Correct Marks : 1

Question Label : Multiple Choice Question

Reena wrote a letter. Here the complement is _____.

Options :

6406531926910. ✖ Wrote a letter

6406531926911. ✔ A letter

6406531926912. ✖ Reena wrote a letter

Sem2 Maths2

Section Id :	64065339027
Section Number :	7
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
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 :	64065382310
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 148 Question Id : 640653576944 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 II (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

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

Options :

6406531926913. ✔ YES

6406531926914. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065382311
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 149 Question Id : 640653576945 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Match the system of linear equations in Column A with their number of solutions in column B and their geometric representation in Column C.

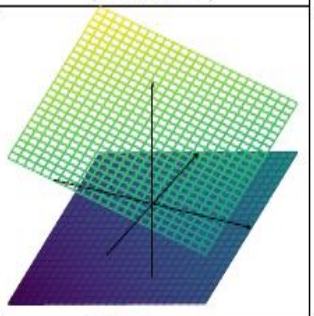
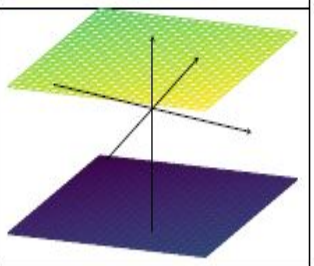
	System of linear equations (Column A)		Number of solutions (Column B)		Geometric representations (Column C)
i)	$x-2y-z=8, -x+2y+z=4$	a)	No solution	1)	
ii)	$x+y-z=3, x-y+z=3$	b)	Infinitely many solutions	2)	

Table: M2Q1:1

Choose the correct option from the following:

Options :

6406531926915. ✖ i) → b → 1, ii) → a → 2.

6406531926916. ✖ i) → a → 1, ii) → b → 2.

6406531926917. ✖ i) → b → 2, ii) → a → 1.

6406531926918. ✔ i) → a → 2, ii) → b → 1.

Sub-Section Number : 3

Sub-Section Id : 64065382312

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 150 Question Id : 640653576946 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following matrices satisfy $A^k = 0$ for some natural number k?

Options :

6406531926919. ✔ $\begin{bmatrix} 4 & -4 & 0 & 0 \\ 4 & -4 & 0 & 0 \\ 0 & 0 & 4 & -4 \\ 0 & 0 & 4 & -4 \end{bmatrix}$

6406531926920. ✔ $\begin{bmatrix} 0 & 3 & 2 & 1 \\ 0 & 0 & 2 & 2 \\ 0 & 0 & 0 & 3 \\ 0 & 0 & 0 & 0 \end{bmatrix}$

6406531926921. ✖ $\begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 \end{bmatrix}$

6406531926922. ✖ $\begin{bmatrix} -1 & 0 & 0 & 1 \\ 0 & -1 & 0 & 2 \\ 0 & 0 & -1 & 2 \\ 1 & 0 & 0 & 0 \end{bmatrix}$

Question Number : 151 Question Id : 640653576947 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following subsets of $\mathbb{R}^2$ is/are vector spaces with respect to usual addition and usual scalar multiplication?

Options :

6406531926923. ✔ $V_1 = \{(x, y) : 2x + 3y = 0\}$

6406531926924. ✔ $V_2 = \{(x, y) : y^2 = 0, x = 2y\}$

6406531926925. ✖ $V_3 = \{(x, y) : x = 1\}$

6406531926926. ✖ $V_4 = \{(x, y) : 2x + 3y - 1 = 0, x - y = 0\}$

Question Number : 152 Question Id : 640653576949 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Select the true statement(s).

Options :

6406531926928. ✔ Any subset of a linearly independent set is a linearly independent set.

6406531926929. ✔ Any superset of a spanning set is a spanning set.

6406531926930. ✖ Any subset of a basis is a basis.

6406531926931. ✖ Any superset of a subspace is a subspace.

Question Number : 153 Question Id : 640653576950 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the set $W = \{A \in M_n(\mathbb{R}) : \det(A^T) = 0\}$ with the usual addition and usual scalar multiplication of matrices. Which of the following is/are true?

Options :

6406531926932. ✖ W is closed under addition.

6406531926933. ✔ W is closed under scalar multiplication.

6406531926934. ✖ *W* is a vector space.

6406531926935. ✔ *W* is not a vector space.

