# Birzeit University

Faculty of Engineering and Technology

Department of Electrical and Computer Engineering

Modern Communication Systems ENEE 3306

Quiz # 1

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**Problem 1**

The signal $m\left(t\right)=5\cos(2π\left(150\right))t+3\cos(2π\left(200\right))t $ is ideally sampled at a rate of 500 samples/sec.

1. Sketch the spectrum of the sampled signal for -800 < f < 800.
2. Is it possible to recover m(t) from the sampled signal? Explain.

**Problem 1**

The signal $m\left(t\right)=5\cos(2π\left(150\right))t$ is sampled at a rate of 300 samples/sec. The samples are applied to an 8-level uniform quantizer with a dynamic range of (-5, 5) V. The quantized levels are then assigned binary digits following the natural binary encoding scheme.

1. Find the signal to quantization noise ratio
2. Find the binary representation corresponding to the sample -1.14 V.