6406531190625. ✔ Ram booked 1 ticket
Ravi booked 1 ticket

6406531190626. ✔ Ram cannot book 1 ticket
Ravi booked 1 ticket

MLF

Section Id :	64065322413
Section Number :	9
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
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 :	64065352340
Question Shuffling Allowed :	No

Question Number : 214 Question Id : 640653359359 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 :

6406531190631. ✔ Yes

6406531190632. ✖ No

Sub-Section Number : 2

Sub-Section Id : 64065352341

Question Shuffling Allowed : Yes

Question Number : 215 Question Id : 640653359365 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

Suppose that eigenvalues of matrix A are 1, 0.5, 0.25. The determinant of $(A^{-1})^T$ is

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Question Number : 216 Question Id : 640653359380 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 X and Y be two random variables of an experiment such that $Y = 8X+4$.
If $E[Y]$=44. What is the value of $E[7X + 10]$.

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

45

Sub-Section Number :	3
Sub-Section Id :	64065352342
Question Shuffling Allowed :	No

Question Id : 640653359361 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (217 to 219)

Question Label : Comprehension

Consider the function $f(x, y) = \sqrt{41 - 4x^2 - y^2}$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 217 Question Id : 640653359362 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

Compute the equation of the function's linear approximation at point (2,3). If the equation of the

linear approximation is $L = ax + by + c$, then provide the value of **a**.

NOTE: Enter your answer 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 : 218 Question Id : 640653359363 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

Compute the equation of the function's linear approximation at point (2,3). If the equation of the linear approximation is $L = ax + by + c$, then provide the value of **b**.

NOTE: Enter your answer upto two decimal.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

-0.8 to -0.7

Question Number : 219 Question Id : 640653359364 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

Compute the equation of the function's linear approximation at point (2,3). If the equation of the linear approximation is $L = ax + by + c$, then provide the value of **c**.

NOTE: Enter your answer upto two decimal.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

10.0 to 10.5

Question Id : 640653359377 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (220 to 221)

Question Label : Comprehension

Probability density function of a random variable X is given by

$$f(x) = \begin{cases} a|x| & \text{if } |x| \leq 2 \\ 0 & \text{otherwise} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 220 Question Id : 640653359378 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

Calculate the value of a

NOTE: Enter your answer upto two decimal.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.23 to 0.27

Question Number : 221 Question Id : 640653359379 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

Find the $P(X \geq \frac{1}{2})$.

NOTE: Enter your answer upto two decimal.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.42 to 0.48

Sub-Section Number :	4
Sub-Section Id :	64065352343
Question Shuffling Allowed :	Yes

Question Number : 222 Question Id : 640653359366 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 two complex vectors v_1 and v_2 have lengths l_1 and l_2 and $v_1.v_2 = l_1l_2$, then which of the following statements is/are true?

Options :

6406531190638. ✔ v_1 and v_2 vectors are parallel to each other.

6406531190639. ✖ v_1 and v_2 vectors are conjugate to each other.

6406531190640. ✖ v_1 and v_2 vectors are perpendicular to each other.

6406531190641. ✖ v_1 and v_2 can be any two vectors.

Question Number : 223 Question Id : 640653359373 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

Compute the Hessian matrix at the point $(0,1,\pi)$ of the following 3 variable function: $f(x,y,z) = e^{-x} \cdot \cos(yz)$

Options :

6406531190660. ✖ $\begin{bmatrix} 0 & \pi & 1 \\ \pi & 0 & -1 \\ 1 & 0 & 1 \end{bmatrix}$

6406531190661. ✖ $\begin{bmatrix} 1 & \pi & 1 \\ \pi & 0 & -1 \\ 1 & -1 & 0 \end{bmatrix}$

6406531190662. ✖ $\begin{bmatrix} 0 & \pi & 1 \\ \pi & 0 & -1 \\ 1 & -1 & 0 \end{bmatrix}$

6406531190663. ✔ $\begin{bmatrix} -1 & 0 & 0 \\ 0 & \pi^2 & \pi \\ 0 & \pi & 1 \end{bmatrix}$

6406531190664. ✖ None of these

Question Number : 224 Question Id : 640653359376 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

Each set of a 3-set badminton match between P.V.Sindhu and Tai Tzu Ying is won with equal probability by either player. Let A be the event that all the three sets are won by one player. Let C be the event that at least two sets are won by Tai Tzu Ying, and let B denote the event that at most two sets are won by Tai Tzu Ying. Which of the two events are independent?

Options :

6406531190667. ✖ A and B are independent.

6406531190668. ✔ A and C are independent.

6406531190669. ✖ B and C are independent.

6406531190670. ✖ A, B and C are independent to each other.

Sub-Section Number :	5
Sub-Section Id :	64065352344
Question Shuffling Allowed :	Yes

Question Number : 225 Question Id : 640653359367 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

The matrix $A = \begin{bmatrix} 4 & 1 & -1 \\ 1 & 2 & 1 \\ -1 & 1 & 2 \end{bmatrix}$ is

Options :

6406531190642. ✔ positive definite

6406531190643. ✖ positive semi-definite

6406531190644. ✖ negative definite

6406531190645. ✖ negative semi-definite

6406531190646. ✖ None of these

Sub-Section Number : 6

Sub-Section Id : 64065352345

Question Shuffling Allowed : Yes

Question Number : 226 Question Id : 640653359368 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Select Question

Consider the following matrix

$$A = \begin{bmatrix} 1 & 1 & 2 \\ 1 & 2 & 1 \\ 2 & 1 & 1 \end{bmatrix}$$

Which of the following are the eigenvector of this matrix ?

