
Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (229 to 231)

Question Label : Comprehension

Given the imaginary demand response curve in the below figure, answer the given subquestions.



Sub questions

Question Number : 229 Question Id : 640653737511 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following statements are true? (choose all that is applicable)

Options :

6406532468302. ❌ As price increases, latent demand decreases

6406532468303. ❌ As it is a linear curve, there is no impact of price on latent demand

6406532468304. ❌ The curve does not have any latent demand region

6406532468305. ✓ None of these

Question Number : 230 Question Id : 640653737512 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 elasticity between any two points of the given demand response curve?

(Note-1: **Do not assume** that it is linear and **do not assume** that it is a constant elasticity curve)

(Note-2: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23". DO NOT ENTER PERCENTAGE VALUES)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 231 Question Id : 640653737513 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

Based on the computed elasticity, what kind of demand is being exhibited by the product?

Options :

6406532468307. ✓ Elastic demand

6406532468308. ✗ Inelastic demand

6406532468309. ✗ Demand for an inferior good

6406532468310. ✗ Demand for a normal good

Sub-Section Number : 7

Sub-Section Id : 640653107677

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653737506 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 : (232 to 234)

Question Label : Comprehension

You are given the following contingency table (Table-1) based on sample data where different cities and their brand preferences are provided. You perform a chi-squared test of independence to make inferences about the population from this sample.

	Brand A	Brand B
Chennai	350	120
Mumbai	280	204

Table-1

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 232 Question Id : 640653737507 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

From the given contingency table, find the expected frequency of Chennai people preferring brand B?

(Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23". DO NOT ENTER PERCENTAGE VALUES)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

159 to 160

Question Number : 233 Question Id : 640653737508 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?

(Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23". DO NOT ENTER PERCENTAGE VALUES)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

28 to 30

Question Number : 234 Question Id : 640653737509 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

At the significance level 0.01, chi-squared tabular value is 6.63. What do you conclude?

Options :

6406532468298. ✓ Reject the null hypothesis and conclude that the categorical variables are not independent

6406532468299. ✗ Fail to reject the null hypothesis and conclude that the categorical variables are not independent

6406532468300. ✗ Fail to reject the null hypothesis and conclude that the categorical variables are

independent

6406532468301. ✘ Reject the null hypothesis and conclude that the categorical variables are independent

Sub-Section Number :	8
Sub-Section Id :	640653107678
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653737516 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 : (235 to 238)

Question Label : Comprehension

The application for the degree “Master in Being Useless (MBU)” has begun at “Star University (SU)”. The applicants to SU are from three professional categories namely “TV Watcher”, “Mobile Gamer” and “Procrastinator”. The previous year admissions indicate that 20% of the total applications are Procrastinators, 40% are Mobile Gamers and the rest are TV Watchers.

When examining past applications submitted by the three professional categories, it is seen that the applications are either “Fully Completed”, “Half Completed” or “Blank”. It is observed that among the “Mobile Gamer” applications that are received, 30% are “Fully Completed” and 60% is “Half Completed”. For TV Watcher applications that are received, 40% are “Half Completed” and 20% are “Blank”. Among all received Procrastinator applications, 50% have submitted “Blank” applications and 40% have submitted “Half Completed” applications.

Assuming the necessary mutual exclusiveness, answer the given subquestions.

Sub questions

Question Number : 235 Question Id : 640653737517 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

What is the probability that an application for the coming admission will be "Fully Completed"?

(Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23". DO NOT ENTER PERCENTAGE VALUES)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.29 to 0.31

Question Number : 236 **Question Id :** 640653737518 **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

If a total of 550 applications are expected to be received for the upcoming admission, then how many would you expect to be "Blank"?

(Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23". DO NOT ENTER PERCENTAGE VALUES)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

121

Question Number : 237 **Question Id :** 640653737519 **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

SU is planning spend money on advertising to increase applications. Once the advertising is completed, a total of 600 applications are expected. Then, what is the expected revenue that can be generated from "TV Watcher" category if an application fee of Rs. 500 is charged for "Blank" applications, Rs. 200 is charged for "Half Completed" applications and Rs. 100 is for "Fully Completed" applications? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

131999 to 132001

Question Number : 238 Question Id : 640653737520 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

Recently, you saw a person applying to "SU". The person had submitted the application "Half Completed". Then which category would you suspect the person to belong to?

