

Indian Institute of Technology, Madras - Centre for Continuing Education

Notations :

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

Question Paper Name :

IIT M FOUNDATION QUIZ2 EXAM QPB1 10
July 2022

Subject Name :

2022 July: IIT M FOUNDATION QUIZ2 EXAM
QPB1

Creation Date :

2022-07-06 19:16:40

Duration :

120

Total Marks :

305

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 :	6406538800
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	305
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

Sem1 CT

Section Id :	64065322076
---------------------	-------------

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
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 :	64065350006
Question Shuffling Allowed :	No

Question Number : 1 Question Id : 640653349861 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: SEMESTER 1: COMPUTATIONAL THINKING](#)"

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 :

6406531161691. ✓ Yes

6406531161692. ✗ No

Question Number : 2 Question Id : 640653349862 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	CityTown	Mathematics	Physics	Chemistry	Total
0	Bhuvanesh	M	7 Nov	Erode	68	64	78	210
					■ ■ ■			

29 Naveen M 13 Oct Vellore 72 66 81 219

Words

SeqNo	Word	PartOfSpeech	LetterCount
0	It	Pronoun	2
		■ ■ ■	

64 cane. Noun 4

Library

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

29 Malgudi Days Narayan Fiction English 150 Indian Thought 1943

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

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

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

Options :

6406531161693. ✓ Useful Data has been mentioned above.

6406531161694. ✗ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :	2
Sub-Section Id :	64065350007
Question Shuffling Allowed :	Yes

Question Number : 3 Question Id : 640653349863 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

Let $D = \{ 'a' : \{ 'a' : 5, 'b' : 4 \}, 'b' : 1 \}$, then the value of $D['b']$ is 4.

Options :

6406531161695. ✘ TRUE

6406531161696. ✓ FALSE

Question Number : 4 Question Id : 640653349864 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

If 'x' is a key of dictionary D , then the value of $D['x']$ can be 'x'.

Options :

6406531161697. ✓ TRUE

6406531161698. ✘ FALSE

Sub-Section Number :	3
Sub-Section Id :	64065350008
Question Shuffling Allowed :	Yes

Question Number : 5 Question Id : 640653349865 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

If 'x' and 'y' are the only two keys of dictionary **D** and **L** = **keys(D)** then

Options :

6406531161699. ✘ **L** = ['x', 'y']

6406531161700. ✘ **L** = ['y', 'x']

6406531161701. ✓ **L** = either ['x', 'y'] or ['y', 'x']

Question Number : 6 Question Id : 640653349867 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 **timeList** be a list of pairs containing information about trains associated with a station **stn**.

Specifically, each element in this list is a pair: [*Arrival*, *Departure*] (pair of arrival and departure time). If the arrival or departure time is empty, it is represented as "None". What does **count** represent at the end of the execution of the following pseudocode?

```
1 count = 0
2 foreach x in timeList{
3     if(first(x) != "None" and last(x) != "None"){
4         count = count + 1
5     }
6 }
```

Options :

6406531161706. ✘ Number of trains for which **stn** is a starting station

6406531161707. ✘ Number of trains for which **stn** is an ending station

6406531161708. ✘ Number of trains for which **stn** is either a starting or an ending station

6406531161709. ✓ Number of trains for which **stn** is neither a starting nor an ending station

Sub-Section Number :

4

Sub-Section Id :

64065350009

Question Shuffling Allowed :

Yes

Question Number : 7 Question Id : 640653349868 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 word is said to be "Vowel Rich" if the word has at least three distinct vowels. Let **isRich** be a procedure that takes a row **X** from the "Words" table as input and returns True if the word in row **X** is a Vowel Rich otherwise returns False. Choose the correct code fragment to complete the procedure **isRich**.

```
1 Procedure isRich(X)
2     vDict = {}
3     i = 1, A = ''
4     while(i <= X.LetterCount){
5         A = ith letter in X.word
6         *****
7         ** Fill the code      **
8         ****
9         i = i + 1
10    }
11    if(length(keys(vDict)) >= 3){
12        return(True)
13    }
14    return(False)
15 End isRich
```

Options :

```
1 if(A is a vowel){
2     vDict[A] = True
3 }
```

6406531161710. ✓

```
1 if(A is a vowel){
2     vDict[A] = True
3 }
4 else{
5     vDict[A] = False
6 }
```

6406531161711. ✗

6406531161712. ✗

```
1 | if(A is a vowel){  
2 |     vDict[A] = vDict[A] + 1  
3 | }
```

```
1 | if(A is a vowel){  
2 |     vDict[A] = False  
3 | }  
4 | else{  
5 |     vDict[A] = True  
6 | }
```

6406531161713. *

Sub-Section Number : 5

Sub-Section Id : 64065350010

Question Shuffling Allowed : Yes

Question Number : 8 Question Id : 640653349870 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. Assume that the rows in Table 1 are arranged in the increasing order of sequence numbers from top to bottom. What will L represent at the end of the execution?

```
1 L = []
2 A = "None"
3 Read the first row X in Table 1
4 A = X.PartOfSpeech
5 Move X to Table 2
6 while(Table 1 has more rows){
7     Read the first row Y in Table 1
8     if(Y.PartOfSpeech == "Noun"){
9         if(A == "Adjective"){
10            L = L ++ [Y.word]
11        }
12    }
13    A = Y.PartOfSpeech
14    Move Y to Table 2
15 }
```

Options :

6406531161718. ✓ List of nouns that appear immediately after an adjective

6406531161719. ✗ List of adjectives that appear immediately after a noun

6406531161720. ✗ List of nouns that appear immediately before an adjective

6406531161721. ✗ List of adjectives that appear immediately before a noun

Question Number : 9 Question Id : 640653349872 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

Two trains are called "Opposite Trains" if they stop at the same set of stations but in the reverse order. `isOpposite(N1, N2)` returns True if trains with train numbers **N1** and **N2** are "Opposite Trains" and False otherwise.

trains is a dictionary with train number as key mapped to a list of stations which that train runs through. For example, `trains = { 12281: ["Bhubaneswar", "Balasore", "Adra", "Varanasi", "Kanpur", "New Delhi"],.....}`. In this example, the train with train number 12281 starts from Bhubaneswar and reaches New Delhi via Balasore, Adra, Varanasi, and Kanpur in the given order.

Choose the correct code fragment to complete the procedure.

```
1 Procedure isOpposite(N1, N2)
2     L1 = trains[N1]
3     L2 = trains[N2]
4     if(length(L1) != length(L2)){
5         return(False)
6     }
7     *****
8     * Fill the code      *
9     *****
10    if(L1 == []){
11        return(True)
12    }
13    else{
14        return(False)
15    }
16
17 End isOpposite
```

Options :

```
1 while(L1 != [] and first(L1) == last(L2)){
2     L1 = rest(L1)
3     L2 = init(L2)
4 }
```

6406531161726. ✓

```
1 while(L2 != [] and first(L2) == last(L1)){
2     L1 = rest(L1)
3     L2 = init(L2)
4 }
```

6406531161727. ✘

6406531161728. ✘

```
1 | while(L1 == [] and first(L1) == last(L2)){  
2 |     L1 = rest(L1)  
3 |     L2 = init(L2)  
4 | }
```

```
1 | while(L2 == [] and first(L2) == last(L1)){  
2 |     L1 = rest(L1)  
3 |     L2 = init(L2)  
4 | }
```

6406531161729. *

Question Number : 10 Question Id : 640653349873 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 given pseudocode is executed using the "Words" dataset. C stores the number of nouns which have at least one adjective adjacent to it. Choose the correct code fragment to complete the pseudocode.

```
1 | A = [], N = [], C = 0  
2 | while(Table 1 has more rows){  
3 |     Read the first row X in Table 1  
4 |     if(X.Partofspeech == "Adjective"){  
5 |         A = A ++ [X.SeqNo]  
6 |     }  
7 |     if(X.Partofspeech == "Noun"){  
8 |         N = N ++ [X.SeqNo]  
9 |     }  
10 |    Move X to Table 2  
11 | }  
12 | *****  
13 | * Fill the code *  
14 | *****
```

Options :

6406531161730. ✓

```
1 | foreach Y in N{  
2 |     if(member(A, Y - 1) or member(A, Y + 1)){  
3 |         C = C + 1  
4 |     }  
5 | }
```

```
1 | foreach Y in N{  
2 |     if(member(A, Y - 1) and member(A, Y + 1)){  
3 |         C = C + 1  
4 |     }  
5 | }
```

6406531161731. *

```
1 | foreach Y in A{  
2 |     if(member(N, Y - 1) or member(N, Y + 1)){  
3 |         C = C + 1  
4 |     }  
5 | }
```

6406531161732. *

```
1 | foreach Y in A{  
2 |     if(member(N, Y - 1) and member(N, Y + 1)){  
3 |         C = C + 1  
4 |     }  
5 | }
```

6406531161733. *

Sub-Section Number : 6

Sub-Section Id : 64065350011

Question Shuffling Allowed : Yes

Question Number : 11 Question Id : 640653349866 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Let **D** be a dictionary, then which of the following is(are) a valid value(s) of **D**? It is a Multiple Select Question (MSQ).

Options :

6406531161702. ✓ `{'x': {'y': 3, 'x': 2}, 'y': {'x': 3, 'y': 4}}`

6406531161703. ✗ `{'x': {'y': 3, 'y': 2}, 'y': {'x': 3, 'x': 2}}`

6406531161704. ✓ `{'x': {'x': 2}, 'y': {'y': 4}}`

6406531161705. ✓ `{'x': {3: 'y'}, 'y': {2: 'z'}}`

Sub-Section Number : 7

Sub-Section Id : 64065350012

Question Shuffling Allowed : Yes

Question Number : 12 Question Id : 640653349869 Question Type : MSQ Is Question

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

Correct Marks : 3

Question Label : Multiple Select Question

The following pseudocode is executed using the "Olympics" dataset. At the end of the execution, **medalDict** stores a dictionary with player's name as key mapped to the list of medal type associated with the player. Assume that every player has a distinct name. 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. It is a Multiple Select Question (MSQ).

```
1 medalDict = {}
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     if(isKey(medalDict, X.Name)){
5         medalDict[X.Name] = medalDict[X.Name] ++ [X.Medal]
6     }
7     else{
8         medalDict[X.Name] = [X.Medal]
9     }
10    Move X to Table 2
11 }
```

Options :

6406531161714. ❌ Line 1: Incorrect initialization of **medalDict**

6406531161715. ❌ Line 4: Incorrect conditional statement

Line 5: The current statement should be replaced by

```
1 | medalDict[X.Name] = medalDict[X.Name] ++ [[X.Medal]]
```

6406531161716. ❌

6406531161717. ✓ No mistakes

Sub-Section Number : 8

Sub-Section Id : 64065350013

Question Shuffling Allowed : Yes

Question Number : 13 Question Id : 640653349871 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the given procedure `isInorder`. Let `Loi` be a list of distinct positive integers. Choose the correct option(s) for which `isInOrder(Loi)` will return True. It is a Multiple Select Question (MSQ) .

```
1 Procedure isInOrder(L1)
2     A = True, L = L1
3     while(length(L) >= 2){
4         if(first(L) < first(rest(L))){
5             A = False
6         }
7         L = rest(L)
8     }
9
10    B = True, L = L1
11    while(length(L) >= 2){
12        if(first(L) > first(rest(L))){
13            B = False
14        }
15        L = rest(L)
16    }
17    return(not A and not B)
18 End isInOrder
```

Options :

6406531161722. ❌ Elements of `Loi` are in ascending order

6406531161723. ❌ Elements of `Loi` are in descending order

6406531161724. ❌ Elements of `Loi` are either in ascending or in descending order

6406531161725. ✓ Elements of `Loi` are neither in ascending nor in descending order

Question Number : 14 Question Id : 640653349874 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Let **medalDict** be a dictionary with player's name as a key mapped to the list of medals associated with the player from the "Olympics" dataset. For example **medalDict** = {"xyz": ["Silver", "Gold", "Gold"], }. In this example, the player xyz has won one Silver and two Gold medals.

