



Exam : Quiz 2
Subject : Maths2
Total Marks : 25.00
QP : 2023 Dec: IIT M AN4 EXAM QDD4

Exam Mode

Learning Mode

QUESTION MENU

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TIMER

00:23



CONTROLS

✓ SUBMIT EXAM

Your Score

0.00 / 25.00

(0%)

Question 1 : 640653690026

Total Mark : 0.00 | Type : MCQ

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : MATHEMATICS FOR DATA SCIENCE II (COMPUTER BASED EXAM)" ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT? CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN. (IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

OPTIONS :

YES

NO

Your score : 0

Discussions (0)

**Question 2 : 640653690035**

View Solutions (0)

Total Mark : 2.00 | Type : MSQ

Which of the following functions are linear transformations?

OPTIONS :

 $T : \mathbb{R} \rightarrow \mathbb{R}$, $T(x) = 2x + 1$ $T : \mathbb{R}^4 \rightarrow \mathbb{R}^2$, $T(x, y, z, w) = (x + y, z + w)$ $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$, $T(x, y, z) = (-y, -x, 0)$ $T : \mathbb{R} \rightarrow \mathbb{R}^2$, $T(x) = (x + 1, x - 1)$

Your score : 0

Discussions (0)

**Question 3 : 640653690036**

View Solutions (0)

Total Mark : 2.00 | Type : MSQ

Let T be a linear transformation from \mathbb{R}^2 to \mathbb{R}^3 . $S \subset \mathbb{R}^2$ is a line passing through the origin. Which of the following are possible?

OPTIONS :

 $T(S)$ could be the origin in \mathbb{R}^3 . $T(S)$ could be a line passing through the origin in \mathbb{R}^3 . $T(S)$ could be a plane passing through the origin in \mathbb{R}^3 . $T(S)$ could be \mathbb{R}^3

Your score : 0

Discussions (0)

**Question 4 : 640653690027**

View Solutions (0)

Total Mark : 3.00 | Type : MSQ

Let A and B be $n \times n$ matrices. Which of the following statement(s) is/are true?

OPTIONS :

- If A and B are similar, then nullity of A and nullity of B are equal.

- Let A and B be similar matrices. Then the homogeneous system of linear equations $Ax = 0$ has a unique solution if and only if the homogeneous system of linear equations $Bx = 0$ has a unique solution.

- If A^k and B^k are similar for some positive integer k , then A and B are similar.

- If A and B are similar matrices where A is a scalar matrix, then $A = B$.

Your score : 0

Discussions (0)

**Question 5 : 640653690034**

View Solutions (0)

Total Mark : 3.00 | Type : MSQ

Let A be a $n \times n$ orthogonal matrix. Then which of the following statement(s) is/are true?

OPTIONS :

- The rows of A form an orthonormal basis for \mathbb{R}^n .

- Suppose T is the linear transformation corresponding to A , then $\|Tv\| = \|v\|$ for any $v \in \mathbb{R}^n$.

- The system of linear equations $Ax = b$ has a unique solution for every $b \in \mathbb{R}^n$. +Q

- The rows of A form an orthogonal basis but not an orthonormal basis for \mathbb{R}^n . +Q

Your score : 0

Discussions (0)



Question 6 : 640653690028

Total Mark : 0.00 | Type : COMPREHENSION

Based on the above data, answer the given subquestions.

Let $L = \{(x, y) : y = x + 1\}$ and $L' = \{(x, x + z - 2, z) : x, z \in \mathbb{R}\}$. +Q

Your score : 0



Question 7 : 640653690029

View Parent QN

View Solutions (0)

Total Mark : 2.00 | Type : MSQ

Choose the correct option from the following.