Options :

6406532468319. ✘ TV Watcher

6406532468320. ✘ Procrastinator

6406532468321. ✓ Mobile Gamer

6406532468322. ✘ None of these, as I do not know how to solve

System Commands

Section Id :	64065351363
Section Number :	15
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	15
Number of Questions to be attempted :	15
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653107679
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 239 Question Id : 640653737526 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 (COMPUTER BASED EXAM)"

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

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

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

REGISTERED BY YOU)

Options :

6406532468327. ✓ YES

6406532468328. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653107680

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 240 Question Id : 640653737527 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Ajit is writing an essay in English. He realizes that he has used both the American English and British English spellings for the same words in his essay. He wants to find all such occurrences for the words "color/colour" and "program/programme". Help him by selecting the correct regular expression which will capture the British version as well as American version of the words from the text. Make sure It only collects the words which has correct spellings in either of the format.

Note: It is an Extended Regular Expression (ERE)

Options :

6406532468329. ✗ colo?r

6406532468330. ✗ program???

6406532468331. ✓ colou?r

6406532468332. ✓ program(me)?

Question Number : 241 Question Id : 640653737528 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

```
export LOG_FILE="/var/log/$USER.log"
```

From the following options which will print the Shell environmental variable "LOG_FILE"

Options :

6406532468333. ✓ echo \$LOG_FILE

6406532468334. ✗ printenv \$LOG_FILE

6406532468335. ✓ printenv LOG_FILE

6406532468336. ✗ env \$LOG_FILE

Question Number : 242 Question Id : 640653737529 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

For a log file 'file.txt' the user wants to change the permissions such that he gives read, write, and execute to the owner; read and execute to the group and others. which of the following commands will accomplish the same?

Options :

6406532468337.

✖ chmod u+rwx,g+rw,o+rw file.txt

6406532468338. ✓ chmod u+rwx,g+rx,o+rx file.txt

6406532468339. ✖ chmod 644 file.txt

6406532468340. ✓ chmod 755 file.txt

Question Number : 243 Question Id : 640653737530 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

```
$ sleep 200 &
$ ps
 PID TTY      TIME CMD
 10 pts/0    00:00:02 bash
 344 pts/0    00:00:00 sleep
 345 pts/0    00:00:00 ps
```

Select the command(s) from the options below which will suspend the `sleep` process started as shown in the above code block.

```
$ man kill
KILL(1)                               User Commands
KILL(1)

NAME
    kill - send a signal to a process

SYNOPSIS
    kill [options] <pid> [...]

DESCRIPTION
    The default signal for kill is TERM. Use -l or -L to list
available signals.

    Particularly useful signals include HUP, INT, KILL, STOP, CONT, and
SUSP. Alter-
nate signals may be specified in three ways: -9, -SIGKILL or -
KILL. Negative
    PID values may be used to choose whole process groups; see the PGID
column in ps
    command output. A PID of -1 is special; it indicates all processes
except the
        kill process itself and init.

OPTIONS
    <pid> [...]
        Send signal to every <pid> listed.
```

```
-<signal>
-s <signal>
--signal <signal>
        Specify the signal to be sent. The signal can be specified by
using name
        or number. The behavior of signals is explained in
signal(7) manual
        page.
```

```
-l, --list [signal]
        List signal names. This option has optional argument, which
will convert
        signal number to signal name, or other way round.
```

```
-L, --table
        List signal names in a nice table.
```

NOTES Your shell (command line interpreter) may have a built-in kill command.

You may need to run the command described here as /bin/kill to solve the conflict.