At the end of the execution, **repeatCount(medalDict)** returns the number of players who have won at least one medal more than one time. But the code may have mistakes. Identify all such mistakes (if any). Assume that all statements not listed in the options below are free of errors. It is a Multiple Select Question (MSQ).

```
1 procedure repeatCount(medalDict)
2     count = 0
3     foreach player in keys(medalDict){
4         tempDict = {}
5         foreach medal in medalDict[player]{
6             if(iskey(tempDict, medal)){
7                 count = count + 1
8                 exitloop
9             }
10            else{
11                tempDict[medal] = True
12            }
13        }
14    }
15    return(count)
16 End repeatCount
```

Options :

6406531161734. ❌ Line 2: Incorrect initialization of **count**

6406531161735. ❌ Line 6: Incorrect conditional statement

6406531161736. ❌ Line 11: The current statement should be replaced by `count = 1`

6406531161737. ✓ No mistakes

Sub-Section Number : 9

Sub-Section Id : 64065350014

Question Shuffling Allowed : No

Question Id : 640653349875 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (15 to 16)

Question Label : Comprehension

Let **Z** be a row in the "Words" table. Use the procedure given below for answering the given subquestions.

```
1 Procedure updateDict(z, Dict)
2     i = 1, x = ''
3     while(i <= z.LetterCount){
4         x = ith letter of z.word
5         if(not isKey(Dict, x)){
6             Dict[x] = 1
7         }
8         else{
9             Dict[x] = Dict[x] + 1
10        }
11        i = i + 1
12    }
13    return(Dict)
14 End updateDict
```

Sub questions

Question Number : 15 Question Id : 640653349876 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Let **Z.Word** be "honesty". What will be the value of **alphaDict['e']** at the end of the execution of the following pseudocode using the procedure mentioned in the main question?

```
1 alphaDict = {'t':2, 'c':1, 'e':1}
2 alphaDict = updatedict(z, alphadict)
```

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 16 Question Id : 640653349877 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 and the procedure **updateDict** mentioned in the main data.

```
1 D = {}
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     D = updateDict(X, D)
5     Move X to Table 2
6 }
```

At the end of the execution of above pseudocode, let 'a' be a letter from the "Words" dataset, then **D['a']** will be

Options :

6406531161739. ✓ The frequency count of 'a' in the dataset.

6406531161740. ✗ Number of words in which 'a' is present.

6406531161741. ✗ Number of sentences in which 'a' is present.

6406531161742. ✗ List of words in which 'a' is present.

Sub-Section Number : 10

Sub-Section Id : 64065350015

Question Shuffling Allowed : No

Question Id : 640653349878 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (17 to 19)

Question Label : Comprehension

The following pseudocode is executed using the "Scores" dataset. At the end of the execution, **medalList** should store the list of sequence numbers of the students who have scored at least 200 total marks and have scored more than 80 at least in two subjects. Answer the given subquestions based on the pseudocode.

```
1 medalList = [], A = False, sCount = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     A = s200[X.seqNo]
5     sCount = nSub(X.SeqNo)
6     if(A and sCount >= 2){
7         medalList = medalList ++ [X.seqNo]
8     }
9     Move X to Table 2
10 }
```

Sub questions

Question Number : 17 Question Id : 640653349879 Question Type : MSQ Is Question

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

Correct Marks : 3

Question Label : Multiple Select Question

Which of the following statement(s) is(are) true about **s200** based on the given pseudocode? It is a Multiple Select Question (MSQ).

Options :

6406531161743. ❌ **s200** is a procedure which accepts the sequence number of a student and returns True if the student has scored at least 200 total marks otherwise returns False.

6406531161744. ✓ **s200** is a dictionary with sequence numbers of students mapped to True if the student has scored at least 200 total marks otherwise mapped to False.

6406531161745. ✘ **s200** is a dictionary with sequence numbers of students mapped to False if the student has scored at least 200 total marks otherwise mapped to True.

6406531161746. ✘ **s200** is a procedure which accepts the sequence number of a student and returns False if the student has scored at least 200 total marks otherwise returns True.

Question Number : 18 Question Id : 640653349880 Question Type : MSQ Is Question

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

Correct Marks : 3

Question Label : Multiple Select Question

Which of the following statement(s) is(are) true about **nSub** based on the given pseudocode? It is a Multiple Select Question (MSQ).

Options :

6406531161747. ✘ **nSub** is a procedure which accepts the sequence number of a student and returns True if the student has scored more than 80 marks at least in two subjects otherwise returns False.

6406531161748. ✓ **nSub** is a procedure which accepts the sequence number of a student and returns the number of subjects in which the student has scored more than 80 marks.

6406531161749. ✘ **nSub** is a dictionary with sequence numbers of students mapped to the number of subjects in which the student has scored more than 80 marks.

6406531161750. ✘ **nSub** is a procedure which accepts the sequence number of a student and returns False if the student has scored more than 80 marks at least in two subjects otherwise returns True.

Question Number : 19 Question Id : 640653349881 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 **M**, **P**, and **C** be the lists of the sequence numbers of the students who have scored more than 80 marks in Mathematics, Physics, and Chemistry respectively. If **n** is the sequence number of a student then choose the correct implementation of **nSub**?

Options :

```
1 Procedure nsub(n)
2     count = 0
3     if(member(M, n)){
4         count = count + 1
5     }
6     if(member(P, n)){
7         count = count + 1
8     }
9     if(member(C, n)){
10        count = count + 1
11    }
12    return(count)
13 End nsub
```

6406531161751. ✓

```
1 Procedure nsub(n)
2     count = 0
3     if(member(M, n)){
4         count = count + 1
5     }
6     if(member(P, n)){
7         count = count + 1
8     }
9     if(member(C, n)){
10        count = count + 1
11    }
12    if(count >= 2){
13        return(True)
14    }
15    return(False)
16 End nsub
```

6406531161752. ✘

6406531161753. ✘

```

1 nsub = []
2 while(Table 1 has more rows){
3     Read the first row x from Table 1
4     count = 0
5     if(member(M, x.SeqNo)){
6         count = count + 1
7     }
8     if(member(P, x.SeqNo)){
9         count = count + 1
10    }
11    if(member(C, x.SeqNo)){
12        count = count + 1
13    }
14    if(count >= 2){
15        nSub[SeqNo] = True
16    }
17    Move X to Table 2
18 }
```

```

1 nsub = []
2 while(Table 1 has more rows){
3     Read the first row x from Table 1
4     count = 0
5     if(member(M, x.SeqNo)){
6         count = count + 1
7     }
8     if(member(P, x.SeqNo)){
9         count = count + 1
10    }
11    if(member(C, x.SeqNo)){
12        count = count + 1
13    }
14    nSub[x.SeqNo] = count
15    Move X to Table 2
16 }
```

6406531161754. *

Sem1 English1

Section Id :

64065322077

Section Number :

2

Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	32
Number of Questions to be attempted :	32
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065350016
Question Shuffling Allowed :	No

Question Number : 20 Question Id : 640653349882 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: SEMESTER 1: ENGLISH 1"

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 :

6406531161755. ✓ Yes

6406531161756. ✗ No

Sub-Section Number :	2
Sub-Section Id :	64065350017
Question Shuffling Allowed :	No

Question Id : 640653349883 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (21 to 30)

Question Label : Comprehension

Read the following passage and answer the given subquestions:

I was nine years old, sitting stiffly at the dining table in my blue-and-white school uniform, and across from me sat my mother, who had come home from work at the university registry, elegant in her swishy skirt, smelling of Poison perfume and saying she wanted to watch me eat. I still do not know who told her that I was skipping lunch before school. Perhaps it was the houseboy, Fide. Perhaps it was my little brother Kenechukwu, who went to school in the morning and came home just before I left. The firm set of her mouth told me that I had no choice but to eat the *garri* and soup placed on the table. I made the sign of the cross. I plucked a morsel from the soft lump of *garri*. I lightly moulded it with my fingers. I dipped it into the soup. I swallowed. My throat itched. I disliked all the variants of this quintessential Nigerian food, whether made from corn, cassava, or yams, whether cooked or stirred or pounded in a mortar until they became a soft mash. It was jokingly called “swallow,” because one swallowed the morsels without chewing; it was easy to tell that a person chewing *garri* was a foreigner.

“Hurry up,” my mother said. “You will be late for school.” We had *garri* for lunch every day except Sunday, when we had rice and stew and sometimes a lush salad that contained everything from baked beans to boiled eggs and was served with dollops of creamy dressing. The soups gave some variety to lunch: the yellowish *egusi*, made of ground melon seeds and vegetables; *onugbu*, rich with dark-green bitterleaf; *okro*, with its sticky sauce; *nsala*, with beef chunks floating in a thin herb-filled broth. I disliked them all.

That afternoon, it was *egusi* soup. My mother’s eyes were steady behind her glasses. “Are you playing with that food or eating it?” she asked. I said I was eating. Finally, I finished and said, “Mummy, thank you,” as all well-brought-up Igbo children were supposed to after a meal. I had just stepped outside the carpeted dining area and onto the polished concrete floor of the passage when my stomach churned and recoiled and the *garri* and soup rushed up my throat.

—Chimamanda Ngozi Adichie, *Real Food*

Sub questions

Question Number : 21 Question Id : 640653349884 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 does the word morsel mean?

Options :

6406531161757. ✓ A small amount of food

6406531161758. ✗ A large amount of food

6406531161759. ✗ A spoonful of liquid food

6406531161760. ✗ A chunk of meat

Question Number : 22 Question Id : 640653349885 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 name of the houseboy the author refers to?

Options :

6406531161761. ✗ Kenechukwu

6406531161762. ✓ Fide

6406531161763. ✗ Egusi

6406531161764. ✗ Garri

Question Number : 23 Question Id : 640653349886 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 the non-foreign way of eating *garri*, according to the author?

Options :

6406531161765. ❌ Chewing it

6406531161766. ❌ Drinking it

6406531161767. ✓ Swallowing it

6406531161768. ❌ Snacking on it

Question Number : 24 Question Id : 640653349887 Question Type : MSQ Is Question

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

Correct Marks : 2

Question Label : Multiple Select Question

From the passage, what can you infer about the author's mother?

Options :

6406531161769. ❌ She is 45 years old.

6406531161770. ✓ She is Nigerian.

6406531161771. ✓ She works at a university.

6406531161772. ❌ She watches her daughter eat food every day.

6406531161773. ❌ She cooks *garri* every day.

Question Number : 25 Question Id : 640653349888 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 meaning of the word "quintessential"?

Options :

6406531161774. ❌ Something that is unavoidable

6406531161775. ✓ Representing the most typical example of something

6406531161776. ❌ Something that is needed on an immediate basis

6406531161777. ❌ Representing something that is long-lasting

Question Number : 26 Question Id : 640653349889 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

Garri can be cooked using which of the following base ingredients?