OPTIONS :

- The subspace associated with the affine space L is the line $y = x + 1$. +Q

- The subspace associated with the affine space L is given by $\{(x, x) : x \in \mathbb{R}\}$. +Q

- The subspace associated with the affine space L' is given by $\{(x, y, z) : x - y + z = 0\}$ +Q

- The subspace associated with the affine space L' is the xz - plane. +Q

Your score : 0

[Discussions \(0\)](#)**Question 8 :****640653690030**[View Parent QN](#)[View Solutions \(0\)](#)

Total Mark : 1.00 | Type : SA

If the dimension of L is m and [?](#)
 the dimension of L' is n ,
 then $m + n$ is

Answer (Numeric):

Answer

Accepted Answer : 3

Your score : 0

[Discussions \(0\)](#)**Question 9 : 640653690031**

Total Mark : 0.00 | Type : COMPREHENSION

Based on the above data, answer the given subquestions.

Let $W = \{(x, y, z) : x + 2y - z = 0\}$. [?](#)

Your score : 0

**Question 10 :****640653690032**[View Parent QN](#)[View Solutions \(0\)](#)

Total Mark : 1.00 | Type : MCQ

Which of the following is a basis [?](#)
 β for W ?

OPTIONS :

- $\{(1, 0, -1), (0, 1, 2)\}$
- $\{(1, 0, 1), (0, 1, 2)\}$
- $\{(1, 0, 1), (0, 1, 1)\}$
- $\{(-1, 0, -1), (0, 2, 1)\}$

Your score : 0

 Discussions (0)



Question 11 :

640653690033

 View Parent QN

 View Solutions (0)

Total Mark : 3.00 | Type : SA

If γ is the orthonormal basis of W obtained from the basis β by using the Gram Schmidt process with respect to the usual inner product and (a, b, c) is the projection of $(1, 3, 1)$ onto W , then what is $a + b + c$?



Answer (Numeric):

Answer

Accepted Answer : 3

Your score : 0

 Discussions (0)



Question 12 : 640653690037

Total Mark : 0.00 | Type : COMPREHENSION

Based on the above data, answer the given subquestions.

Consider the following system of linear equations:



$$\begin{aligned}x + 3y - 2z &= 0 \\y - z &= 0 \\x + y &= 0\end{aligned}$$

Let A be the coefficient matrix corresponding to this system.

Your score : 0



Question 13 :

640653690038



[View Parent QN](#)



[View Solutions \(0\)](#)

Total Mark : 2.00 | Type : MCQ

Which of the following is the nullspace of A ?

OPTIONS :

- span{(-1, 1, 1)}
- span{(1, 1, 0)}
- span{(1, 0, 1), (0, 1, -1)}
- span{(1, 1, 0), (0, 1, -1)}

Your score : 0



[Discussions \(0\)](#)



Question 14 :

640653690039



[View Parent QN](#)



[View Solutions \(0\)](#)

Total Mark : 2.00 | Type : SA

Let B be a square matrix of order 3. What is the smallest value that the nullity of BA could take?

Answer (Numeric):

Answer

Accepted Answer : 1

Your score : 0

Discussions (0)

**Question 15 : 640653690040**

Total Mark : 0.00 | Type : COMPREHENSION

Based on the above data, answer the given subquestions.

Consider a vector space V with bases $\beta = \{v_1, v_2\}$ and $\gamma = \{v_1 + v_2, v_1 - v_2\}$.

T is a linear transformation from V to itself such that $T(v_1) = v_1 + 2v_2$ and $T(v_2) = 2v_1 - v_2$.

Your score : 0

**Question 16 :****640653690041**

View Parent QN

View Solutions (0)

Total Mark : 3.00 | Type : MCQ

Find the matrix corresponding to T
 if γ is used as the basis for both
 the domain and co-domain.

OPTIONS :

$$\begin{bmatrix} 2 & 1 \\ 1 & -2 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 \\ 2 & -1 \end{bmatrix}$$

$$\begin{bmatrix} 3 & -1 \\ 1 & 3 \end{bmatrix}$$

$$\begin{bmatrix} 1.5 & 0.5 \\ -0.5 & 1.5 \end{bmatrix}$$
 

Your score : 0

 Discussions (0)**Question 17 :****640653690042**

View Parent QN



View Solutions (0)

Total Mark : 1.00 | Type : MCQ

Is T an isomorphism?

OPTIONS :

 Yes No

Your score : 0

 Discussions (0) SUBMIT EXAM