6406531286246. ✖ 1005

6406531286247. ✔ 1006

6406531286248. ✖ 1002, 1005

MLF

Section Id :	64065323904
Section Number :	8
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
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 :	64065355360
Question Shuffling Allowed :	No

Question Number : 116 Question Id : 640653386771 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL: MACHINE LEARNING FOUNDATIONS"

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 :

6406531286257. ✔ Yes

6406531286258. ✖ No

Sub-Section Number : 2

Sub-Section Id : 64065355361

Question Shuffling Allowed : Yes

Question Number : 117 Question Id : 640653386772 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

The ML team in a movie production company wanted to predict whether a movie will earn 100 cr or not by using some classification models. Therefore, the team collected presence/absence of various factors $\mathbf{x} = [x_1, x_2, x_3]$ from the movies in the past. The data and the corresponding labels are shown in the Table below.

x	y
[0,1,1]	0
[1,0,1]	1
[1,0,0]	1
[1,1,1]	1
[1,1,0]	1

Compute the loss of the model if they use

$$u(z) = \begin{cases} 1, & \text{if } z \geq 0 \\ 0, & \text{otherwise} \end{cases}$$

and $z = 0.5x_1 - 0.8x_2 + 0.4x_3$

Note: 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 :

0.18 to 0.24

Question Number : 118 Question Id : 640653386778 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

Find the linear approximation (L) of $f(x, y) = 3x^3 + 4y^2 + 10$ around $(1, 1)$ and use it to compute L$(1.1, 0.9)$. What will be the value of $f(1.1, 0.9) - L(1.1, 0.9)$?

Note: 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 :

0.10 to 0.16

Question Number : 119 Question Id : 640653386785 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 second degree polynomial that fits the below is $ax^2 + bx + c$, then what is the value of $a + b + c$?

x	y
1	2
2	3
3	7

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number :	3
Sub-Section Id :	64065355362
Question Shuffling Allowed :	Yes

Question Number : 120 Question Id : 640653386773 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

Identify which of the following requires use of classification technique.

Options :

6406531286260. ✔ Credit card fraud detection.

6406531286261. ✔ Sentiment analysis.

6406531286262. ✔ Predicting whether an email is spam or not.

6406531286263. ✔ Predicting whether the patient is having cancer or not.

Question Number : 121 Question Id : 640653386780 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

Two vectors v_1 and v_2 are such that $v_1 = 2v_2$. If $v_1 = (1, 2, 3)^T$, and we have another vector $v_3 = (1, -5, 3)^T$, then which of the following statements is/are true?

Options :

6406531286270. ✔ Vectors v_1 and v_2 are parallel to each other.

6406531286271. ✖ Vectors v_1 and v_2 are perpendicular to each other.

6406531286272. ✖ Vectors v_2 and v_3 are not perpendicular to each other.

6406531286273. ✔ Vectors v_2 and v_3 are perpendicular to each other.

Question Number : 122 Question Id : 640653386783 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

Which of the following is/are eigen vectors of the matrix $\begin{bmatrix} 5 & 2 \\ 3 & 6 \end{bmatrix}$?

Options :

6406531286279. ✔ $(1, -1)^T$

6406531286280. ✖ $(1, 1)^T$

6406531286281. ✔ $(1, 1.5)^T$

6406531286282. ✔ $(2, 3)^T$

Sub-Section Number : 4

Sub-Section Id : 64065355363

Question Shuffling Allowed : Yes

Question Number : 123 Question Id : 640653386774 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

For the data sets $(x^i, y^i) = [(1,1),(2,2),(3,4),(4,5),(5,5)], i = 1$ to 5, Consider the regression model $f(x) = x + 2$. What is the mean squared loss of $f(x)$. (Enter 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 :

2.8

Question Number : 124 Question Id : 640653386776 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 will be the directional derivative of $f(x, y, z) = xyz$ at point (-1, 1, 3) along the direction given by the unit vector $(\frac{1}{3}, \frac{-2}{3}, \frac{2}{3})$

Note: 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 :

2.10 to 2.40

Question Number : 125 Question Id : 640653386777 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

For what value of k, will the following function be continuous?

$$f(x) = \begin{cases} \frac{tan3x}{sin2x}, & \text{if } x \neq 0 \\ 2k & \text{if } x = 0 \end{cases}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.75

Question Number : 126 Question Id : 640653386779 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

For the matrix $S = \begin{bmatrix} 2 & -1 & 3 \\ 1 & 0 & 1 \\ 0 & 2 & -1 \\ 1 & 1 & 4 \end{bmatrix}$ what is the dimension of its column space?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 127 Question Id : 640653386782 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 length of orthogonal projection vector of $(2,2,3)^T$ on to a line through $(2,3,6)^T$? Round the answer to nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 128 Question Id : 640653386784 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 $A = PDP^{-1}$ where $P = \begin{bmatrix} 1 & 2 \\ 1 & -5 \end{bmatrix}$ and $D = \begin{bmatrix} -1 & 0 \\ 0 & 6 \end{bmatrix}$, then what is the summation of all the diagonal elements of A^4?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1297

Question Number : 129 Question Id : 640653386786 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 values of α and β for which the matrix $A = \begin{bmatrix} 2 & \alpha \\ 2 & \beta \end{bmatrix}$ has eigenvalues equal to -1 and -3. Enter your answer as $2 \times \alpha + \beta \times 2$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-21

Sub-Section Number :	5
Sub-Section Id :	64065355364
Question Shuffling Allowed :	Yes

Question Number : 130 Question Id : 640653386775 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

Is the following function continuous?
$f(x) = |x|$ at $x = 0$
(Provide 1 as answer for 'Yes' and 0 for 'No'.)

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 :	64065355365
Question Shuffling Allowed :	Yes

Question Number : 131 Question Id : 640653386781 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

In a linear regression problem $X\theta = y$, with features $X = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 1 & 2 \\ 3 & 1 & 5 \end{bmatrix}$ $y = (16, 9, 18)^T$, what is the weight vector θ?

Options :

6406531286274. ✔ $(-3, 2, 5)^T$

6406531286275. ✖ $(3, 2, 5)^T$

6406531286276. ✖ $(-1, 1, 6)^T$

6406531286277. ✖ $(-3, 5, 2)^T$