Options :

6406531161778. ❌ Corn, rice, or tapioca

6406531161779. ❌ Vegetables, yam, or rice

6406531161780. ❌ Corn, wheat, or cassava

6406531161781. ✓ Corn, cassava, or yam

Question Number : 27 Question Id : 640653349890 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

From the passage, what can you infer about what happened next to the narrator/protagonist?

Options :

6406531161782. ❌ She broke down into tears because she didn't want to have garri.

6406531161783. ✓ She threw up the food she had taken.

6406531161784. ❌ She silently cursed her fate and went to school.

6406531161785. ❌ She came back to confront her mother in an argument.

Question Number : 28 Question Id : 640653349891 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 Sunday lunch at the author's house would consist of:

Options :

6406531161786. ✘ Garri, a soup, and a salad
6406531161787. ✘ Rice and stew, and a salad
6406531161788. ✘ Garri, egusi, and a salad
6406531161789. ✓ Rice and stew, a salad, and soup

Question Number : 29 Question Id : 640653349892 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 was the after-meal custom supposed to be followed by all well-brought-up Igbo children?

Options :

6406531161790. ✓ Thank their mother
6406531161791. ✘ Run and play
6406531161792. ✘ Throw up
6406531161793. ✘ Sleep and dream

Question Number : 30 Question Id : 640653349893 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 this passage, 'swallow' indicates a bird.

Options :

6406531161794. ✘ TRUE
6406531161795. ✓ FALSE

Sub-Section Number : 3

Sub-Section Id : 64065350018

Question Shuffling Allowed : Yes

Question Number : 31 Question Id : 640653349894 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

John and Christina _____ getting married tomorrow.

Options :

6406531161796. ❌ Is

6406531161797. ✓ Are

Question Number : 32 Question Id : 640653349895 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

Context: A boy to his father after school.

"*Can we go eat dinner outside, please?*". This is a_____.

Options :

6406531161798. ❌ Command

6406531161799. ✓ Request

Question Number : 33 Question Id : 640653349896 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

'*He was very proud of himself.*' The predicate is ____.

Options :

6406531161800. ✓ Was very proud of himself

6406531161801. ❌ Proud of himself

Question Number : 34 Question Id : 640653349897 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

'We had a lovely time'. 'A lovely time' is a _____.

Options :

6406531161802. ✓ Noun phrase

6406531161803. ✗ Prepositional Phrase

Question Number : 35 Question Id : 640653349898 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

Context: A company's board of directors to a junior level employee.

'Send us the e-mail by tomorrow'. This is a _____.

Options :

6406531161804. ✓ Command

6406531161805. ✗ Request

Question Number : 36 Question Id : 640653349899 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

Surya's radio show and Jyothika's podcast ____ a lot of local music.

Options :

6406531161806. ✓ Feature

6406531161807. ✗ Features

Question Number : 37 Question Id : 640653349900 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following is not apparent in agreement in English?

Options :

6406531161808. ❌ Number

6406531161809. ❌ Person

6406531161810. ✓ Gender

6406531161811. ❌ All of these

Question Number : 38 Question Id : 640653349901 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

Amartya Sen is ____ economist from India.

Options :

6406531161812. ❌ A

6406531161813. ✓ An

6406531161814. ❌ The

Question Number : 39 Question Id : 640653349902 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

Our mayor, just like most other politicians, never _____ when to keep quiet.

Options :

6406531161815. ✘ Know

6406531161816. ✓ Knows

Question Number : 40 Question Id : 640653349903 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

More than fifty guests ____ expected.

Options :

6406531161817. ✘ Is

6406531161818. ✓ Are

Question Number : 41 Question Id : 640653349905 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

A direct object answers questions of ____.

Options :

6406531161823. ✘ What and where?

6406531161824. ✘ How and why?

6406531161825. ✘ When and whom?

6406531161826. ✓ What and whom?

Question Number : 42 Question Id : 640653349906 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

'Leela, along with her brothers, rides a cycle.' Is this sentence correct?

Options :

6406531161827. ✓ The given sentence is correct.

6406531161828. ❌ No, the given sentence is wrong. The correct sentence is: Leela, along with her brothers, ride a cycle.

Question Number : 43 Question Id : 640653349907 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

'I've been trying to come up with a fresh idea, but so far I've only drawn a blank.' What does 'to draw a blank' mean?

Options :

6406531161829. ✓ To be unsuccessful

6406531161830. ❌ To be stupid

6406531161831. ❌ To be empty

6406531161832. ❌ To be creative

Question Number : 44 Question Id : 640653349908 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

'You are entering a restricted zone'.

Options :

6406531161833. ✓ Tense marker is 'are'

6406531161834. ❌ Tense marker is contained in 'entering'

6406531161835. ❌ Tense marker is 'are entering'

Question Number : 45 Question Id : 640653349909 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

'I manage to travel for pleasure once in a blue moon.' What does "once in a blue moon" mean?

Options :

6406531161836. ❌ Once a month, when there is full moon

6406531161837. ❌ Twice a month, when there is no moon and when there is a full moon

6406531161838. ✓ Very rarely

6406531161839. ❌ Never

Question Number : 46 Question Id : 640653349910 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

Geeta is _____ by writing just a single university entrance exam.

Options :

6406531161840. ❌ Barking up the wrong tree

6406531161841. ❌ Taking the bull by the horns

6406531161842. ❌ Breaking the ice

6406531161843. ✓ Putting all her eggs in one basket

Question Number : 47 Question Id : 640653349911 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

You have been trying to reduce your weight, but have been unsuccessful so far. Now you are _____.

Options :

6406531161844. ✘ Out of loop

6406531161845. ✓ Out of shape

6406531161846. ✘ Out of touch

6406531161847. ✘ Out of mind

Question Number : 48 Question Id : 640653349912 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

Reema is living within her budget. She is_____.

Options :

6406531161848. ✘ Pulling herself together

6406531161849. ✘ Getting a taste of her own medicine

6406531161850. ✘ Between the devil and the deep sea

6406531161851. ✓ Cutting her coat according to her cloth

Question Number : 49 Question Id : 640653349913 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

In the words 'glee' and 'meat'

Options :

6406531161852. ✘ Glee begins with a voiced consonant, meat begins with a voiceless consonant

6406531161853. ✓ Both begin with voiced consonants

6406531161854. ✘ Both begin with voiceless consonants

6406531161855. ✘ Glee begins with a voiceless consonant, meat begins with a voiced consonant

Question Number : 50 Question Id : 640653349914 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

Out of shape, out of the loop, and out of touch all mean the same thing.

Options :

6406531161856. ✘ TRUE

6406531161857. ✓ FALSE

Question Number : 51 Question Id : 640653349915 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Identify whether the vowel sound (in bold) in the following word is short or long.

Pleasure

Options :

6406531161858. ✓ Short

6406531161859. ✘ Long

Question Number : 52 Question Id : 640653349916 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Identify whether the vowel sound (in bold) in the following word is monophthong or diphthong.

Touch

Options :

6406531161860. ✓ Monophthong

6406531161861. ✗ Diphthong

Question Number : 53 Question Id : 640653349917 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following is NOT a voiced sound?

Options :

6406531161862. ✗ /m/

6406531161863. ✗ /n/

6406531161864. ✗ /z/

6406531161865. ✓ /k/

Question Number : 54 Question Id : 640653349918 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Identify whether the consonant sound (in bold) in the following word is voiced or voiceless:

Logs

Options :

6406531161866. ✗ Voiceless

6406531161867. ✓ Voiced

Question Number : 55 Question Id : 640653349919 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the number of consonant sounds in the following word:

Number

Options :

6406531161868. ✘ 2

6406531161869. ✓ 3

6406531161870. ✘ 4

6406531161871. ✘ 5

Question Number : 56 Question Id : 640653349920 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the word with correctly marked stress from the following

Participation

Options :

6406531161872. ✘ 'Participation

6406531161873. ✘ Par'ticipation

6406531161874. ✘ Participa'tion

6406531161875. ✓ Partici'pation

Question Number : 57 Question Id : 640653349921 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the stressed syllable in the following word:

Identity

Options :

6406531161876. ✘ First syllable

6406531161877. ✓ Second syllable

6406531161878. ✗ Third syllable

6406531161879. ✗ Fourth syllable

Question Number : 58 Question Id : 640653349922 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the number of syllables in the following word:

Reimbursement

Options :

6406531161880. ✗ 3

6406531161881. ✗ 2

6406531161882. ✗ 5

6406531161883. ✓ 4

Question Number : 59 Question Id : 640653349923 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the word with correctly marked syllable stress:

Extend

Options :

6406531161884. ✗ E'xtend

6406531161885. ✗ 'Extend

6406531161886. ✓ Ex'tend

6406531161887. ✗ Ext'end

Sub-Section Number :

4

Sub-Section Id :

64065350019

Question Shuffling Allowed :

Yes

Question Number : 60 Question Id : 640653349904 Question Type : MSQ Is Question

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

Correct Marks : 1

Question Label : Multiple Select Question

"I'm quite tired now, shall we call it a day?" Which of the following most closely resembles (in meaning) the underlined phrase?

Options :

6406531161819. ✓ To wrap up

6406531161820. ✓ To stop doing whatever one has been doing

6406531161821. ✗ To start a new task

6406531161822. ✓ To wind down and go home

Sem1 Maths1

Section Id : 64065322078

Section Number : 3

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

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 :

64065350020

Question Shuffling Allowed :

No

Question Number : 61 Question Id : 640653349924 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: SEMESTER 1: MATHEMATICS FOR DATA SCIENCE 1"

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 :

6406531161888. ✓ Yes

6406531161889. ✗ No

Question Number : 62 Question Id : 640653349925 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.
- Notations:
 - \mathbb{R} = Set of real numbers
 - \mathbb{Q} = Set of rational numbers
 - \mathbb{Z} = Set of integers
 - \mathbb{N} = Set of natural numbers

Options :

6406531161890. ✓ Useful Data has been mentioned above

6406531161891. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 64065350021

Question Shuffling Allowed : Yes

Question Number : 63 Question Id : 640653349927 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 5

Question Label : Multiple Select Question

Let $f(x) = e^{a(x^2 - 7x + 6)}$, $a \in \mathbb{R}$ then choose the set of correct options.

Options :

6406531161893. ✓ $f(x)$ will be positive for $x \in (-10, 5)$ if $a > 0$.

6406531161894. ✓ $f(x)$ will be positive for $x \in (5, 10)$ if $a < 0$.

6406531161895. ✖ $f(x)$ is a one-to-one (injective) function.

6406531161896. ✖ If $a = 1$, then $f(x)$ will have two X -intercepts.

Sub-Section Number : 3

Sub-Section Id : 64065350022

Question Shuffling Allowed : Yes

Question Number : 64 Question Id : 640653349931 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 6

Question Label : Multiple Select Question

Choose the correct options from the following.

Options :

There exist two convergent sequences $\{a_n\}$ and $\{b_n\}$ which converge to two different non-zero real numbers, but $\{a_n + b_n\}$ converges to 0.
6406531161903. ✓

The sequence $a_n = \begin{cases} \frac{1}{n} & \text{if } n \text{ is odd} \\ 1 & \text{if } n \text{ is even} \end{cases}$ is convergent.
6406531161904. ✗

A sequence $\{a_n\}$ which is not increasing cannot have an increasing subsequence
6406531161905. ✗

6406531161906. ✓ The sequence $a_n = n$ has no convergent subsequence.

Sub-Section Number : 4

Sub-Section Id : 64065350023

Question Shuffling Allowed : Yes

Question Number : 65 Question Id : 640653349928 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 7

Question Label : Multiple Select Question

Choose the correct options from the following.

