

Unit 3 - Week 0

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Assignment 0

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

Due on 2020-01-27, 23:59 IST.

- The entropy of a 2 symbol source with symbol probabilities p and $1 - p$ is maximum when p is

 - 0.2.
 - 1.
 - 0.5.
 - 0.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: c.
- If the symbol error rate of a k -bit constellation is S then the bit error rate is approximately equal to

 - $\log_2 k S$.
 - $\frac{S}{\log_2 k}$.
 - kS .
 - $\frac{S}{k}$.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: d.
- What is the missing block in the following block diagram

 - Decoder.
 - Amplifier.
 - RAM.
 - Quantizer.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: d.
- The job of a source coder is

 - To convert source symbols into bits.
 - To represent an input source message in the most efficient way possible.
 - To add parity check bits..
 - To pulse shape the data.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- In channel coding theorem, channel capacity decides the ----- permissible rate at which error free transmission is possible.

 - Maximum.
 - Minimum.
 - Constant.
 - None of the above.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.
- In Wi-Fi the mode of transmission is

 - continuous.
 - burst.
 - analog.
 - continuous.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- The rank of the matrix given below is,

$$\begin{bmatrix} 3 & 4 & 1 & 6 \\ 9 & 12 & 3 & 18 \\ 8 & 2 & 6 & 4 \\ 1 & 5 & 7 & 4 \end{bmatrix}$$
 - 4.
 - 3.
 - 2.
 - 1.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- The maximum eigen-value of the matrix given below is,

$$\begin{bmatrix} -1 & 3 \\ 5 & 6 \end{bmatrix}$$
 - 7.72.
 - 8.45.
 - 12.34.
 - 3.89.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.
- The Nyquist sampling frequency for a signal with frequencies between -2 Hz to 2 Hz is,

 - 2 Hz.
 - 2.5 Hz.
 - 4 Hz.
 - 6 Hz.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: c.
- The number of bits required for representing the symbols belonging to a 64 QAM constellation is,

 - 2.
 - 8.
 - 4.
 - 6.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: d.
- The expression for covariance between two random variables X and Y is,

 - $E[XY] - E[X]E[Y]$.
 - $E[XY]$.
 - $E[XY] + E[X]E[Y]$.
 - $\frac{E[XY]}{E[X]E[Y]}$.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.
- The null space basis vector for the following matrix is, $\begin{bmatrix} 3 & 6 \\ -9 & -18 \end{bmatrix}$

 - $\begin{bmatrix} -2/\sqrt{5} \\ 1/\sqrt{5} \end{bmatrix}$.
 - $\begin{bmatrix} 3/\sqrt{11} \\ -2/\sqrt{11} \end{bmatrix}$.
 - $\begin{bmatrix} 1/\sqrt{10} \\ 3/\sqrt{10} \end{bmatrix}$.
 - $\begin{bmatrix} 6/\sqrt{61} \\ -5/\sqrt{61} \end{bmatrix}$.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: a.
- The determinant of the following matrix is, $\begin{bmatrix} 6 & -5 & 2 \\ 7 & 1 & -3 \\ 3 & -1 & 0 \end{bmatrix}$

 - 9.
 - 7.
 - 6.
 - 2.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: b.
- The Fourier Transform of a rectangular pulse is,

 - Rectangular.
 - Triangular.
 - Sinc pulse.
 - Impulse.

a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0
Accepted Answers: c.
- Following are statements related to cellular communication:

 - 1G used analog communication.
 - 2G was developed for voice and data communication both.
 - GPRS is also known as 2.5G.
 - MIMO was introduced in 3G.
 - Massive MIMO is used in 4G.
 - The sole aim of 5G communication system is to increase the data rate for high mobility users.
 - (i), (ii), (iii) and (iv) are correct.
 - (i), (iii) and (iv) are correct.
 - (i), (iii) and (vi) are correct.
 - (i), (iii), (iv) and (vi) are correct.

a.
 b.
 c.
 d.

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