Options :

6406531190647. ✔ $\begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$

6406531190648. ✔ $\begin{bmatrix} 1 \\ -2 \\ 1 \end{bmatrix}$

6406531190649. ✔

$\begin{bmatrix} -1 \\ 0 \\ 1 \end{bmatrix}$

6406531190650. ✖ $\begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$

Sub-Section Number :	7
Sub-Section Id :	64065352346
Question Shuffling Allowed :	No

Question Id : 640653359369 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (227 to 228)

Question Label : Comprehension

A manufacturing company makes two types of television sets; one is smart led and the other is normal led. The company has resources to make at most 300 sets a week. It takes Rs 1800 to make a smart led set and Rs 2700 to make a normal led set. The company can spend not more than Rs 648000 a week to make television sets. If it makes a profit of Rs 510 per smart led and Rs 675 per normal led.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 227 Question Id : 640653359370 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

The objective function to maximise the profit for the given problem is

Options :

6406531190651. ✔ 510*x* + 675*y*

6406531190652. ✖ 410*x* + 675*y*

6406531190653. ✖ 510*x* + 575*y*

6406531190654. ✖ 102*x* + 135*y*

Question Number : 228 Question Id : 640653359371 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Select Question

The constraints for the given problem is

Options :

6406531190655. ✔ $x + y \leq 300$

6406531190656. ✔ $2x + 3y \leq 720$

6406531190657. ✖ $x + 3y \leq 120$

6406531190658. ✔ $x \geq 0, y \geq 0$

Sub-Section Number :	8
Sub-Section Id :	64065352347
Question Shuffling Allowed :	Yes

Question Number : 229 Question Id : 640653359360 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 following regression problem with one dimensional feature where the data is really generated according to the following rules (but the learning algorithm does not know these rules).

$$X \sim Normal(5, 5)$$

$$Y = X + 5$$

Using n data points, your learning algorithm outputs a learned model $f(x) = X + 3$. What is the MSE (mean squared error) of the output model?

NOTE: Enter your answer to the 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 : 230 Question Id : 640653359372 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

Equation of plane $r.n = d$, Here n is the unit vector $\frac{6i+4j-2k}{\sqrt{56}}$ and d is the distance of the plane from origin i.e $\frac{40}{\sqrt{56}}$ here. Then the Minimum distance of the plane $r.n = d$ from point $(1, 2, 1)$ is ___.

NOTE: Enter your answer in one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

3.5 to 4.0

Question Number : 231 Question Id : 640653359374 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

While solving for the optimal weight vector (w) for a linear regression problem using gradient descent, we have $y = \begin{bmatrix}1\\2\\3\end{bmatrix}$ and $X = \begin{bmatrix}0 & 1\\1 & 1\\1 & 2\end{bmatrix}$. $w^t = \begin{bmatrix}1\\2\end{bmatrix}$ after t iterations.

If the value of $w^{t+1} = \begin{bmatrix}i\\j\end{bmatrix}$ in next iteration using gradient descent method, then what is the absolute value of $|i + j|$? Assume $\eta = 1$.

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 7

Question Number : 232 Question Id : 640653359375 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 maximum value possible for the function $f(x, y) = e^{2xy}$ subject to the conditions $x \geq 0, y \geq 0$, and $x^2 + y^2 = 2$

NOTE: Enter your answer upto one decimal.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

7.1 to 7.7

Question Number : 233 Question Id : 640653359381 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

Suppose that the lifetime of light bulbs is modeled by an exponential distribution with unknown parameter λ. We test 5 bulbs and find that they have lifetimes of 3, 4, 2, 5 and 6 years, respectively. What is the Maximum likelihood estimate for λ? Write your answer correct to two decimal places.

NOTE: Enter your answer upto two decimal

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.23 to 0.27

Sub-Section Number :	9
Sub-Section Id :	64065352348
Question Shuffling Allowed :	No

Question Id : 640653359382 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (234 to 235)

Question Label : Comprehension

The pdf of the variables X and Y is

$$f(x,y) = \begin{cases} \frac{1}{2}xe^{-y} & \text{if } 0 < x < 2, y > 0 \\ 0 & \text{otherwise} \end{cases}$$

Consider the transformation $U = X + Y$ and $V = X$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 234 Question Id : 640653359383 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

Calculate the $|J|$, (J represents the Jacobian of the transform $U, V \mapsto X, Y$)

Options :

6406531190675. ✔ 1

6406531190676. ✖ $\frac{1}{2}$

6406531190677. ✖ u

6406531190678. ✖ v

Question Number : 235 Question Id : 640653359384 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

Find the joint distribution of U and V

Options :

6406531190679. ✔

$$g(u,v) = \begin{cases} \frac{1}{2}ve^{-(u-v)} & \text{if } 0 < v < 2, u > v \\ 0 & \text{otherwise} \end{cases}$$

6406531190680. ✖

$$g(u,v) = \begin{cases} \frac{1}{2}ve^{-(u+v)} & \text{if } 0 < v < 2, u > v \\ 0 & \text{otherwise} \end{cases}$$

6406531190681. ✖

$$g(u,v) = \begin{cases} \frac{1}{2}ve^{-(u-v)} & \text{if } 0 < v < 2, v > u \\ 0 & \text{otherwise} \end{cases}$$

6406531190682. ✖

$$g(u,v) = \begin{cases} \frac{1}{2}ve^{-(u-v)} & \text{if } 0 < x < 2, u > v \\ 0 & \text{otherwise} \end{cases}$$

MLP

Section Id :	64065322414
Section Number :	10
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	38
Number of Questions to be attempted :	38
Section Marks :	100
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and	Yes