Options :

6406531161897. ✓ There is no asymptote for the function $\log(x^2 - x + 5)$

6406531161898. ✓ $f(x) = \frac{1}{x^2 + 2}$ is a bounded function.

6406531161899. ✗ The inverse of $f(x) = x^2 - 4$ is $g(x) = \pm\sqrt{(x + 4)}$

6406531161900. ✓

The domain of the function $f(x) = \frac{3}{9-x^2} + \log(x^3 - x)$ is $(-1, 0) \cup (1, 3) \cup (3, \infty)$.

Question Number : 66 Question Id : 640653349934 Question Type : MSQ Is Question

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

Correct Marks : 7

Question Label : Multiple Select Question

Choose the set of correct options.

Options :

6406531161909. ✖ The derivative of the function $f(x) = \sin(2 \cos 3x)$ is $f'(x) = 6 \sin(3x) \cos(2 \cos 3x)$.

6406531161910. ✓ If $h(x) = x^2 + \sin(\pi x) + e^x$ is the derivative of the function f then the value of $\lim_{m \rightarrow 0} \frac{f(2+m) - f(2)}{m}$ is $4 + e^2$.

6406531161911. ✓ The function $f(x) = \frac{x}{e^x}$ is differentiable on \mathbb{R} .

6406531161912. ✖ If product of two functions f and g is differentiable, then both f and g are differentiable.

Sub-Section Number : 5

Sub-Section Id : 64065350024

Question Shuffling Allowed : Yes

Question Number : 67 Question Id : 640653349930 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Consider two sequences $a_n = \frac{100n^2 + n - 10}{n^2 - 2n - 1}$ and $b_n = \frac{\sin(n)}{n}$. Find the limit of the sequence $\log_{10}(a_n) + \frac{a_n}{10} - 7b_n$.

NOTE: Enter a numeric value.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

12

Question Number : 68 **Question Id :** 640653349935 **Question Type :** SA **Calculator :** None

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

Correct Marks : 3

Question Label : Short Answer Question

Let f be a differentiable function such that $f'(3) = 2$ and $f(3) = -7$. If $y = ax + b$ denotes the tangent of the function f at $x = 3$, then find 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 :

-11

Sub-Section Number : 6

Sub-Section Id : 64065350025

Question Shuffling Allowed : Yes

Question Number : 69 **Question Id :** 640653349926 **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

On an average, a video lecture in our online degree course has 200 views on the same day that it is posted. It is verified that the total number of views increases exponentially according to the function $y = 200 \times 5^{0.15t}$, where t represents the number of days since the video was posted ($t = 0$ on the day of posting the video). How many days does it take for 25000 people to view the video?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

20

Sub-Section Number : 7

Sub-Section Id : 64065350026

Question Shuffling Allowed : Yes

Question Number : 70 Question Id : 640653349929 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

If a is the number of solutions of the equation $x^{\left(\frac{3}{4}(\log_2 x)^2 + \log_2 x - \frac{5}{4}\right)} = \sqrt{2}$, then the value of a is

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 71 Question Id : 640653349932 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

Consider the function

$$f(x) = \begin{cases} \frac{3x}{(x+2)^2} & x \leq -1 \\ 2x-5 & -1 < x \leq 1 \\ \frac{-8}{x+1} & x > 1. \end{cases}$$

Find the total number of points in $(-2, \infty)$ at which $f(x)$ is not continuous.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 72 Question Id : 640653349933 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

Consider a function defined as,

$$f(x) = \begin{cases} x^3 + 5x + 1 & x \leq 0 \\ m \sin(x) + n \cos(x) & x > 0. \end{cases}$$

If f is differentiable at $x = 0$, then the value of $m + n$ is

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sem1 Statistics1

Section Id :	64065322079
Section Number :	4
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
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 :	64065350027
Question Shuffling Allowed :	No

Question Number : 73 Question Id : 640653349936 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

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 :

6406531161914. ✓ Yes

6406531161915. ✗ No

Sub-Section Number : 2

Sub-Section Id : 64065350028

Question Shuffling Allowed : Yes

Question Number : 74 Question Id : 640653349937 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 has to choose a t-shirt for his outfit from a collection of 6 yellow t-shirts, 2 black t-shirts and 4 blue t-shirts. If a t-shirt is chosen randomly, then what is the chance that a black or a blue t-shirt is chosen by Ram for his outfit ?

Options :

6406531161916. ✗ $\frac{1}{6}$

6406531161917. ✓ $\frac{1}{2}$

6406531161918. ✗ $\frac{1}{3}$

6406531161919. ✗ $\frac{2}{3}$

Question Number : 75 Question Id : 640653349953 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

Mean and population variance of the dataset x_1, x_2, \dots, x_{10} are 19 and 49 respectively. If the value of $\sum_{i=6}^{10} x_i^2$ is 1900, then what is the value of $\sum_{i=1}^5 x_i^2$?

Options :

6406531161958. ✘ 4100

6406531161959. ✘ 1900

6406531161960. ✘ 1759

6406531161961. ✓ 2200

Question Number : 76 Question Id : 640653349955 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

A fair die is thrown twice independently. What is the probability of getting two numbers whose product is odd?

Options :

6406531161966. ✘ $\frac{3}{4}$

6406531161967. ✘ $\frac{1}{2}$

6406531161968. ✓ $\frac{1}{4}$

6406531161969. ✘ $\frac{2}{9}$

Sub-Section Number :	3
Sub-Section Id :	64065350029
Question Shuffling Allowed :	No

Question Id : 640653349938 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (77 to 78)

Question Label : Comprehension

In a hospital, 40% of the patients are male. It is known that 15% of male patients are suffering from cancer and 10% of female patients are suffering from cancer. If a patient is selected randomly, then based on the given information, answer the subquestions.

Sub questions

Question Number : 77 Question Id : 640653349939 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What is the probability that the selected patient is suffering from cancer? (Enter the answer correct to 2 decimal accuracy)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.09 to 0.15

Question Number : 78 Question Id : 640653349940 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

If the selected patient is suffering from cancer, then what is the probability that the patient is a female? (Enter the answer correct to 2 decimal accuracy)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.47 to 0.53

Sub-Section Number : 4

Sub-Section Id : 64065350030

Question Shuffling Allowed : No

Question Id : 64065349941 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (79 to 80)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 79 Question Id : 64065349942 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

A boy went to a bakery shop to purchase chocolates. If there are 5 dark chocolates and 3 milk chocolates, of which two are to be purchased by him, then in how many ways can it be done such that both of the purchased ones are either dark chocolate or the milk chocolate?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

13

Question Number : 80 Question Id : 640653349943 Question Type : MSQ Is Question

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

Correct Marks : 0

Question Label : Multiple Select Question

Select the steps from the following options, that you will use for the selection of chocolates to be purchased.

Note: This question is optional. We will check your answer to this question if you make a mistake in the previous one.

Options :

6406531161923. ✓ Selection of chocolates will occur simultaneously.

6406531161924. ✗ Selection of chocolates will not occur simultaneously.

6406531161925. ✗ With replacement.

6406531161926. ✓ Without replacement.

6406531161927. ✗ Order matters.

6406531161928. ✓ Order does not matter.

6406531161929. ✗ Permutation is used.

6406531161930. ✓ Combination is used.

Sub-Section Number : 5

Sub-Section Id : 64065350031

Question Shuffling Allowed : No

Question Id : 640653349944 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (81 to 82)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 81 Question Id : 640653349945 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 numbers can be formed using the digits 0, 1, 3, 5, 7, 9 (without repetition), such that the number formed is greater than 20,000?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1080

Question Number : 82 Question Id : 640653349946 Question Type : MSQ Is Question

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

Correct Marks : 0

Question Label : Multiple Select Question

Select the steps from the following options, that you will use to form the numbers greater than 20,000 using the given digits.

Note: This question is optional. We will check your answer to this question if you make a mistake in the previous one.

Options :

6406531161932. ✓ Selection of digits will occur simultaneously.
6406531161933. ✗ Selection of digits will not occur simultaneously
6406531161934. ✗ With replacement.
6406531161935. ✓ Without replacement.
6406531161936. ✓ Order matters.
6406531161937. ✗ Order does not matter.
6406531161938. ✓ Permutation is used.
6406531161939. ✗ Combination is used.

Question Id : 640653349947 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (83 to 84)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 83 Question Id : 640653349948 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

In a school, there are 3 students in section-A, 4 students in section-B and 5 students in section-C.

Find the number of ways, in which 8 students can be selected such that it include at least 2 students from each section and at most 5 students from the total 7 students in section-A and B.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 84 Question Id : 640653349949 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Select Question

Select the steps from the following options, that you will use for selection of students from the given three sections.

Note: This question is optional. We will check your answer to this question if you make a mistake in the previous one.

Options :

6406531161941. ✓ Selection of students will occur simultaneously

6406531161942. ✗ Selection of students will not occur simultaneously.

6406531161943. ✗ With replacement.

6406531161944. ✓ Without replacement.

6406531161945. ✗ Order matters.

6406531161946. ✓ Order does not matter.

6406531161947. ✗ Permutation is used.

6406531161948. ✓ Combination is used.

Sub-Section Number : 6

Sub-Section Id : 64065350032

Question Shuffling Allowed : No

Question Id : 640653349950 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (85 to 86)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 85 Question Id : 640653349951 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

In how many ways a necklace of 6 beads can be formed using 8 beads of different colour?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1680

Question Number : 86 Question Id : 640653349952 Question Type : MSQ Is Question

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

Correct Marks : 0

Question Label : Multiple Select Question

Select the steps from the following options, that you will use to form a necklace after choosing 6 beads from 8 beads.

Note: This question is optional. We will check your answer to this question if you make a mistake in the previous one.

Options :

6406531161950. ✓ Selection of beads will occur simultaneously.

6406531161951. ✗ Selection of beads will not occur simultaneously.

6406531161952. ✗ With replacement.

6406531161953. ✓ Without replacement.

6406531161954. ✓ Order matters.

6406531161955. ❌ Order does not matter.

6406531161956. ✓ Permutation is used.

6406531161957. ❌ Combination is used.

Sub-Section Number : 7

Sub-Section Id : 64065350033

Question Shuffling Allowed : Yes

Question Number : 87 Question Id : 640653349954 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

If an analyst wants to categorize the satisfaction level of a ride as “not happy, happy, very happy” which is serviced by a transport company, then which scale of measurement is suitable for the satisfaction level?

Options :

6406531161962. ❌ Nominal

6406531161963. ✓ Ordinal

6406531161964. ❌ Interval

6406531161965. ❌ None

Sub-Section Number : 8

Sub-Section Id : 64065350034

Question Shuffling Allowed : Yes

Question Number : 88 Question Id : 640653349956 Question Type : MSQ Is Question

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

Correct Marks : 3

Question Label : Multiple Select Question

Which of the following statements is/are incorrect?

Options :

6406531161970. ✓ Number of road accidents in a month is a numeric and continuous variable.
6406531161971. ✗ Age of a student (in years) in a class is a numeric and continuous variable.
6406531161972. ✗ Number of languages spoken by an individual is a numeric and discrete variable.
6406531161973. ✓ Speed of a car is a numeric and discrete variable.

Sem2 English2

Section Id :	64065322080
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	33
Number of Questions to be attempted :	33
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065350035
Question Shuffling Allowed :	No

Question Number : 89 Question Id : 640653349957 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

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 :

6406531161974. ✓ Yes

6406531161975. ✗ No

Sub-Section Number : 2

Sub-Section Id : 64065350036

Question Shuffling Allowed : No

Question Id : 640653349958 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (90 to 94)

Question Label : Comprehension

Read the conversation between Mahesh and Isha and answer given subquestions:

Mahesh: Isha, a bunch of us are probably going to ditch the mess and go for pizza tonight. If you're free, you can meet us at the east gate at seven.

