Consider the following flask application.

```
from flask import Flask, redirect, url_for
app = Flask(__name__)

@app.route('/admin')
def hello_admin():
   return 'Hello Admin'

@app.route('/guest/<guest>')
def hello_guest(guest):
   return 'Hello ' +guest+ ' as Guest'

@app.route('/user/<name>')
def hello_user(name):
   if name =='admin':
      return redirect(url_for('hello_admin'))
   else:
      return redirect(url_for('hello_guest', guest = name))

if __name__ == '__main__':
   app.run(debug = True)
```

If this flask app is running locally on http://localhost:5000, what is the output for the following URL?
For input: http://localhost:5000/user/admin?guest=appdev1

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

Hello Admin

MLF

Section Id : 64065339714

Section Number : 8

Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	40
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 :	64065384380
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 110 Question Id : 640653587017 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 (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 :

6406531958731. ✔ YES

6406531958732. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065384381

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 111 Question Id : 640653587018 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which among the following is/are true for a Hermitian matrix?

Options :

6406531958733. ✔ The eigenvalues of a Hermitian matrix are always real.

6406531958734. ✔ The diagonal elements of a Hermitian matrix are always real.

6406531958735. ✖ All symmetric matrices are Hermitian.

6406531958736. ✖ All Hermitian matrices are symmetric.

Question Number : 112 Question Id : 640653587020 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following options are true?

Options :

6406531958738. ✖ A matrix that is both unitary and Hermitian must be a diagonal matrix.

6406531958739. ✔ A matrix that is both unitary and Hermitian need not be a diagonal matrix.

6406531958740. ✔ If matrix A is unitary, then A^* is unitary.

6406531958741. ✖ If matrix A is unitary then, A^* may not be unitary.

Question Number : 113 Question Id : 640653587023 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which among the following statements is/are true?

Options :

6406531958750. ✔ If a function is positive semidefinite, then it only has a global minimum.

6406531958751. ✖ If a function is positive semidefinite, then it has both global minimum and global maximum.

6406531958752. ✔ If a function is negative semidefinite, then it only has a global maximum.

6406531958753. ✖ If a function is negative semidefinite, then it has both global minimum and global maximum.

Sub-Section Number :	3
Sub-Section Id :	64065384382
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 114 Question Id : 640653587019 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 a 2×2 matrix $A = \frac{1}{k}\begin{bmatrix} 2 & -2+i \\ i+2 & 2 \end{bmatrix}$. Find the value of k such that A is a unitary matrix.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 115 Question Id : 640653587031 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 $f([1,2,3]^T) = 10$ and $\nabla f([1,2,3]^T) = [1,5,7]^T$, then find the value of $f([2,2,2]^T)$ using first order taylor series expansion.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number :	4
Sub-Section Id :	64065384383
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 116 Question Id : 640653587021 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

Which among the following functions are positive definite?

Options :

6406531958742. ✖ $Q(x,y) = xy$

6406531958743. ✔ $Q(x,y) = x^2 - xy + y^2$

6406531958744. ✖ $Q(x,y) = x^2 - 2xy + y^2$

6406531958745. ✖ $Q(x,y) = x^2 + xy$

Sub-Section Number :	5
Sub-Section Id :	64065384384
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 117 Question Id : 640653587022 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

Given the following information about a 4×2 matrix A:

- The characteristic polynomial of A^TA is $(\lambda - 48)(\lambda - 12)$.
- Eigenvectors of A^TA corresponding to eigenvalues $\lambda = 48$, $\lambda = 12$ are $q_1 = \begin{pmatrix} 1/\sqrt{2} \\ 1/\sqrt{2} \end{pmatrix}$ and $q_2 = \begin{pmatrix} 1/\sqrt{2} \\ -1/\sqrt{2} \end{pmatrix}$, respectively.
- $Aq_1 = \begin{pmatrix} 4/\sqrt{2} \\ -8/\sqrt{2} \\ 0 \\ 4/\sqrt{2} \end{pmatrix}$, $Aq_2 = \begin{pmatrix} -2/\sqrt{2} \\ 0 \\ 4/\sqrt{2} \\ 2/\sqrt{2} \end{pmatrix}$

What is the matrix A?

