Sub-Section Number :	6
Sub-Section Id :	64065367684
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 119 Question Id : 640653470045 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following are the correct regarding the web server?

Options :

6406531562034. ✔ A web server is a computer system capable of delivering web content over the internet.

6406531562035. ✔ A web server sends the response as an HTML document which is rendered on the user's screen.

6406531562036. ✔ A web server listens for incoming network connections on a fixed port.

6406531562037. ✖ A web server is a software that allows to send the request over the internet.

MLF

Section Id :	64065330334
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 :	64065367685
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 120 Question Id : 640653470046 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 :

6406531562038. ✔ YES

6406531562039. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065367686
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 121 Question Id : 640653470047 Question Type : MSQ Is Question

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

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following is/are true about loss after applying Encoder and Decoder functions to a given data?

Options :

6406531562040. ✖ The loss value can be equal to any real number.

6406531562041. ✔ The loss value cannot be negative.

6406531562042. ✖ A perfect encoder and decoder function will not exist for any data, that is loss value can never be equal to zero.

6406531562043. ✔ For some data, there can exist a perfect encoder and decoder functions, that is loss value can be equal to zero.

Question Number : 122 Question Id : 640653470048 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements is/are true?

Options :

6406531562044. ✔ Email spam detection falls under classification problem.

6406531562045. ✖ Predicting the price of a house based on previous datasets falls under classificiation problem.

6406531562046. ✔ Classifying whether handwriting belongs to a particular person or not based on previous data falls under the classification problem.

6406531562047. ✔ Finding out the probability that a particular poem is written by Shakespeare falls under unsupervised learning.

Question Number : 123 Question Id : 640653470051 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements is/are true about function $f(x) = \begin{cases} \frac{|x|}{x^2}, x \neq 0 \\ 0, x = 0 \end{cases}$?

Options :

6406531562050. ✔ The function is differentiable for all the values of *x* except when *x* = 0.

6406531562051. ✖ The function is differentiable for all the values of *x*.

6406531562052. ✖ The function is continuous at *x* = 0.

6406531562053. ✔ The function is not continuous at *x* = 0.

Sub-Section Number :	3
Sub-Section Id :	64065367687
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 124 Question Id : 640653470059 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements is/are true?

Options :

6406531562077. ✔ There exists a $n \times n$ matrix A, n is odd, for which the rank of A is not equal to the nullity of A.

6406531562078. ✖ There exists a $n \times n$ matrix A, n is odd, for which the rank of A is equal to the nullity of A.

6406531562079. ✔ There exists a $n \times n$ matrix A, n is even, for which the rank of A is not equal to the nullity of A.

6406531562080. ✔ There exists a $n \times n$ matrix A, n is even, for which the rank of A is equal to the nullity of A.

Question Number : 125 Question Id : 640653470061 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Let P be the matrix that projects vectors in $\mathbb{R}^3$ onto the subspace spanned by the vector $a = [1, 2, 3]^T$. Which of the following are eigenvectors of P corresponding to the eigenvalue 0?

Options :

6406531562085. ✖ [1,−2, 2]

6406531562086. ✖ [2, 2,−1]

6406531562087. ✔ [−2, 1, 0]

6406531562088. ✔ [−3, 0, 1]

Sub-Section Number :	4
Sub-Section Id :	64065367688
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 126 Question Id : 640653470052 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 quadratic approximation of the function $f(x) = \sin^2 x$ at $x = \frac{\pi}{4}$ radian is:

Options :

6406531562054. ✖ $Q_{\frac{\pi}{4}}[f(x)] = \frac{1}{2} + (x - \frac{\pi}{4}) + (x - \frac{\pi}{4})$

6406531562055. ✔ $Q_{\frac{\pi}{4}}[f(x)] = \frac{1}{2} + (x - \frac{\pi}{4})$

6406531562056. ✖ $Q_{\frac{\pi}{4}}[f(x)] = \frac{1}{2} + 2(x - \frac{\pi}{4}) + \frac{1}{2}(x - \frac{\pi}{4})$

6406531562057. ✖ $Q_{\frac{\pi}{4}}[f(x)] = \frac{\pi}{2} + 2(x - \frac{\pi}{4}) + \frac{1}{2}(x - \frac{\pi}{4})$

Question Number : 127 Question Id : 640653470053 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 direction of steepest descent for the function $f(x, y, z) = \cos(x)\sin(y)\cos(z)$ at the point $(x, y, z) = \left(\frac{\pi}{4}, \frac{\pi}{6}, \frac{\pi}{4}\right)$ is?

Options :

6406531562058. ✖ $\left[-\frac{1}{4}, \frac{\sqrt{3}}{4}, -\frac{1}{4}\right]$

6406531562059. ✔ $\left[\frac{1}{4}, -\frac{\sqrt{3}}{4}, \frac{1}{4}\right]$

6406531562060. ✖ $\left[\frac{1}{4}, \frac{1}{4}, \frac{1}{4}\right]$

6406531562061. ✖ $\left[-\frac{1}{4}, -\frac{1}{4}, -\frac{1}{4}\right]$

Question Number : 128 Question Id : 640653470054 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

Which of the following is the equation of the line that passes through point $[1,2,3,4]$ and is tangent to the function $f(p,q,r,s) = p^2+q^2+r^2+s^2+pq+rs-2p-2q$ at the point $[p,q,r,s] = [1,3,5,1]$?