Isha: I'd love to Mahesh, but I have tuition classes tonight.

Mahesh: Tuition? I can't imagine you needing help with a class.

Isha: The tuition I'm talking about is tutoring I'm doing for someone else—though, now that you mention it, physics has been giving me more problems than usual this semester.

Mahesh: I find that hard to believe. Uh, so are you tutoring one of the juniors, or something?

Isha: Actually, no, I go out of campus to tutor a few students at the Perambur Government High

School.

Mahesh: High school kids? Wow. In maths or something?

Isha: Right. You've probably read about this in the paper, but the city's trying to raise the standards for its maths classes. The problem is, a lot of the kids are behind when they get to junior college.

Mahesh: So you help them catch up?

Isha: Basically. I have three students for forty-five minutes each on Wednesday night. So I'm there from 6:00 to 8:30 or so.

Mahesh: Isn't that late for kids to be still at school?

Isha: Well, they'd be doing homework at that hour if they were home, anyway. The thing is, most of the tutors are students here at the university, so our classes aren't over until late afternoon. And the education department likes us. We're good at what we do, but we volunteer, so the program doesn't cost a lot beyond, you know, the electricity to keep the high school open at night.

Mahesh: Can you afford to take that much time away from your own studying?

Isha: Some weeks it's kind of hard, but, I mean, when I start my PhD, I'm going to have to start teaching physics to students as a professor's assistant, anyway. I may as well get used to teaching with easier material and just one student at a time.

Mahesh: And it must be nice to help people.

Isha: Definitely. That goes without saying. Forty-five minutes a week isn't much time, but all three of my students have improved in the months we've worked together. It's really inspiring.

Mahesh: Cool.

Isha: So, anyway, sorry about dinner. It sounds like fun, and if it were any other night—

Mahesh: Hey, I understand. Have fun, and I guess I'll see you in class tomorrow morning.

Sub questions

Question Number : 90 Question Id : 640653349959 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 Isha going to spend the evening doing?

Options :

6406531161976. ✘ Catching up on her maths homework

6406531161977. ✘ Having dinner with the man

6406531161978. ✘ Seeing a tutor about one of her classes

6406531161979. ✓ Helping high school students with their studies

Question Number : 91 Question Id : 640653349960 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

Why has the city started the tutoring program?

Options :

6406531161980. ✓ It wants to raise the maths level of the students.

6406531161981. ✘ It has received extra funding.

6406531161982. ✘ The high school building could be used at night.

6406531161983. ✘ Some university students suggested it.

Question Number : 92 Question Id : 640653349961 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 does the education department like about the tutors?

Options :

6406531161984. ❌ Most of them have taught students before.

6406531161985. ❌ The tutors are available in the afternoon.

6406531161986. ❌ Most of them went to the city high school.

6406531161987. ✓ The department doesn't have to pay them.

Question Number : 93 Question Id : 640653349962 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 does the woman think tutoring will prepare her for?

Options :

6406531161988. ❌ Her upcoming math tests

6406531161989. ✓ Her duties as a PhD student

6406531161990. ❌ Her next job as a professor

6406531161991. ❌ Her job at the City Department of Education

Question Number : 94 Question Id : 640653349963 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 Mahesh going to do that night?

Options :

6406531161992. ❌ He is tutoring

6406531161993. ❌ He is going out dancing

6406531161994. ✓ He is going out with friends for dinner

6406531161995. ✖ He is going to sleep

Question Id : 640653349964 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (95 to 99)

Question Label : Comprehension

Fill in the blanks with correct expressions of numbers/values/quantity for the given subquestions.

In 2012, it was estimated that there were more than 100,000 Africans living in Guangzhou, but 1) _____ of them stayed for a very short time. According to official figures, 2) _____ 430,000 (plus or minus 1000) arrivals and exits by nationals from African countries were recorded at the city's checkpoints in the first nine months of 2014. Guangzhou officials released official population figures for residents in 2014 due to popular fears of an Ebola outbreak in the city by way of the African community. According to the city, there were 16,000 Africans including North Africans residing in Guangzhou. Of these residents, 3) _____ 4,000 (or twenty-five 4) _____) were long-term residents, which is defined by city officials as living for longer than 6 months in the city. A 2014 article in the magazine *This Is Africa* noted a decrease in population, blaming increased immigration enforcement and foreign exchange difficulties. A September 2016 CNN article on the community claimed that upwards to thousands of African residents had left the city, 5) _____ in the previous 18 months. From 2014, the African population significantly declined, dropping to 10,344 residents by February 2017.

Sub questions

Question Number : 95 Question Id : 640653349965 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 answer for blank (1).

Options :

6406531161996. ✘ About

6406531161997. ✘ Approximately

6406531161998. ✘ Mostly

6406531161999. ✓ Most

6406531162000. ✘ Percent

Question Number : 96 Question Id : 640653349966 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 answer for blank (2).

Options :

6406531162001. ✘ Above

6406531162002. ✓ Approximately

6406531162003. ✘ Mostly

6406531162004. ✘ Most

6406531162005. ✘ Percent

Question Number : 97 Question Id : 640653349967 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 answer for blank (3).

Options :

6406531162006. ✓ About

6406531162007. ✘ Approximately

6406531162008. ✘ Mostly

6406531162009. ✘ Most

6406531162010. ✘ Percent

Question Number : 98 Question Id : 640653349968 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 answer for blank (4).

Options :

6406531162011. ❌ About

6406531162012. ❌ Approximately

6406531162013. ❌ Mostly

6406531162014. ❌ Most

6406531162015. ✓ Percent

Question Number : 99 Question Id : 640653349969 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 answer for blank (5).

Options :

6406531162016. ❌ About

6406531162017. ❌ Approximately

6406531162018. ✓ Mostly

6406531162019. ❌ Most

6406531162020. ❌ Percent

Sub-Section Number : 3

Sub-Section Id : 64065350037

Question Shuffling Allowed : Yes

Question Number : 100 Question Id : 640653349970 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

You are politely seeking permission to borrow a file from a workplace colleague. She is of the same level as you. In this context, you use _____.

Options :

6406531162021. ❌ Can

6406531162022. ❌ Must

6406531162023. ❌ Will

6406531162024. ✓ Could

Question Number : 101 Question Id : 640653349971 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

In the following sentence, fill in the blank with the most appropriate modal verb.

_____ you please do a recap for me?

Options :

6406531162025. ❌ Could

6406531162026. ❌ Would

6406531162027. ✓ Either could or would

6406531162028. ❌ None of these

Question Number : 102 Question Id : 640653349972 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

In the following sentence, fill in the blank with the most appropriate modal verb.

The secretary told the manager: "I think we _____ book the tickets now".

Options :

6406531162029. ✘ Would

6406531162030. ✘ Are

6406531162031. ✘ Will

6406531162032. ✓ Could

Question Number : 103 Question Id : 640653349973 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

In the following sentence, fill in the blank with the most appropriate modal verb.

If I had a job, the first thing I _____ do is retire.

Options :

6406531162033. ✓ Would

6406531162034. ✘ Will

6406531162035. ✘ Could

6406531162036. ✘ Can

Question Number : 104 Question Id : 640653349974 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

In the following sentence, what modal verb can replace the phrase in bold?

Am I **allowed to** take that road?

Options :

6406531162037. ✘ Can

6406531162038. ✘ Will

6406531162039. ✘ Could

6406531162040. ✓ Both Can and Could

Question Number : 105 Question Id : 640653349975 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

Fill in the blank with the most appropriate modal verb.

The caravan _____ be allowed to leave. (Stating obligation)

Options :

6406531162041. ✘ Can't

6406531162042. ✘ Won't

6406531162043. ✘ Wasn't

6406531162044. ✓ Mustn't

Question Number : 106 Question Id : 640653349976 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

Fill in the blank with the most appropriate modal verb.

_____ we take your leave? (Very formal setting, seeking permission)

Options :

6406531162045. ✓ May

6406531162046. ✘ Might

6406531162047. ✘ Should

6406531162048. ✘ Has

Question Number : 107 Question Id : 640653349977 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

Imagine that you are in a formal meeting with a client. In such a context, you are asking her whether she would like to review a file. From the options below, which would be the most appropriate way to ask this question?

Options :

6406531162049. ✘ Will you like to take a look at the file?

6406531162050. ✘ You will like to take a look at the file?

6406531162051. ✓ Would you like to take a look at the file?

6406531162052. ✘ Do you want this file?

Question Number : 108 Question Id : 640653349978 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

"If you multiply negative numbers, you get positive numbers." Which modal verb must be added to this sentence to make it complete?

Options :

6406531162053. ✘ Will

6406531162054. ✘ Would

6406531162055. ✓ Neither, this sentence is already complete

6406531162056. ✘ Both, they should be used together

Question Number : 109 Question Id : 640653349979 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

Fill in the blank with modal verbs 'can' or 'could' based on the context and intended meaning in the following sentence.

Vamsi ____ be late to work today.

Options :

6406531162057. ✘ Can

6406531162058. ✓ Could

Question Number : 110 Question Id : 640653349980 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

What does the modal auxiliary in the following sentence denote?

It could be a challenging lifestyle.

Options :

6406531162059. ✓ Possibility

6406531162060. ✘ Ability

6406531162061. ✘ Suggestion

6406531162062. ✘ Request

Question Number : 111 Question Id : 640653349981 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

What does the modal auxiliary in the following sentence denote?

You might have forgotten about the pain in my shoulder.

Options :

6406531162063. ✓ Possibility

6406531162064. ✘ Ability

6406531162065. ✘ Suggestion

6406531162066. ✘ Request

Question Number : 112 Question Id : 640653349982 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

Fill in the blank with the most appropriate modal verb according to the context.

If she had said yes, it _____ have empowered more people in power to follow.

Options :

6406531162067. ✘ Ought

6406531162068. ✘ Not

6406531162069. ✓ Would

6406531162070. ✘ Will

Question Number : 113 Question Id : 640653349983 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the modal auxiliary in this sentence.

This could be your can of water.

Options :

6406531162071. ✘ Can

6406531162072. ✘ Be

6406531162073. ✓ Could

6406531162074. ✘ Your

Question Number : 114 Question Id : 640653349984 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

'Could you please move?'

'Please' in this sentence is a modal auxiliary.

Options :

6406531162075. ✘ TRUE

6406531162076. ✓ FALSE

Question Number : 115 Question Id : 640653349985 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Which among these is an affirmative sentence?

Options :

6406531162077. ✓ India has a parliamentary style of democracy.

6406531162078. ✘ What is a nation-state?

6406531162079. ✘ You cannot swim faster than your brother.

6406531162080. ✘ He will not park our car.

Question Number : 116 Question Id : 640653349986 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the adjective(s) in the following sentence.

A sick Sharmila had to be provided intensive care.

Options :

6406531162081. ❌ Had, intensive

6406531162082. ❌ Sick, care

6406531162083. ❌ Sharmila, provided

6406531162084. ✓ Sick, intensive

Question Number : 117 Question Id : 640653349987 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

In the following sentence, identify the nature of the underlined adjective.

"The scariest villain I have seen comes in that novel."