Options :

6406531958746. ✖

$$\begin{bmatrix} 1 & 3 \\ 0 & 0 \\ 2 & -2 \\ 1 & -1 \end{bmatrix}$$

6406531958747. ✖ $\begin{bmatrix} 2 & 2 \\ -4 & -4 \\ 0 & 0 \\ 2 & 2 \end{bmatrix}$

6406531958748. ✖ $\begin{bmatrix} -1 & 1 \\ 0 & 0 \\ 2 & -2 \\ 1 & -1 \end{bmatrix}$

6406531958749. ✔ $\begin{bmatrix} 1 & 3 \\ -4 & -4 \\ 2 & -2 \\ 3 & 1 \end{bmatrix}$

Sub-Section Number : 6

Sub-Section Id : 64065384385

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 118 Question Id : 640653587024 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

Suppose you have a 3-dimensional dataset $\{x_1, x_2, \ldots x_n\}$ with mean zero.

Suppose the covariance matrix $C = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$. For projection using PCA onto a line, what is the projected variance?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 119 Question Id : 640653587030 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

What is the maximum area of a circle that can be inscribed in a closed region formed by two parabolas, $y = 2 - x^2$ and $y = x^2 - 2$?
Hint: The circle will be centered at origin.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5.3 to 5.7

Sub-Section Number :	7
Sub-Section Id :	64065384386
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587025 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (120 to 123)

Question Label : Comprehension

Anwer the given subquestions.

Sub questions

Question Number : 120 Question Id : 640653587026 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

Consider the dataset
$\mathcal{D} = \{(-1, 1), (0, 1), (1, 1)\}$.
What is the first principal component (i.e., the direction corresponding to the largest eigenvalue of the covariance matrix) for the given dataset?

Options :

6406531958755. ✔ $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$

6406531958756. ✖ $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$

6406531958757. ✖ $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$

6406531958758. ✖ $\begin{pmatrix} -1 \\ 0 \end{pmatrix}$

Question Number : 121 Question Id : 640653587027 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 you change the dataset to $\mathcal{D}' = \{(-1,1),(0,0),(1,1)\}$, what will be the first principal component?

Options :

6406531958759. ✔ $\begin{pmatrix}1\\0\end{pmatrix}$

6406531958760. ✖ $\begin{pmatrix}0\\1\end{pmatrix}$

6406531958761. ✖ $\begin{pmatrix}1\\1\end{pmatrix}$

6406531958762. ✖ $\begin{pmatrix}-1\\0\end{pmatrix}$

Question Number : 122 Question Id : 640653587028 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

For the dataset $\mathcal{D}'$, let $\tilde{x_1}, \tilde{x_2}$ and $\tilde{x_3}$ be the projection of data points on the first principal component, then which among the following is true?

Options :

6406531958763. ✖

$$\tilde{x_1} = \begin{pmatrix} -1 \\ 2/3 \end{pmatrix}, \tilde{x_2} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}, \tilde{x_3} = \begin{pmatrix} 1/2 \\ 2/3 \end{pmatrix}$$

6406531958764. ✔ $\tilde{x_1} = \begin{pmatrix} -1 \\ 2/3 \end{pmatrix}, \tilde{x_2} = \begin{pmatrix} 0 \\ 2/3 \end{pmatrix}, \tilde{x_3} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}$

6406531958765. ✖ $\tilde{x_1} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}, \tilde{x_2} = \begin{pmatrix} 0 \\ 2/3 \end{pmatrix}, \tilde{x_3} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$

6406531958766. ✖ $\tilde{x_1} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}, \tilde{x_2} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}, \tilde{x_3} = \begin{pmatrix} -1 \\ 2/3 \end{pmatrix}$

Question Number : 123 Question Id : 640653587029 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

What is the reconstruction error after projecting $\mathcal{D}'$ along the first principal component?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.20 to 0.24