...

```
$ kill -L
 1) SIGHUP      2) SIGINT      3) SIGQUIT      4) SIGILL      5) SIGTRAP
 6) SIGABRT     7) SIGBUS      8) SIGFPE       9) SIGKILL     10) SIGUSR1
 11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
 16) SIGSTKFLT    17) SIGCHLD     18) SIGCONT     19) SIGSTOP     20) SIGTSTP
 21) SIGTTIN     22) SIGTTOU     23) SIGURG      24) SIGXCPU     25) SIGXFSZ
 26) SIGVTALRM    27) SIGPROF     28) SIGWINCH    29) SIGIO       30) SIGPWR
 31) SIGSYS      34) SIGRTMIN    35) SIGRTMIN+1  36) SIGRTMIN+2  37)
SIGRTMIN+3
38) SIGRTMIN+4  39) SIGRTMIN+5  40) SIGRTMIN+6  41) SIGRTMIN+7  42)
SIGRTMIN+8
43) SIGRTMIN+9  44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47)
SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52)
SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9  56) SIGRTMAX-8  57)
SIGRTMAX-7
58) SIGRTMAX-6  59) SIGRTMAX-5  60) SIGRTMAX-4  61) SIGRTMAX-3  62)
SIGRTMAX-2
63) SIGRTMAX-1  64) SIGRTMAX
```

Options :

6406532468341. ❁ Ctrl + C

6406532468342. ❁ Ctrl + D

6406532468343. ✓ Ctrl + Z

6406532468344. ✘ kill STOP 344

6406532468345. ✓ kill -20 344

Question Number : 244 Question Id : 640653737533 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following command(s) will run the `ls` command with the `more` command to show the output page-by-page.

Options :

6406532468354. ✓ ls | more

6406532468355. ✘ list="ls | more"; echo \$list

6406532468356. ✘ list="ls | more"; bash \$list

6406532468357. ✓ list="ls | more"; eval \$list

Question Number : 245 Question Id : 640653737539 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Following bash script is run to find if a given file has a 'txt' extension. Which of the following option(s) will achieve the same?

```
#!/bin/bash

echo "Enter a filename: "
read filename

if [[ "$filename" =~ \.txt$ ]]; then
    echo "Text file"
else
    echo "Not a text file"
fi
```

Options :

6406532468373. ✓

```
extension="txt"; [ "${filename##*.}" == "$extension" ] && echo "Text file" ||
echo "Not a Text file"
```

6406532468374. ✗

```
extension="txt"; [ "${filename%%.*}" == "$extension" ] && echo "Text file" ||
echo "Not a Text file"
```

6406532468375. ✗

```
`extension="txt"; [ "${filename%%.*}" == "$extension" ] || echo "Text file" ||
&& echo "Not a Text file"
```

6406532468376. ✗

```
extension="txt"; [ "${filename##*.}" == "$extension" ] || echo "Text file" &&
echo "Not a Text file"
```

6406532468377. ✓

```
[[ "$filename" =~ \.txt$ ]] && echo "Text file" || echo "Not a text file"
```

6406532468378. ✗

```
[[ "$filename" =~ \.txt$ ]] || echo "Text file" && echo "Not a text file"
```

Sub-Section Number :	3
Sub-Section Id :	640653107681
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 246 Question Id : 640653737534 Question Type : MSQ Is Question

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

Correct Marks : 9 Max. Selectable Options : 0

Question Label : Multiple Select Question

Select the regex to extract only the value of MAC address from the command `ifconfig` output as shown below.

Hint:

- A sample mac address is `00:15:5d:01:52:74`
- The field separator colon `:` separates 6 hexadecimal numbers

```
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1492
    inet 172.17.118.210 netmask 255.255.240.0 broadcast 172.17.127.255
        inet6 fe80::215:8dfa:fe06:5174 prefixlen 64 scopeid 0x20<link>
            ether 00:15:5d:01:52:74 txqueuelen 1000 (Ethernet)
                RX packets 1088 bytes 700086 (700.0 KB)
                RX errors 0 dropped 0 overruns 0 frame 0
                TX packets 286 bytes 39079 (39.0 KB)
                TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
        loop txqueuelen 1000 (Local Loopback)
            RX packets 4 bytes 200 (200.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 4 bytes 200 (200.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Hint:

- `-o` option in grep prints only the matched regular expression.
- `-E` option enables ERE

Options :

6406532468358. ✓ grep -oE "([0-9A-Fa-f]{2}[:-])\{5\}([0-9A-Fa-f]{2})"

6406532468359. ✘ grep -o "([0-9A-Fa-f]{2}[:-])\{5\}([0-9A-Fa-f]{2})"

6406532468360. ✓ grep -o "\(([0-9A-Fa-f]\{2\}[:-])\{5\}\(([0-9A-Fa-f]\{2\})\)"

6406532468361. ✘ grep -o "/([[:alnum:]]/{2})[:-]/{5}/([[:alnum:]]/{2})/"

6406532468362. ✓ grep -oE "([[:xdigit:]]{2}[:-])\{5\}([[:xdigit:]]{2})"

Question Number : 247 Question Id : 640653737541 Question Type : MSQ Is Question

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

Correct Marks : 9 Max. Selectable Options : 0

Question Label : Multiple Select Question

Select the command(s) that prints the files present in both the directory `dir1` and `dir2` in the current working directory.

Sample directory structure