Options :

6406531162085. ❌ Predicative

6406531162086. ✓ Attributive

6406531162087. ❌ Indicative

6406531162088. ❌ Adverbial

Question Number : 118 Question Id : 640653349988 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

"Raja travelled to Delhi." The interrogative form of this sentence is _____

Options :

6406531162089. ❌ Where does Raja travel to?

6406531162090. ❌ Who did Raja travel with?

6406531162091. ✓ Where did Raja travel to?

6406531162092. ❌ When did Raja travel?

Question Number : 119 Question Id : 640653349989 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 following options, identify the yes/no type question.

Options :

6406531162093. ❌ What time is it?

6406531162094. ❌ When does the show start?

6406531162095. ❌ Where are our team members?

6406531162096. ✓ May I take the subway?

Question Number : 120 Question Id : 640653349990 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

Convert the following sentence to active voice.

The defender was tackled by Ronaldo.

Options :

6406531162097. ❌ The defender was tackling Ronaldo.

6406531162098. ❌ Ronaldo was tackled by the defender.

6406531162099. ❌ Ronaldo is tackling the defender.

6406531162100. ✓ Ronaldo tackled the defender.

Question Number : 121 Question Id : 640653349991 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

"*Sajal takes the medal.*" In this sentence, the verb 'take' will change to _____ when converted to

passive voice.

Options :

6406531162101. ✘ Will take

6406531162102. ✓ Is taken

6406531162103. ✘ Was taken

6406531162104. ✘ Were taken

Question Number : 122 Question Id : 640653349992 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

India is a large country, _____?

Options :

6406531162105. ✘ Aren't they

6406531162106. ✓ Isn't it

6406531162107. ✘ Didn't it

6406531162108. ✘ Don't you

Question Number : 123 Question Id : 640653349993 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

Tina wants to go to Odisha tomorrow, _____?

Options :

6406531162109. ✘ Didn't she

6406531162110. ✘ Don't she

6406531162111. ✓ Doesn't she

6406531162112. ✘ Won't she

Question Number : 124 Question Id : 640653349994 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

"She gave him the letter." In this sentence, identify the direct object.

Options :

6406531162113. ❌ She

6406531162114. ✓ The letter

6406531162115. ❌ Him

6406531162116. ❌ Gave

Question Number : 125 Question Id : 640653349995 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

In the following sentence, fill in the blank with 'if' or 'whether'.

_____ they outrun you, they will be selected.

Options :

6406531162117. ✓ If

6406531162118. ❌ Whether

6406531162119. ❌ Either if or whether can be used

Question Number : 126 Question Id : 640653349996 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

In the following sentence, fill in the blank with 'if' or 'whether'.

The task was tough, but _____ it was impossible or not is anybody's guess.

Options :

6406531162120. ❌ Whether

6406531162121. ❌ If

6406531162122. ✓ Either *if* or *whether* can be used

Question Number : 127 Question Id : 640653349997 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

Fill in the blank with correct expression of numbers/values:

Tina had _____ seen him so angry.

Options :

6406531162123. ❌ Many

6406531162124. ✓ Seldom

6406531162125. ❌ Several

Question Number : 128 Question Id : 640653349998 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

Fill in the blank with correct expression of numbers/values:

The allocation of education expenditure is quite uneven in _____ countries.

Options :

6406531162126. ✓ Many

6406531162127. ❌ Seldom

6406531162128. ❌ Innumerable

Question Number : 129 Question Id : 640653349999 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

Fill in the blank with correct expression of numbers/values:

This extends the length of the investigation, which can take _____ months or years to complete.

Options :

6406531162129. ❌ Many

6406531162130. ❌ Seldom

6406531162131. ✓ Several

Sem2 Maths2

Section Id : 64065322081

Section Number : 6

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 8

Number of Questions to be attempted : 8

Section Marks : 25

Display Number Panel : Yes

Group All Questions : No

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

Maximum Instruction Time : 0

Sub-Section Number : 1

Sub-Section Id : 64065350038

Question Shuffling Allowed : No

Question Number : 130 Question Id : 640653350000 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: SEMESTER 2: MATHEMATICS FOR DATA SCIENCE 2"

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

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

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

Options :

6406531162132. ✓ Yes

6406531162133. ✗ No

Sub-Section Number : 2

Sub-Section Id : 64065350039

Question Shuffling Allowed : Yes

Question Number : 131 Question Id : 640653350001 Question Type : MSQ Is Question

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

Correct Marks : 2

Question Label : Multiple Select Question

Choose the correct options.

Options :

The row reduced echelon form of an $n \times n$ orthogonal matrix is

6406531162134. ✓ the identity matrix of order n .

Suppose that A is a non-zero $m \times n$ matrix such that the vectors in \mathbb{R}^m corresponding to the columns of A are mutually orthonormal with respect to the usual inner product of \mathbb{R}^m . Then $A^T A = I$, where I is the identity matrix of order n .

6406531162135. ✓

6406531162136. ✗ The trace of an $n \times n$ orthogonal matrix is 0.

Suppose A is a non-zero $m \times n$ matrix such that the vectors in \mathbb{R}^m corresponding to the columns of A are mutually orthogonal with respect to the usual inner product of \mathbb{R}^m . Then AA^T is a diagonal matrix of order m .

6406531162137. ✘

Question Number : 132 Question Id : 640653350010 Question Type : MSQ Is Question

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

Correct Marks : 2

Question Label : Multiple Select Question

An inner product on a vector space V is a function $\langle \cdot, \cdot \rangle : V \times V \rightarrow \mathbb{R}$ satisfying the following conditions:

Condition 1: $\langle v, v \rangle > 0$ for all $v \in V \setminus \{0\}$; $\langle v, v \rangle = 0$ if and only if $v = 0$.

Condition 2: $\langle v_1 + v_2, v_3 \rangle = \langle v_1, v_3 \rangle + \langle v_2, v_3 \rangle$.

Condition 3: $\langle v_1, v_2 \rangle = \langle v_2, v_1 \rangle$.

Condition 4: $\langle cv_1, v_2 \rangle = c\langle v_1, v_2 \rangle$

Let $V = \mathbb{R}^2$ and consider the function defined as:

$$\begin{aligned}\langle \cdot, \cdot \rangle : V \times V &\rightarrow \mathbb{R} \\ \langle (x_1, x_2), (y_1, y_2) \rangle &= x_1y_1 - x_1y_2 - x_2y_1 + x_2y_2.\end{aligned}$$

Which of the following are satisfied by the above function?

Options :

6406531162148. ✘ Condition 1 is satisfied.

6406531162149. ✓ Condition 2 is satisfied.

6406531162150. ✓ Condition 3 is satisfied.

6406531162151. ✓ Condition 4 is satisfied.

Question Number : 133 Question Id : 640653350012 Question Type : MSQ Is Question

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

Correct Marks : 2

Question Label : Multiple Select Question

Let U be a subspace of the vector space \mathbb{R}^3 and suppose $\{(1, 0, 1), (0, 1, 2)\}$ is a basis of U . Then which of the following subsets of \mathbb{R}^3 are appropriate candidates for the affine subspaces of \mathbb{R}^3 such that the corresponding vector subspace is U ?

Options :

6406531162156. ❌ $\{(x, y, z) \mid x + 2y + z = 2, x, y, z \in \mathbb{R}\}$

6406531162157. ❌ $\{(x, y, z) \mid x + 2y + z = 1, x, y, z \in \mathbb{R}\}$

6406531162158. ❌ $\{(x, y, z) \mid x - 2y - z = 0, x, y, z \in \mathbb{R}\}$

6406531162159. ❌ $\{(x, y, z) \mid x - 2y - z = 1, x, y, z \in \mathbb{R}\}$

6406531162160. ✓ $\{(x, y, z) \mid x + 2y - z = 2, x, y, z \in \mathbb{R}\}$

6406531162161. ✓ $\{(x, y, z) \mid x + 2y - z = 0, x, y, z \in \mathbb{R}\}$

Sub-Section Number : 3

Sub-Section Id : 64065350040

Question Shuffling Allowed : Yes

Question Number : 134 Question Id : 640653350009 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 us consider the following matrices:

$$A = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}, B = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}, C = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

Consider the following pairs of matrices :

- Pair I: A, B
- Pair II: A, C
- Pair III: B, C

Choose the correct option from the following.

Options :

6406531162144. ✓ Only the matrices in Pair I are similar matrices.

6406531162145. ✗ All the pairs consist of similar matrices.

6406531162146. ✗ Only the matrices in Pair III are similar matrices.

6406531162147. ✗ None of these pairs consist of similar matrices.

Sub-Section Number : 4

Sub-Section Id : 64065350041

Question Shuffling Allowed : Yes

Question Number : 135 Question Id : 640653350011 Question Type : MSQ Is Question

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

Correct Marks : 1

Question Label : Multiple Select Question

A norm on a vector space V is a function

$$\|\cdot\| : V \rightarrow \mathbb{R}$$

$$x \mapsto \|x\|$$

satisfying the following conditions:

Condition 1: $\|x + y\| \leq \|x\| + \|y\|$ for all $x, y \in V$.

Condition 2: $\|cx\| = |c|\|x\|$ for all $c \in \mathbb{R}$ and for all $x \in V$.

Condition 3: $\|x\| \geq 0$ for all $x \in V$; $\|x\|=0$ if and only if $x = 0$.

Consider a function $\|\cdot\| : \mathbb{R}^3 \rightarrow \mathbb{R}$ defined as

$$\|(x_1, x_2, x_3)\| = |x_1 + x_2 + x_3|$$

on the vector space \mathbb{R}^3 .

Which of the following are satisfied by the above function?

Options :

6406531162152. ✓ Condition 1 is satisfied.

6406531162153. ✓ Condition 2 is satisfied.

6406531162154. ✗ Condition 3 is satisfied.

6406531162155. ✗ None of these conditions are satisfied.

Sub-Section Number : 5

Sub-Section Id : 64065350042

Question Shuffling Allowed : No

Question Id : 640653350002 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (136 to 141)

Question Label : Comprehension

Let T be a linear transformation from \mathbb{R}^3 to \mathbb{R}^2 defined as

$T(x, y, z) = (x + y - z, y + z)$. Let A be the matrix representation of T with respect to the basis $\beta = \{(1, 1, 0), (0, 1, 1), (1, 0, 1)\}$ for the domain and the basis $\gamma = \{(1, 1), (1, 0)\}$ for the codomain.

$$A = \begin{bmatrix} a & b & c \\ d & e & f \end{bmatrix}$$

Let $S = \{(x, y, z) \mid x = mz, y = nz; x, y, z \in \mathbb{R}\}$ be the nullspace of the T . Answer the subquestions based on the given data.

Sub questions

Question Number : 136 Question Id : 640653350003 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 value of $d - a$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 137 Question Id : 640653350004 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 value of $e - b$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-4

Question Number : 138 **Question Id :** 640653350005 **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 value of $f - c$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-2

Question Number : 139 **Question Id :** 640653350006 **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 value of m ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 140 Question Id : 640653350007 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 value of n ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-1

Question Number : 141 Question Id : 640653350008 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 out the nullity of T .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number : 6

Sub-Section Id : 64065350043

Question Shuffling Allowed : No

Question Id : 640653350013 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (142 to 151)

Question Label : Comprehension

Suppose two publication houses (publication house A and publication house B) have organized a sale of their books. Both of them publish three types of books: novels, poetry collections and collections of short stories. The selling price (in (hundreds) ₹) of these three types of books in publication houses A and B are given as follows:

	Novels	Poetry collections	Collections of short stories
Publication house A	1	2	5
Publication house B	3	3	3

Table: Q2M2T1

The publication houses announced that in order to avail these special sale prices, customers have to buy equal number of novels, equal number of poetry collection, and equal number of collection of short stories from each of the publication houses (i.e., if a customer buys x number of novels, y number of poetry collections and z number of collection of short stories from Publication house A; then they have to buy exactly x number of novels, y number of poetry collections and z number of collection of short stories from Publication house B, to avail the benefit of the sale). So there is a map taking the tuple consisting of the number of books of each type bought (Novels, Poetry collections, Collection of short stories) to the prices paid by customers who availed the sale to each of the publication houses, which yields a linear transformation (T) from \mathbb{R}^3 to \mathbb{R}^2 (where the first and second co-ordinates of the image denotes the prices paid to publication house A and publication house B, respectively).

