

MODULE 3 CLASS

Aidan Hogg & Patrick Naylor - Autumn Term 2020
ELEC50013: Signal and Systems
Department of Electrical and Electronic Engineering

Method:

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Íá Íßææ °ü(5 mins)

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QUESTION 1:

What is the effect on the frequency spectrum if a continuous signal $x(t)$ is sampled?

• $X_s(\omega) = \sum_{k=-\infty}^{\infty} X(\omega - k\omega_s)$

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" $X_s(\omega) = \sum_{k=-\infty}^{\infty} X(\omega - k\omega_s) \text{ for } |\omega| < \omega_s/2$

($X_s(\omega) = \sum_{k=-\infty}^{\infty} X(\omega - k\omega_s) \text{ for } |\omega| < \omega_s/2$

What is the effect on the frequency spectrum if a continuous signal $x(t)$ is sampled?

- $X_s(\omega) = \sum_{k=-\infty}^{\infty} X(\omega - k\omega_s)$
- ! $X_s(\omega) = \sum_{k=-\infty}^{\infty} X(\omega - k\omega_s)$ (aliasing)
- " $X_s(\omega) = \sum_{k=-\infty}^{\infty} X(\omega - k\omega_s)$ (aliasing) $\omega_s > 2\omega_m$
- ($X_s(\omega) = \sum_{k=-\infty}^{\infty} X(\omega - k\omega_s)$ (aliasing) $\omega_s < 2\omega_m$

One Domain	Other Domain
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QUESTION 2:

What is the sampling frequency that would satisfy the Nyquist Sampling Criterion of the signal:

$$f(t) = \cos(2\pi \cdot 1000t) + \sin(2\pi \cdot 1500t)$$

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What is the sampling frequency that would satisfy the Nyquist Sampling Criterion of the signal:

$$f(t) = 10 \cos(2\pi \cdot 1000t) + 5 \sin(2\pi \cdot 1500t)$$

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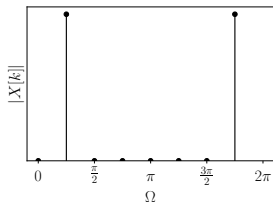
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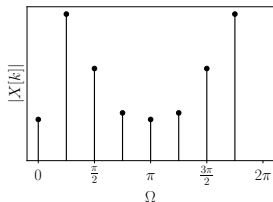
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EXPLANATION

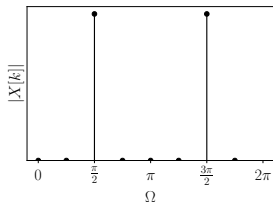
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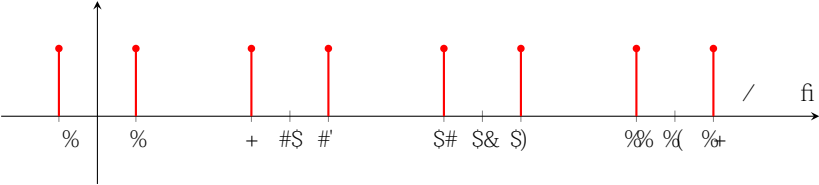
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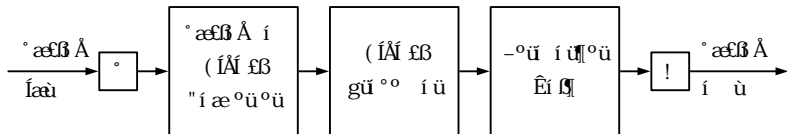
EXPLANATION



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QUESTION 4:

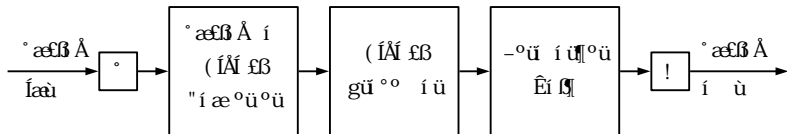
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What is the purpose of B?

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What is the purpose of B?

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QUESTION 5:

Which of these statements are true? à ßüß í ù Íí æ Æß °¶

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Which of these statements are true? à ßüß í ù Íí æ Æß °¶

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QUESTION 6:

Which row shows the process of quantization?



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Which row shows the process of quantization?



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EXPLANATION



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