Options :

6406531562062. ✔ $[1,2,3,4] + \alpha[3,5,11,7]$

6406531562063. ✖ $[3,5,11,7] + \alpha[1,2,3,4]$

6406531562064. ✖ $[1,2,3,4] + \alpha[0,4,10,2]$

6406531562065. ✖ $[1,2,3,4] + \alpha[5,3,11,7]$

6406531562066. ✖ $[5,3,11,7] + \alpha[1,2,3,4]$

Question Number : 129 Question Id : 640653470060 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 characteristic polynomial of a matrix with eigenvalues 1, 2, 3 and 4 is

Options :

6406531562081. ✔ $\lambda^4 - 10\lambda^3 + 35\lambda^2 - 50\lambda + 24$

6406531562082. ✖ $\lambda^4 + 10\lambda^3 + 35\lambda^2 + 50\lambda + 24$

6406531562083. ✖ $\lambda^4 + 10\lambda^3 - 35\lambda^2 + 50\lambda - 24$

6406531562084. ✖ $2\lambda^4 - 20\lambda^3 + 35\lambda^2 - 100\lambda + 48$

Sub-Section Number : 5

Sub-Section Id : 64065367689

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 130 Question Id : 640653470056 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

If null space of a matrix A is span$\left\{\begin{bmatrix} 7/17 \\ 22/17 \\ -1 \end{bmatrix}\right\}$, then which of the following can be row space of matrix A?

Options :

6406531562068. ✔ $\text{Span}\left\{\begin{bmatrix} 1 \\ 0 \\ \frac{7}{17} \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ \frac{22}{17} \end{bmatrix}\right\}$

6406531562069. ✖ $\text{Span}\left\{\begin{bmatrix} -1 \\ 0 \\ \frac{7}{17} \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ \frac{22}{17} \end{bmatrix}\right\}$

6406531562070. ✖ $\text{Span}\left\{\begin{bmatrix} 1 \\ 0 \\ \frac{7}{17} \end{bmatrix}, \begin{bmatrix} 0 \\ -1 \\ \frac{22}{17} \end{bmatrix}\right\}$

6406531562071. ✖ $\text{Span}\left\{\begin{bmatrix}-1\\0\\\frac{7}{17}\end{bmatrix}, \begin{bmatrix}0\\-1\\\frac{22}{17}\end{bmatrix}\right\}$

Question Number : 131 Question Id : 640653470058 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 $A = \begin{bmatrix}1 & 1\\2 & 0\\3 & 1\\5 & 1\end{bmatrix}$, then which among the following is orthogonal to $C(A)$?

Options :

6406531562073. ✔ $\text{Span}\left\{\begin{bmatrix}-3\\-5\\1\\2\end{bmatrix}, \begin{bmatrix}-1\\-1\\1\\0\end{bmatrix}\right\}$

6406531562074. ✖ $\text{Span}\left\{\begin{bmatrix}3\\5\\1\\2\end{bmatrix}, \begin{bmatrix}-1\\-1\\1\\0\end{bmatrix}\right\}$

6406531562075. ✖ $\text{Span}\left\{\begin{bmatrix}3\\5\\1\\2\end{bmatrix}, \begin{bmatrix}1\\1\\1\\0\end{bmatrix}\right\}$

6406531562076. ✖ $\text{Span}\left\{\begin{bmatrix}-3\\-5\\1\\2\end{bmatrix}, \begin{bmatrix}1\\1\\1\\0\end{bmatrix}\right\}$

Sub-Section Number : 6

Sub-Section Id : 64065367690

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 132 Question Id : 640653470049 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 set $\{(x^i, y^i)\} = \{(1,1),(2,6),(3,8),(4,15),(5,26)\}, i = 1$ to 5, Consider the regression model $f(x) = x^2 + 1$. What is the mean squared loss of $f(x)$?(Round your answer off 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 : 133 Question Id : 640653470050 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 average misclassification error when the functions $g(X) = sign((x_1 - x_2)^2 - 8)$ is used to classify the data points into classes +1 or −1. Enter the answer closest to one decimal accuracy.

X	y
(5,2)	1
(5,6)	-1
(6,3)	1
(6,4)	-1
(4,8)	-1

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.2

Question Number : 134 Question Id : 640653470055 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 a 3×3 matrix A whose nullity is equal to 1, what is the value of $R(A) + \dim(C(A)) + \dim(C(A^T))$?
Here $R(A)$ stands for Rank of A, $\dim(C(A))$ stands for dimension of column space of A,
and $\dim(C(A^T))$ stands for dimension of column space of A^T. Enter the answer as an integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sub-Section Number :	7
Sub-Section Id :	64065367691
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 135 Question Id : 640653470057 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

If projection of vector A of length 10 units, onto vector B of length 8 units, has a magnitude of 5 units, then length of projection of vector B onto A is?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Java

Section Id :	64065330335
Section Number :	9
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 :	64065367692
Question Shuffling Allowed :	No
Is Section Default? :	null