```
$ ls -R
.:
dir1 dir2

./dir1:
file1 file2 file3 file4 file5 file6 file7

./dir2:
file1 file2 file3 file4 file5
```

Sample output

```
file1
file2
file3
file4
file5
```

Hints::

- `-f` flag in `grep` command will search for all the regex pattern in the file separated by line break
- `basename` command will return the filename from the path, example `basename /home/user/file1` will return `file1`

Options :

6406532468383. ✓ `ls dir2 > pat; ls dir1 | grep -f pat`

6406532468384. ✓ `ls dir1 > pat; ls dir2 | grep -f pat`

6406532468385. ✓ `for i in dir1/*; do [-f "dir2/${basename $i}"] && echo ${basename $i}; done`

6406532468386. ❌ for i in dir2/*; do [-f "dir2/\${basename \$i}"] && echo \${basename \$i}; done

Sub-Section Number : 4
Sub-Section Id : 640653107682
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 248 Question Id : 640653737543 Question Type : MSQ Is Question

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

Correct Marks : 8 Max. Selectable Options : 0

Question Label : Multiple Select Question

Select the script that prints the number of files and directory present in the current working directory, in the format "5,7" given that there 5 files and 7 directories present in the current directory before running the script.

Hint:

- Unary operator `-f` checks if the file exists and is a regular file
- Unary operator `-d` checks if the file exists and is a directory

Options :

```
#!/bin/bash
files=0
dirs=0
for i in *; do
    if [ -f "$i" ]; then
        files=$((files+1))
    elif [ -d "$i" ]; then
        dirs=$((dirs+1))
    fi
done
echo "$files,$dirs"
```

6406532468388. ✓

```
#!/bin/bash
files=0
dirs=0
for i in *; do
    if [ -f "$i" ]; then
        files=$((files+1))
    elif [ -d "$i" ]; then
        dirs=$((dirs+1))
    fi
done
echo "$dirs,$files"
```

6406532468389. ❌

```
#!/bin/bash
files=0
dirs=0
ls > ls.txt # ls.txt did not exist before
while read -r i; do
    if [ -f "$i" ]; then
        files=$((files+1))
    elif [ -d "$i" ]; then
        dirs=$((dirs+1))
    fi
done < ls.txt
echo "$files,$dirs"
```

6406532468390. ❌

6406532468391. ✓

```
#!/bin/bash
files=0
dirs=0
ls > ls.txt # ls.txt did not exist before
while read -r i; do
    if [ -f "$i" ]; then
        files=$((files+1))
    elif [ -d "$i" ]; then
        dirs=$((dirs+1))
    fi
done < ls.txt
echo "$((files-1)),${dirs}"
```

Sub-Section Number :

5

Sub-Section Id :

640653107683

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 249 Question Id : 640653737531 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

```
$ start=5; end=8; echo {$start..$end}
```

Above commands were executed in Bash shell. Which of the following represents the output of the above commands.

Options :

6406532468346. ✓ {5..8}

6406532468347. ✗ 5 6 7 8

5
6
7
8

6406532468348. ✘

6406532468349. ✘ None of these

Question Number : 250 Question Id : 640653737532 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=test
$ b=10
$ c=$((a + b))
$ d=$((a + c))
$ echo $d
```

What will be the value of `d` at the end of execution?