Answer the subquestions using the above information.

Sub questions

Question Number : 142 Question Id : 640653350014 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

If A is the matrix representation of T

with respect to the basis

$$\{(1, 0, 0), (0, 1, 0), (0, 0, 1)\}$$

for \mathbb{R}^3 and to the basis $\{(1, 0), (0, 1)\}$ for \mathbb{R}^2 , then A is

Options :

$$\begin{bmatrix} 1 & 3 \\ 2 & 3 \\ 5 & 3 \end{bmatrix}$$

6406531162162. *

$$\begin{bmatrix} 1 & 2 & 5 \\ 3 & 3 & 3 \end{bmatrix}$$

6406531162163. ✓

$$\begin{bmatrix} 1 & 3 & 5 \\ 2 & 3 & 3 \end{bmatrix}$$

6406531162164. *

$$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

6406531162165. *

Question Number : 143 Question Id : 640653350015 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

We apply the sequence of row operations on A , as follows:

- Step 1: $R_2 - 3R_1$
- Step 2: $-\frac{1}{3}R_2$
- Step 3: $R_1 - 2R_2$

Applying this row operations in the given order, the matrix B is derived. Let

$$B = \begin{bmatrix} a & b & c \\ d & e & f \end{bmatrix}$$

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 :

1

Question Number : 144 **Question Id :** 640653350016 **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

We apply the sequence of row operations on A , as follows:

- Step 1: $R_2 - 3R_1$
- Step 2: $-\frac{1}{3}R_2$
- Step 3: $R_1 - 2R_2$

Applying this row operations in the given order, the matrix B is derived. Let

$$B = \begin{bmatrix} a & b & c \\ d & e & f \end{bmatrix}$$

What is the value of d ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 145 **Question Id :** 640653350017 **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

We apply the sequence of row operations on A , as follows:

- Step 1: $R_2 - 3R_1$
- Step 2: $-\frac{1}{3}R_2$
- Step 3: $R_1 - 2R_2$

Applying this row operations in the given order, the matrix B is derived. Let

$$B = \begin{bmatrix} a & b & c \\ d & e & f \end{bmatrix}$$

What is the value of c ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-3

Question Number : 146 **Question Id :** 640653350018 **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 $\{(l, m, n)\}$ is a basis of $\ker(T)$, then

Find the value of l if n is 1.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 147 Question Id : 640653350019 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 $\{(l, m, n)\}$ is a basis of $\ker(T)$, then

Find the value of m if n is 1.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-4

Question Number : 148 Question Id : 640653350020 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

Let $\beta = \{v_1, v_2\}$ be the orthonormal basis of the row space obtained by using the GramSchmidt process (with respect to usual inner product) applied on the ordered basis of the row space given by the first row and the second row of the matrix A . If

$$v_2 = \frac{1}{\sqrt{195}}(b, c, d)$$

What is the value of $\|30v_1\|$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

30

Question Number : 149 Question Id : 640653350021 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

Let $\beta = \{v_1, v_2\}$ be the orthonormal basis of the row space obtained by using the GramSchmidt process (with respect to usual inner product) applied on the ordered basis of the row space given by the first row and the second row of the matrix A . If

$$v_2 = \frac{1}{\sqrt{195}}(b, c, d)$$

What is the value of b ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

11

Question Number : 150 Question Id : 640653350022 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

Let $\beta = \{v_1, v_2\}$ be the orthonormal basis of the row space obtained by using the GramSchmidt process (with respect to usual inner product) applied on the ordered basis of the row space given by the first row and the second row of the matrix A . If

$$v_2 = \frac{1}{\sqrt{195}}(b, c, d)$$

What is the value of c ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Question Number : 151 **Question Id :** 640653350023 **Question Type :** SA **Calculator :** None

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

Correct Marks : 1

Question Label : Short Answer Question

Let $\beta = \{v_1, v_2\}$ be the orthonormal basis of the row space obtained by using the GramSchmidt process (with respect to usual inner product) applied on the ordered basis of the row space given by the first row and the second row of the matrix A . If

$$v_2 = \frac{1}{\sqrt{195}}(b, c, d)$$

What is the value of d ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-5

Sem2 Statistics2

Section Id :	64065322082
Section Number :	7
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	40
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065350044
Question Shuffling Allowed :	No

Question Number : 152 Question Id : 640653350024 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

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 :

6406531162175. ✓ Yes

6406531162176. ✗ No

Question Number : 153 Question Id : 640653350025 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

Discrete random variables:

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

Continuous random variables:

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

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

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

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

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

3. **Weak Law of Large numbers:** Let $X_1, X_2, \dots, X_n \sim \text{iid } X$ with $E[X] = \mu, \text{Var}(X) = \sigma^2$.

Define sample mean $\bar{X} = \frac{X_1 + X_2 + \dots + X_n}{n}$. Then,

$$P(|\bar{X} - \mu| > \delta) \leq \frac{\sigma^2}{n\delta^2}$$

4. **Using CLT to approximate probability:** Let $X_1, X_2, \dots, X_n \sim \text{iid } X$ with $E[X] = \mu, \text{Var}(X) = \sigma^2$.

Define $Y = X_1 + X_2 + \dots + X_n$. Then,

$$\frac{Y - n\mu}{\sqrt{n}\sigma} \approx \text{Normal}(0, 1).$$

Options :

6406531162177. ✓ Useful Data has been mentioned above.

6406531162178. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :

2

Sub-Section Id :

64065350045

Question Shuffling Allowed :

Yes

Question Number : 154 Question Id : 640653350037 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 random variable X with the following PMF:

X	0	1	2	3
$p_X(x)$	1/8	1/4	1/8	1/2

Find the moment generating function of X.

Options :

6406531162193. ✘
$$M_X(\lambda) = \frac{1}{4}e^{-\lambda} + \frac{1}{8}e^{-2\lambda} + \frac{1}{2}e^{-3\lambda}$$

6406531162194. ✘
$$M_X(\lambda) = \frac{1}{8} + \frac{1}{4}e^{\lambda} + \frac{1}{8}e^{2\lambda} + \frac{1}{2}e^{3\lambda}$$

6406531162195. ✓
$$M_X(\lambda) = \frac{1}{8} + \frac{1}{4}e^{-\lambda} + \frac{1}{8}e^{-2\lambda} + \frac{1}{2}e^{-3\lambda}$$

6406531162196. ✘
$$M_X(\lambda) = \frac{1}{4}e^{\lambda} + \frac{1}{8}e^{2\lambda} + \frac{1}{2}e^{3\lambda}$$

Sub-Section Number : 3

Sub-Section Id : 64065350046

Question Shuffling Allowed : Yes

Question Number : 155 Question Id : 640653350052 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 $X_1, X_2, \dots, X_{50} \sim \text{i.i.d. Poisson}(2)$ and let $Y = \sum_{i=1}^{50} X_i$. Using Central Limit theorem, find the value of $P(Y > 50)$.

Options :

6406531162220. ✓ $1 - F_z(-5)$

6406531162221. ✗ $1 - F_z(5)$

6406531162222. ✗ $F_z(-0.5)$

6406531162223. ✗ $1 - F_z(-0.5)$

Sub-Section Number : 4

Sub-Section Id : 64065350047

Question Shuffling Allowed : Yes

Question Number : 156 **Question Id :** 640653350038 **Question Type :** MSQ Is Question

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

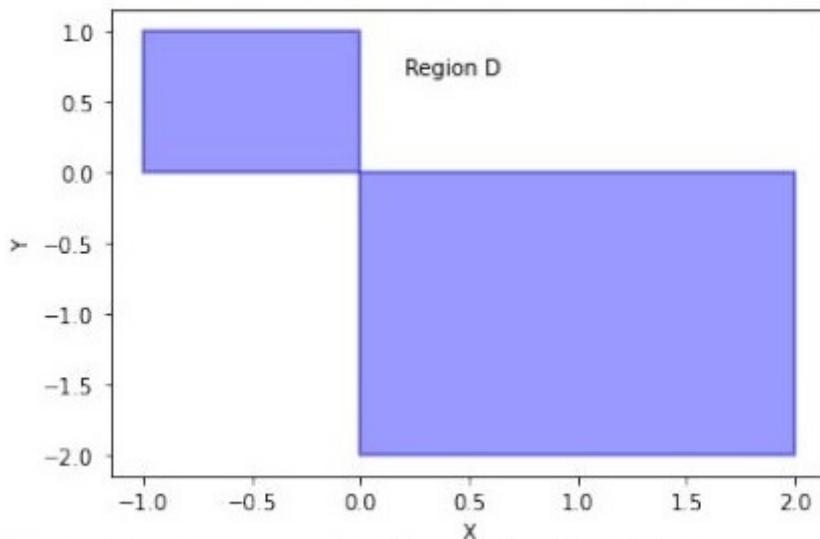
Time : 0

Correct Marks : 3

Question Label : Multiple Select Question

Suppose random variables X and Y are uniformly distributed over the region D , where

$$D = \{(x, y) : [0, 2] \times [0, -2] \cup [-1, 0] \times [0, 1]\}$$



Choose the correct options from the following:

Options :

$$f_{XY}(x, y) = \begin{cases} 4, & 0 < x < 2, -2 < y < 0 \\ 1, & -1 < x < 0, 0 < y < 1 \\ 0, & \text{otherwise} \end{cases}$$

6406531162197. ✘

$$f_{XY}(x, y) = \begin{cases} \frac{1}{5}, & x, y \in D \\ 0, & \text{otherwise} \end{cases}$$

6406531162198. ✓

6406531162199. ✓ $f_{Y|X=1}(-1) = 0.5$

6406531162200. ✘ $f_{Y|X=1}(-1) = 0$

6406531162201. ✘ $f_{Y|X=1}(-1) = 0.625$

Sub-Section Number : 5

Sub-Section Id : 64065350048

Question Shuffling Allowed : No

Question Id : 640653350030 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (157 to 159)

Question Label : Comprehension

Consider a sample 0, 1, 0, 1, 1, 1, 0, 1, 0, 1 from Bernoulli(0.5) distribution.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 157 Question Id : 640653350031 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

Compute empirical distribution of the sample.

