First and last name .....

Question 1/14

Let A matrix= 5 2
0 k

Find all numbers k for which A is a root of the polynomial: x^2-25

A. 3
B. -3
C. 5
D. -5

Question 2/14

For the following set of equations, for what value of k, the system will have unique solution?

A. -1
B. 1
C. both
D. none

Question 3/14

If matrix X has dimension of 2x2 and if 1 and -1 are the eigenvalues of X then what will be eigenvalues of X^3

A. It will be 3 and -3
B. Same as 1 and -1
C. It will be 3 and 3
D. It will be 1 and 1

Question 4/14

For what value of 'k' for the following set of equation, we might have solution.

kx+y+z=1
x+ky+z=1
x+y+kz=1

A. 2
B. 1,-2
C. -1
D. -1,2

Question 5/14

Consider a matrix $\begin{matrix} 0 & 1 & 1 \\ \sqrt{2} & 2 & 0 \\ 0 & 1 & 1 \end{matrix}$

For the matrix answer following question

Which one is the Σ (SVD unitary matrix) matrix of A?

A. $\begin{matrix} 2/\sqrt{2} & 0 & 0 \\ 0 & \sqrt{2} & 0 \\ 0 & 0 & 0 \end{matrix}$

B. $\begin{matrix} 1/\sqrt{3} & -1/6 & 1/2 \\ 1 & \sqrt{2} & 0 \\ 1/\sqrt{6} & 2/3 & 1/\sqrt{2} \end{matrix}$

C. $\begin{matrix} 1/\sqrt{6} & 1/\sqrt{3} & 1/\sqrt{2} \\ 3/\sqrt{12} & 0 & -1/2 \\ 1/\sqrt{2} & 0 & 0 \end{matrix}$

D. none

Question 6/14

Consider a matrix 0 1 1

$\sqrt{2}$ 2 0

0 1 1

For the matrix answer following question

Which one is the V (SVD unitary matrix) matrix of A?

A. 1/ $\sqrt{12}$ -1/ $\sqrt{12}$ 1/2

2/ $\sqrt{6}$ 1/3 0

1/ $\sqrt{12}$ -1/3 1/2

B. 1/ $\sqrt{6}$ 1/ $\sqrt{3}$ 1/ $\sqrt{2}$

3/ $\sqrt{12}$ 0 -1/2

1/ $\sqrt{12}$ -2/ $\sqrt{6}$ 1/ $\sqrt{2}$

C. none

D. 1/ $\sqrt{3}$ -1/6 1/2

1 $\sqrt{2}$ 1/3 0

1/ $\sqrt{6}$ 2/3 1/ $\sqrt{2}$

Question 7/14

What will be the volume of the parallelepiped form by the vector [1,2,4] , [2,1,-3] ,[]5,7,9]

A. -1
B. 2
C. 0
D. 1

Question 8/14

Consider a matrix 2 a
a/2 b
If the eigen value of the matrix is 4 and 2 then the value of a and b are

A. 4,4
B. 2,4
C. 4,2
D. 2,2

Question 9/14

Two column of orthogonal matrix are, [1,-1,1] and [1,2,1]. What will be third column vector of the matrix?

A. [1,0,-1]
B. [0,1,-1]
C. [2,-1,0]
D. [1,0,0]

Question 10/14

If two matrices has same eigenvalue then, select incorrect option

A. All above
B. They will also have eigenvector
C. They will same characteristic equation
D. They will have same determinants

Question 11/14

Let the A matrix is 1 1/3
c d
For what value of 'c' and 'd', the matrix will be nilpotent of order 2.

A. 6,-1
B. 6,1
C. -6,-1
D. -6,1

Question 12/14

Which of the following is true for matrix a b c
b 0 0
c 0 e

A. The eigenvector of the matrix will be orthogonal but not linearly independent
B. This is positive definite matrix
C. The root of the matrix will be real
D. There will be at least one eigenvalue which is zero

Question 13/14

For a symmetric matrix, one eigenvector is [3,- 2]. What will be another eigenvector?

A. [2,3] and [3,-2]
B. [6,9]
C. [3,-2]
D. [2,3]

Question 14/14

Consider a matrix 0 1 1

$\sqrt{2}$ 2 0
0 1 1

For the matrix answer following question

Which one is the U (SVD unitary matrix) matrix of A?

A. none

B. 1/ $\sqrt{6}$ -1/ $\sqrt{3}$ 1/ $\sqrt{2}$
2/ $\sqrt{6}$ 1/ $\sqrt{3}$ 0
1/ $\sqrt{6}$ -1/ $\sqrt{3}$ -1/ $\sqrt{2}$

C. 1/ $\sqrt{3}$ -1/6 1/2
1 $\sqrt{2}$ 1/3 0
1/ $\sqrt{6}$ 2/3 1/ $\sqrt{2}$

D. 1/ $\sqrt{6}$ -1/ $\sqrt{3}$ 1/2
2/ $\sqrt{6}$ 1/3 0
1/ $\sqrt{6}$ -1/3 1/2