Unit 7 - Week 5

Week 5 Assignment 5

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-04, 23:59 IST.

1) Which of the pair does not form an Orthogonal Pair? *1 point*

a. $\sin(2\pi f t), \sin(4\pi f t)$
b. $\cos(2\pi f t), \cos(4\pi f t)$
c. $\cos(2\pi f t), \cos(\sqrt{2}\pi f t)$
d. None of the above

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

2) Find the Kronecker product $A \otimes B$ of the matrices A and B as given below *1 point*

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{bmatrix}, B = \begin{bmatrix} 2 & 1 \\ 2 & 3 \end{bmatrix}$$

a)	: $\begin{bmatrix} 2 & 1 & 4 & 2 & 6 & 3 \\ 2 & 3 & 4 & 6 & 6 & 9 \\ 6 & 3 & 4 & 2 & 2 & 1 \\ 6 & 9 & 4 & 6 & 2 & 3 \end{bmatrix}$
b)	: $\begin{bmatrix} 3 & 6 & 9 & 1 & 2 & 3 \\ 9 & 6 & 3 & 3 & 2 & 1 \\ 2 & 4 & 6 & 2 & 4 & 6 \\ 6 & 4 & 1 & 6 & 4 & 1 \end{bmatrix}$
c)	: $\begin{bmatrix} 4 & 2 & 4 & 2 & 6 & 3 \\ 4 & 6 & 4 & 6 & 6 & 9 \\ 6 & 3 & 2 & 1 & 2 & 1 \\ 6 & 9 & 2 & 3 & 2 & 3 \end{bmatrix}$
d)	: $\begin{bmatrix} 2 & 4 & 6 & 1 & 2 & 3 \\ 6 & 4 & 1 & 3 & 2 & 1 \\ 2 & 4 & 6 & 3 & 6 & 9 \\ 6 & 4 & 1 & 9 & 6 & 3 \end{bmatrix}$

a)
b)
c)
d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
a)

3) If **A** is a diagonal matrix, what are its eigenvalues? *1 point*

a) Eigen values are the inverse of the diagonal elements
b) All eigen values are same and equal to product of the diagonal elements
c) Each diagonal elements are the Eigen values.
d) None of the above

a)
b)
c)
d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
c)

4) Image transformation represents a given image as a series summation of a set of ________________. *1 point*

a. Symmetric Matrices.
b. Skew-Symmetric Matrices.
c. Unitary Matrices
d. None of the above.

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

5) DFT is applied to *1 point*

a. Infinite sequences
b. Finite discrete sequence
c. Continuous infinite signals
d. Continuous finite sequences

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

6) For a given 2x2 image U and 2x2 transformation matrix A. Find the transformed image V. *1 point*

$$A = \frac{1}{\sqrt{2}}\begin{bmatrix} 1 & 1 \\ 1 & -1 \end{bmatrix} \quad U = \begin{bmatrix} 2 & 7 \\ -8 & 2 \end{bmatrix}$$

a. $\frac{1}{2}\begin{bmatrix} 3 & -15 \\ 15 & -5 \end{bmatrix}$

b. $\frac{1}{2}\begin{bmatrix} 3 & 15 \\ 15 & 15 \end{bmatrix}$

c. $\frac{1}{2}\begin{bmatrix} 3 & -15 \\ -15 & -5 \end{bmatrix}$

d. None of the above

a.
b.
c.
d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

7) Which of the following can be used as a transformation matrix? *1 point*

a) $A = \frac{1}{2}\begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & -1 & -1 \\ \sqrt{2} & \sqrt{2} & 0 & 0 \\ 0 & 0 & -\sqrt{2} & -\sqrt{2} \end{bmatrix}$

b) $A = \frac{1}{2}\begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & -1 & -1 \\ \sqrt{2} & -\sqrt{2} & 0 & 0 \\ 0 & 0 & -\sqrt{2} & \sqrt{2} \end{bmatrix}$

c) $A = \frac{1}{4}\begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & -1 & -1 \\ \sqrt{2} & \sqrt{2} & 0 & 0 \\ 0 & 0 & -\sqrt{2} & -\sqrt{2} \end{bmatrix}$

d) None of these

a)
b)
c)
d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
b)

8) Which of the following is an application of convolution? *1 point*

a) FIR Filtering
b) Mean Filtering
c) Median Filtering
d) Both a & b

a)
b)
c)
d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
d)

9) Determine the linear convolution of two sequences x(n) = {3, 2, 1, 2} and h(n) = {3, 2, 1, 2} *1 point*

a) y(n) = {3,8,3,12,9,4,4}
b) y(n) = {3,8,8,12,9,4,4}
c) y(n) = {9,12,10,16,9,4,4}
d) y(n) = {3,8,8,1,9,4,4}

a)
b)
c)
d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
c)

10) Given that $W_N^n = e^{-j\frac{2\pi}{N}n}$, where N =8 and $F = W_N^4$. Find the value of F. *1 point*

a) 0
b) -1
c) 1
d) e

a)
b)
c)
d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
b)