Options :

6406532468350. ✘ 10

6406532468351. ✓ 20

6406532468352. ✘ test1010

6406532468353. ✘ will result in error

Question Number : 251 Question Id : 640653737540 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

```
192.168.1.1 -- [22/Jan/2024:10:30:45 +0000] "GET /page1 HTTP/1.1" 200 1234
192.168.1.2 -- [22/Jan/2024:10:31:15 +0000] "GET /page2 HTTP/1.1" 404 5678
192.168.1.1 -- [22/Jan/2024:10:32:30 +0000] "POST /page1 HTTP/1.1" 200 9876
192.168.1.3 -- [22/Jan/2024:10:33:45 +0000] "GET /page3 HTTP/1.1" 200 4321
192.168.1.2 -- [22/Jan/2024:10:34:00 +0000] "GET /page1 HTTP/1.1" 200 8765
```

A sample web access log file of a web server is shown above. If the following command is run on the access log what will it return?

```
$ grep -oE '\b([0-9]{1,3}\.){3}[0-9]{1,3}\b' web_access.log | sort | uniq -c
```

Hint:

Uniq with -c flag:

- * -c, --count
prefix lines by the number of occurrences

Options :

6406532468379. ✘ Sort the log as per the first column entry

6406532468380. ✘ Sort the log as per the first column entry and show uniq entries in the log

6406532468381. ✘ Sort the log as per the first column entry and show uniq entries in the log with it's count in the output

6406532468382. ✓ sort the log as per first column entry and show the unique entries in the log with the output showing only the count of uniq entries in first column with the ip addresses as a first column from the log file

Sub-Section Number :	6
Sub-Section Id :	640653107684
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653737535 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 : (252 to 254)

Question Label : Comprehension

Following is a part of information obtained upon running `ls -la` command in a directory.
Based upon the given information answer the subquestions.

```
drwxr-xr-x 16 root root      3640 Jan 16 19:38 .
drwxr-xr-x 25 root root      4096 Jan 16 19:33 ..
crw-r--r--  1 root root     10, 235 Jan 16 19:38 autofs
drwxr-xr-x  2 root root      620 Jan 16 19:38 block
drwxr-xr-x  2 root root      140 Jan 16 19:37 bsg
crw-rw----  1 root disk    10, 234 Jan 16 19:38 btrfs-control
drwxr-xr-x  3 root root      60 Jan 16 19:33 bus
drwxr-xr-x  2 root root     2840 Jan 16 19:38 char
crw--w----  1 root tty      5,   1 Jan 17 10:53 console
lrwxrwxrwx  1 root root      11 Jan 16 19:36 core -> /proc/kcore
crw-----  1 root root    10, 125 Jan 16 19:38 cpu_dma_latency
crw-----  1 root root    10, 203 Jan 16 19:38 cuse
drwxr-xr-x  5 root root      100 Jan 16 19:36 disk
drwxr-xr-x  3 root root      100 Jan 16 19:36 dri
crw-rw-rw-  1 root root    10, 127 Jan 16 19:38 dxg
lrwxrwxrwx  1 root root      13 Jan 16 19:33 fd -> /proc/self/fd
```

Sub questions

Question Number : 252 Question Id : 640653737536 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

How many soft links are present in the list?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 253 **Question Id :** 640653737537 **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

Assume that each directory has 2 hard links (one for the current working directory and another from its parent directory) and a link each for the sub-directory's parent directory. How many subdirectories are present in the current working directory?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

14

Question Number : 254 **Question Id :** 640653737538 **Question Type :** MSQ Is Question

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

Correct Marks : 6 **Max. Selectable Options :** 0

Question Label : Multiple Select Question

From the given information, which of the following types are present in the list?

Options :

6406532468365. ✘ regular file

6406532468366. ✓ directory

6406532468367. ✘ hard links

6406532468368. ✓ soft/symbolic links

6406532468369. ✓ character files

6406532468370. ✘ block files

6406532468371. ✘ named pipe files

6406532468372. ✘ socket files

Sub-Section Number : 7

Sub-Section Id : 640653107685

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 255 Question Id : 640653737542 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

Assuming the file myfile.txt has 10 lines, what will be the output from the following script?

```
#!/bin/bash
c=0
while read -r line; do
    c=$((c+1))
    if [ "$c" -eq 5 ]; then
        break
    fi
done < myfile.txt
echo $c
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5