Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	770
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
Revisit Section :	Yes
Action on Revisit Section :	View and Edit
Navigate To Group Summary From Last Question? :	No
Disable Submit Button During Assessment? :	No
Section Selection Time? :	0
No of Optional sections to be attempted :	0

MLF

Section Id :	64065369400
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	13
Number of Questions to be attempted :	13
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653146769
Question Shuffling Allowed :	No

Question Number : 1 Question Id : 640653995423 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : MACHINE LEARNING FOUNDATIONS (COMPUTER BASED EXAM)"

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

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

Options :

6406533360569. ✔ YES

6406533360570. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	640653146770
Question Shuffling Allowed :	Yes

Question Number : 2 Question Id : 640653995424 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following 3 × 3 matrices have rank 2 with column space equal to row space?

Options :

6406533360571. ✔ $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix}$

6406533360572. ✖ $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{bmatrix}$

6406533360573. ✖ $\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$

6406533360574. ✔ $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 2 \end{bmatrix}$

Question Number : 3 Question Id : 640653995428 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406533360589. ✔ B has eigenvalues -4, 8, 70.

6406533360590. ✖ A has eigenvalues 1, 16, 81.

6406533360591. ✔ B is an upper triangular matrix.

6406533360592. ✖ B is a lower triangular matrix.

Sub-Section Number : 3

Sub-Section Id : 640653146771

Question Shuffling Allowed : Yes

Question Number : 4 Question Id : 640653995425 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a matrix $A = \begin{bmatrix} 6 & 3 \\ -2 & 1 \end{bmatrix}$ and a set $S = \{v_1 = (1, -1), v_2 = (1, 1)\}$. Which of the following options is/are correct?

Options :

6406533360575. ✖ S is the set of eigenvectors of A.

6406533360576. ✔ Only v_1 is an eigenvector of A.

6406533360577. ✔ $A^{50} = \begin{pmatrix} 1 & 3 \\ -1 & -2 \end{pmatrix} \begin{pmatrix} 3^{50} & 0 \\ 0 & 4^{50} \end{pmatrix} \begin{pmatrix} -2 & -3 \\ 1 & 1 \end{pmatrix}$

6406533360578. ✖ $A^{50} = \begin{pmatrix} 3 & 1 \\ -2 & -1 \end{pmatrix} \begin{pmatrix} 3^{50} & 0 \\ 0 & 4^{50} \end{pmatrix} \begin{pmatrix} 1 & 1 \\ -2 & -3 \end{pmatrix}$

Question Number : 5 Question Id : 640653995426 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider two vectors $a = \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix}$ and $b = \begin{bmatrix} 1 \\ 2 \\ -1 \end{bmatrix}$. Let P be the projection matrix that projects a vector onto the line through the vector a. Which of the following options is/are true?

Options :

6406533360579. ✔ P is symmetric matrix.

6406533360580. ✖ Projection of b onto a is $\frac{1}{4}(-a)$.

6406533360581. ✔ P is rank one matrix.

6406533360582. ✔ Plane $x = y$ is orthogonal to a.

Question Number : 6 Question Id : 640653995427 Question Type : MSQ
Correct Marks : 4 Max. Selectable Options : 0
Question Label : Multiple Select Question

Which of the following options is/are correct for the following dataset?

x	1	1	-1
y	1	1	1

Options :

6406533360583. ✔ The best-fit line for the dataset given using the least squares method is, $\hat{y} = 1$.

6406533360584. ✖ The best-fit line for the dataset given using the least squares method is, $\hat{y} = -1$.

6406533360585. ✖ The best-fit line for the dataset given using the least squares method is, $\hat{y} = x - 1$.

6406533360586. ✖ The best-fit line for the dataset given using the least squares method is, $\hat{y} = x + 1$.

6406533360587. ✖ Error vector (the difference between predicted value and actual value) is $\begin{bmatrix} 0 \\ 0 \\ -2 \end{bmatrix}$.

6406533360588. ✔ Error vector(the difference between predicted value and actual value) is $\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$

Question Number : 7 Question Id : 640653995433 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Determine which of the following limits yields a finite value.

