Assignment 6

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. Due on 2018-09-12, 23:59 IST.

1) A sinusoidal signal of frequency $f_o$ and amplitude $A$, is sampled at frequency $10f_o$. It is then operated upon by a one-step linear predictor with a single coefficient $w_1$. The value of $w_1$ that maximizes the prediction error variance is

- $\cos(0.1)
- \cos(0.2)
- \cos(0.05)
- \cos(0.02)$

No, the answer is incorrect.
Score: 0
Accepted Answers: $\cos(0.1)$

2) In Question-1, the minimum value of the prediction error variance is

- $\frac{A^2}{2} \cos^2(0.1)$
- $\frac{A^2}{2} \sin^2(0.1)$
- $A^2 \cos^2(0.05)$
- $\sqrt{A^2 \cos^2(0.1)}$

1 point
3) A delta modulation system has a maximum bandwidth constraint of 5 kHz for its input analog signals. Its sampling frequency is 50 kHz. A sinusoid of amplitude 1 V and frequency 1 kHz is input to the system. The value of the step size (in volts) which minimizes slope overload is

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.1,0.2

1 point

4) A linear delta modulation system uses a step size of 0.1 V and has bandwidth of 3 kHz. The sampling frequency is 10 times the Nyquist rate. The maximum amplitude (in volts) for sinusoidal signal of 1 kHz frequency, that can be processed without slope overload distortion is

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.9,1

1 point

5) A square root compander with the characteristic \( z(x) = x_{max} \sqrt{\frac{x}{x_{max}}} \text{sgn}(x), |\frac{x}{x_{max}}| \leq 1 \) is deployed in conjunction with a 3 - bit midrise uniform quantizer where the output of the quantizer varies in the range ±8.75 V. For a input of 0.6 V the magnitude of the quantization error in volts with companding is

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.4,0.5

1 point