Sub-Section Number : 4

Sub-Section Id : 64065382313

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 154 Question Id : 640653576954 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Let $A = \begin{pmatrix} 2022 & 2023 & 2024 \\ 2022 & 2021 & 2022 \\ 2022 & 2022 & 2022 \end{pmatrix}$. What is the determinant of $\frac{1}{2}A$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

505.5

Sub-Section Number : 5

Sub-Section Id : 64065382314

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 155 Question Id : 640653576948 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 the system of linear equations represented in the matrix form $Ax = b$, where $A = \begin{pmatrix} 1 & 1 & 3 \\ 1 & 2 & 4 \\ 1 & 3 & \alpha \end{pmatrix}$ and $b = \begin{pmatrix} 2 \\ 3 \\ \beta \end{pmatrix}$. What is the value of $\alpha + \beta$ if the above system has infinitely many solutions?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

9

Sub-Section Number :	6
Sub-Section Id :	64065382315
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653576951 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (156 to 157)

Question Label : Comprehension

What is the dimension of vector spaces for the given subquestions.

Sub questions

Question Number : 156 Question Id : 640653576952 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

$V_1 = \{(x, y, z) \in \mathbb{R}^3 : 2x + 3y = 0 = 2z + 3x\}$ with usual addition and scalar multiplication. _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 157 Question Id : 640653576953 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

$V_2 = \{A \in M_3(\mathbb{R}) : \text{sum of the diagonal entries of } A \text{ is } 0 \text{ and sum of each row is } 0\}$ with usual addition and scalar multiplication of matrices. _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Sub-Section Number :	7
Sub-Section Id :	64065382316
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653576955 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (158 to 162)

Question Label : Comprehension

Shivani, Sruthi and Smriti enjoyed shopping on a Sunday. Shivani bought 2 shirts, a T-shirt and 2 pants, whereas Sruthi bought a T-shirt and a pant and Smriti bought 2 shirts and a pant. They paid Rs. 600, Rs. 400 and Rs. 300 respectively. Suppose x_1 is the price of a shirt, x_2 is the price of a T-shirt and x_3 is the price of a pant. Then the above information forms a system of linear equations. If $Ax = b$ is the matrix representation of the above system, where $x = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$ is the vector that represents the price of a shirt, T-shirt and pant respectively, answer the given subquestions.

Sub questions

Question Number : 158 Question Id : 640653576956 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct option(s):

Options :

6406531926939. ✖ $A = \begin{pmatrix} 2 & 0 & 2 \\ 1 & 1 & 0 \\ 2 & 1 & 1 \end{pmatrix}, b = \begin{pmatrix} 600 \\ 400 \\ 300 \end{pmatrix}$

6406531926940. ✔ $A = \begin{pmatrix} 2 & 1 & 2 \\ 0 & 1 & 1 \\ 2 & 0 & 1 \end{pmatrix}, b = \begin{pmatrix} 600 \\ 400 \\ 300 \end{pmatrix}$

6406531926941. ✖ $A = \begin{pmatrix} 2 & 1 & 2 \\ 1 & 1 & 0 \\ 2 & 1 & 1 \end{pmatrix}, b = \begin{pmatrix} 600 \\ 400 \\ 300 \end{pmatrix}$

$$A = \begin{pmatrix} 2 & 1 & 2 \\ 1 & 1 & 1 \\ 2 & 0 & 1 \end{pmatrix}, b = \begin{pmatrix} 600 \\ 400 \\ 300 \end{pmatrix}$$

6406531926942.

Question Number : 159 Question Id : 640653576957 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

How many solutions does the given system *Ax* = *b* have?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 160 Question Id : 640653576958 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

Consider the set *S* of solutions of the system *Ax* = 0, where *A* is as given. Clearly, *S* is a vector space with respect to usual addition and scalar multiplication. What is the dimension of *S*?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 161 Question Id : 640653576959 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 forms a basis for *S*?

Options :

6406531926945. ✖ $\{(\frac{1}{2}, 1, -1), (0, 1, -1)\}$

6406531926946. ✔ $\{(\frac{1}{2}, 1, -1)\}$

6406531926947. ✖ $\{(\frac{1}{2}, 1, 1), (0, 1, -1)\}$

6406531926948. ✖ $\{(\frac{1}{2}, 1, 1)\}$

Question Number : 162 Question Id : 640653576960 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 rank of *A*?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sem2 Statistics2

Section Id :	64065339028
Section Number :	8
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 :	64065382317
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 163 Question Id : 640653576961 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: STATISTICS FOR DATA SCIENCE II (COMPUTER BASED EXAM) "

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

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