Options :

6406533360605. ✔ $\lim_{x\to 1} \frac{x^{\frac{1}{3}}-1}{x^{\frac{1}{2}}-1}$

6406533360606. ✔ $\lim_{x\to 1} \frac{1-x^{\frac{1}{2}}}{1-x}$

6406533360607. ✖ $\lim_{x\to \infty} \frac{x^2-7x}{x+1}$

6406533360608. ✔ $\lim_{x\to a} \frac{x^2-a^2}{x^4-a^4}$, where $a>0$

6406533360609. ✖ None of these

Sub-Section Number :	4
Sub-Section Id :	640653146772
Question Shuffling Allowed :	Yes

Question Number : 8 Question Id : 640653995429 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Let $A = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 2 & 1 \\ 0 & 0 & 6 \end{bmatrix}$. Is A diagonalizable?

Options :

6406533360593. ✔ Yes

6406533360594. ✖ No

6406533360595. ✖ Insufficient information

Question Number : 9 Question Id : 640653995430 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following input data points:

X	Y
[0, 1, 1]	-1
[0, 1, 0]	-1
[1, 1, 3]	+1
[1, 0, 5]	+1
[0, 0, 6]	+1
[1, 0, 4]	+1

Which among the following models has the least misclassification error?
Hint: Consider $Sign(0) = 1$

Options :

6406533360596. ✔ $Sign(x_1 + x_2 + x_3 - 5)$

6406533360597. ✖ $Sign(x_1 + x_2 - 2)$

6406533360598. ✖ $Sign(x_1 + x_2 + x_3)$

6406533360599. ✖ $Sign(x_3 - x_2 - x_1)$

Question Number : 10 Question Id : 640653995432 Question Type : MCQ
Correct Marks : 3
Question Label : Multiple Choice Question

For what value of b is

$$f(x) = \begin{cases} \frac{x-b}{b+1}, & \text{if } x < 0 \\ x^2 + b, & \text{if } x \geq 0 \end{cases}$$

continuous at every x?

Options :

6406533360601. ✖ 3

6406533360602. ✖ 2

6406533360603. ✔ -2

6406533360604. ✖ 1

Question Number : 11 Question Id : 640653995435 Question Type : MCQ
Correct Marks : 3
Question Label : Multiple Choice Question

Consider the function, $f(x,y) = x^2 + 3y^2$, in which direction does the maximum directional derivative occur at the point $(1, 2)$?

Options :

6406533360611. ✖ $\left(\frac{1}{\sqrt{10}}, \frac{3}{\sqrt{10}}\right)$

6406533360612. ✔ $\left(\frac{1}{\sqrt{37}}, \frac{6}{\sqrt{37}}\right)$

6406533360613. ✖ $\left(\frac{2}{\sqrt{5}}, \frac{24}{\sqrt{5}}\right)$

6406533360614. ✖ $\left(\frac{1}{\sqrt{5}}, \frac{2}{\sqrt{5}}\right)$

Sub-Section Number :	5
Sub-Section Id :	640653146773
Question Shuffling Allowed :	Yes

Question Number : 12 Question Id : 640653995431 Question Type : SA
Correct Marks : 3
Question Label : Short Answer Question

Consider the function, $f(x,y) = e^x \cos(y)$. Let $L(x,y)$ be the linear approximation of $f(x,y)$ at the point $(0,0)$, then find the value $L(0.5,0)$. Enter the answer correct to one decimal place.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
1.5

Question Number : 13 Question Id : 640653995434 Question Type : SA
Correct Marks : 3
Question Label : Short Answer Question

Let $f : \mathbb{R} \to \mathbb{R}$ be the function, $f(x) = 1 + e^{-x}$. What is the value of the derivative of f at x where $f(x) = 1.4$? Enter the answer correct to one decimal place.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
0.4

MLT

Section Id :	64065369401
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653146774
Question Shuffling Allowed :	No

Question Number : 14 Question Id : 640653995436 Question Type : MCQ
Correct Marks : 0
Question Label : Multiple Choice Question
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