Options :

6406531162182. ❌ $p(0) = 0.3, p(1) = 0.7$

6406531162183. ✓ $p(0) = 0.4, p(1) = 0.6$

6406531162184. ❌ $p(0) = 0.6, p(1) = 0.4$

6406531162185. ❌ $p(0) = 0.7, p(1) = 0.3$

Question Number : 158 Question Id : 640653350032 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

Compute distribution mean. 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 :

0.5

Question Number : 159 Question Id : 640653350033 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

Compute sample mean. 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 :

0.6

Question Id : 640653350034 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (160 to 161)

Question Label : Comprehension

Let X be a continuous random variable with PDF

$$f_X(x) = \begin{cases} 2/3, & 0 < x < 1 \\ 1/3, & 2 < x < 3 \\ 0, & \text{otherwise} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 160 Question Id : 640653350035 Question Type : MCQ Is Question

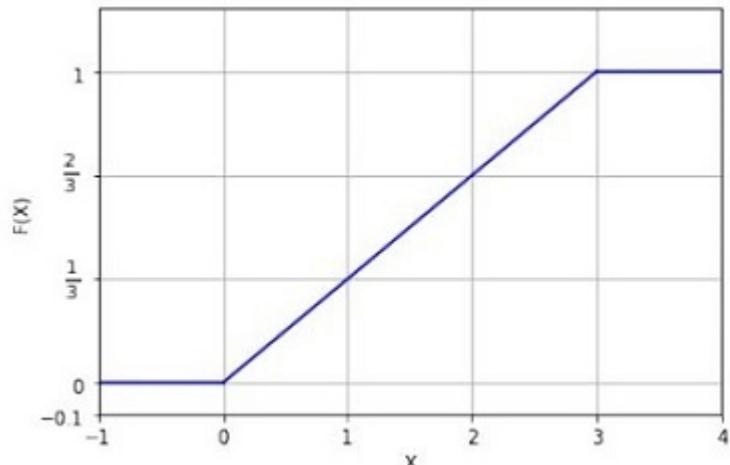
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

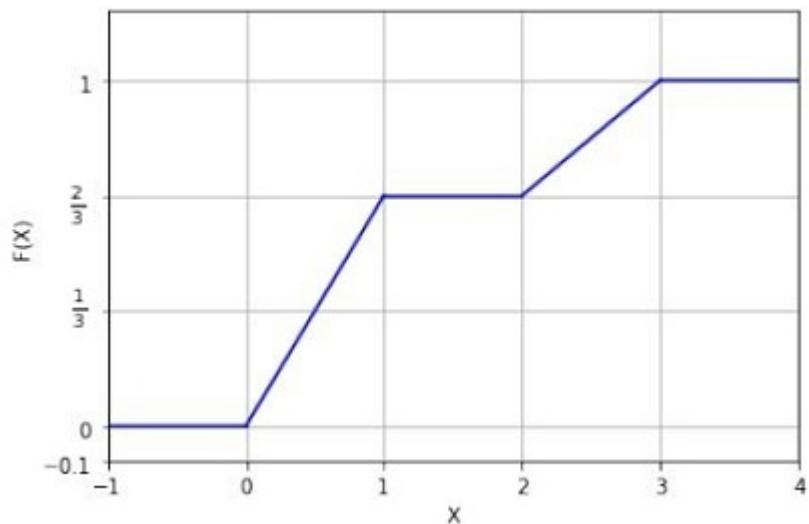
Correct Marks : 2

Question Label : Multiple Choice Question

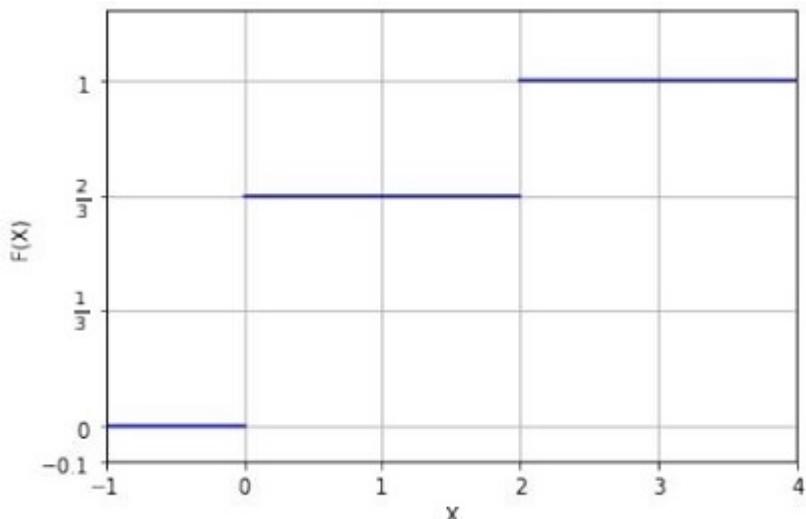
Which among the following represent the cumulative distribution function (CDF) of X?

Options :

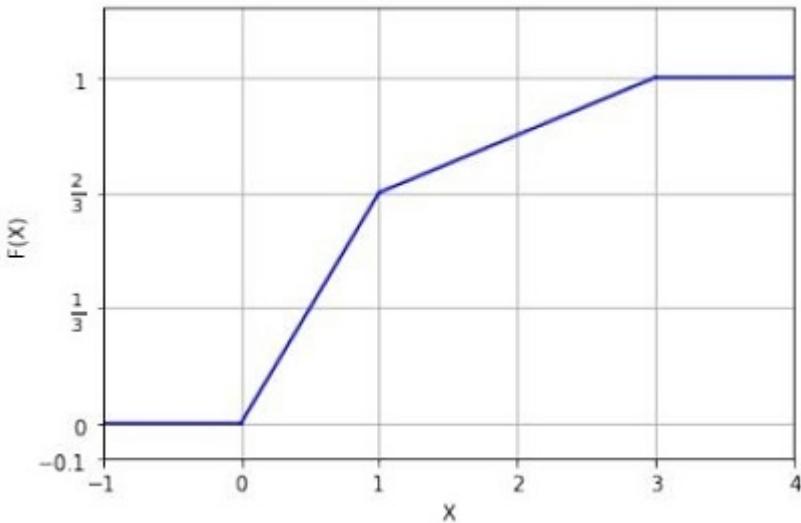
6406531162188. ✘



6406531162189. ✓



6406531162190. ✘



6406531162191. *

Question Number : 161 Question Id : 640653350036 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 $P(X \leq 2.5)$. 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 :

0.81 to 0.85

Sub-Section Number : 6

Sub-Section Id : 64065350049

Question Shuffling Allowed : No

Question Id : 640653350026 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (162 to 164)

Question Label : Comprehension

Let the random variables X and Y have the following joint density function:

$$f_{XY}(x, y) = \begin{cases} 1 & \text{for } 0 \leq x < 1, 0 \leq y < 1 \\ 0 & \text{otherwise} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 162 Question Id : 640653350027 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

Calculate $P\left(0 < X < \frac{1}{2}, \frac{1}{4} < Y < \frac{1}{2}\right)$.

Enter the answer correct to three decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.125

Question Number : 163 Question Id : 640653350028 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 $P\left(0 < X < \frac{1}{2}\right)$. 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 :

0.5

Question Number : 164 **Question Id :** 640653350029 **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 $P(X < 2Y)$. Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.75

Sub-Section Number : 7

Sub-Section Id : 64065350050

Question Shuffling Allowed : No

Question Id : 640653350046 **Question Type :** COMPREHENSION **Sub Question Shuffling**

Allowed : No **Group Comprehension Questions :** No **Calculator :** None **Response Time :** N.A

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

Question Numbers : (165 to 166)

Question Label : Comprehension

Consider a sample of i.i.d. random variables (X_1, X_2, \dots, X_n) , where each of the X 's follows Uniform($-0.5, 0.5$) distribution.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 165 Question Id : 640653350047 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

Compute the expected value and variance of sample mean,

$$\bar{X} = \frac{X_1 + \dots + X_n}{n}$$

Options :

6406531162210. ✘ $E[\bar{X}] = 0$ and $\text{Var}[\bar{X}] = 0$

6406531162211. ✘ $E[\bar{X}] = 0$ and $\text{Var}[\bar{X}] = \frac{1}{12}$

6406531162212. ✘ $E[\bar{X}] = \frac{1}{2}$ and $\text{Var}[\bar{X}] = \frac{1}{n}$

6406531162213. ✓ $E[\bar{X}] = 0$ and $\text{Var}[\bar{X}] = \frac{1}{12n}$

Question Number : 166 Question Id : 640653350048 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Find the minimum value of n such that probability that the sample mean, \bar{X} is within 0.2 of the distribution mean is at least 0.9 using Weak Law of Large numbers.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

21

Question Id : 640653350049 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (167 to 168)

Question Label : Comprehension

Let X be a continuous uniform random variable on $[0, 1]$ and $Y = \frac{1}{X}$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 167 Question Id : 640653350050 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 probability density function of Y .

Options :

$$f_Y(y) = 1 - \frac{1}{y}, \text{ for } 0 \leq y < \infty$$

6406531162215. *

$$f_Y(y) = 1 - \frac{1}{y}, \text{ for } 1 \leq y < \infty$$

6406531162216. ❌

$$f_Y(y) = \frac{1}{y^2}, \text{ for } 0 \leq y < \infty$$

6406531162217. ❌

$$f_Y(y) = \frac{1}{y^2}, \text{ for } 1 \leq y < \infty$$

6406531162218. ✓

Question Number : 168 Question Id : 640653350051 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 $P(Y \leq 2)$. 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 :

0.5

Sub-Section Number : 8

Sub-Section Id : 64065350051

Question Shuffling Allowed : No

Question Id : 640653350039 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (169 to 170)

Question Label : Comprehension

30% of the total players in IPL 2022 are uncapped (i.e., they have not played any international games) and 70% are capped (i.e., they have played at least 1 international game). Suppose the runs scored by the capped players is Normal(60, 25) and the runs scored by the uncapped players is Normal(55,36).

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 169 Question Id : 640653350040 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 distribution of runs of a randomly chosen player.

Options :

6406531162202. ❌
$$\frac{3}{25\sqrt{2\pi}} \exp\left(\frac{-(y-60)^2}{50}\right) + \frac{1}{15\sqrt{2\pi}} \exp\left(\frac{-(y-55)^2}{72}\right)$$

6406531162203. ✓
$$\frac{7}{50\sqrt{2\pi}} \exp\left(\frac{-(y-60)^2}{50}\right) + \frac{1}{20\sqrt{2\pi}} \exp\left(\frac{-(y-55)^2}{72}\right)$$

6406531162204. ❌
$$\frac{3}{25\sqrt{2\pi}} \exp\left(\frac{-(y-60)^2}{50}\right) + \frac{7}{15\sqrt{2\pi}} \exp\left(\frac{-(y-55)^2}{72}\right)$$

6406531162205. ❌
$$\frac{7}{25\sqrt{2\pi}} \exp\left(\frac{-(y-60)^2}{50}\right) + \frac{1}{15\sqrt{2\pi}} \exp\left(\frac{-(y-55)^2}{72}\right)$$

Question Number : 170 Question Id : 640653350041 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

If a randomly selected player scored 60 runs, what is the probability that the selected candidate is a capped player? 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 :

0.77 to 0.82

Question Id : 640653350042 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A

Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (171 to 173)

Question Label : Comprehension

Suppose the time to failure of device A is exponentially distributed with parameter α . Suppose the time to failure of device B is exponentially distributed with parameter β . Let X and Y denote the time to failure of Devices A and B , respectively. The joint pdf of X and Y is given by

$$f_{XY}(x, y) = \begin{cases} ke^{-(4x+5y)} & \text{if } x > 0, y > 0 \\ 0 & \text{otherwise} \end{cases}$$

Sub questions

Question Number : 171 Question Id : 640653350043 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 .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

20

Question Number : 172 Question Id : 640653350044 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 $\alpha + \beta$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

9

Question Number : 173 Question Id : 640653350045 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Find the probability that Device *B* will last longer when compared to Device *A*.

Enter the answer correct to two decimal places.

Hint: Use $\int_a^b e^{nx} dx = \frac{e^{nx}}{n} \Big|_a^b$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.42 to 0.46