Performance Task
FM Sidebands

Objective:

At the end of the exercise, the students should be able to:

- Plot the sidebands based on the computed modulation index of FM signals.

Requirement:

- Microsoft Word

Instruction: Provide the necessary answers to create a frequency spectrum. **(60 points)**

1. A frequency spectrum has a modulating frequency of $4\,kHz$, a carrier frequency of $20\,kHz$, and a maximum frequency of $4\,kHz$. Provide the following:
    a. The value of four (4) sideband pairs
    b. The frequency deviation
    c. The modulation index
    d. An FM spectrum with proper labeling of sidebands and sideband amplitudes. Refer to **04 Handout 1** for the Bessel function table.

GRADING RUBRIC:

Criteria	Excellent (4)	Good (3)	Fair (2)	Poor (1)	Score
Illustration (x3)	The illustration is **correct and complete**.	The illustration is **correct but missed some details**.	The illustration is **correct but missed significant details**.	The illustration is **incorrect and incomplete**.	/12
Calculation (x1)	**All steps** have no mathematical errors.	**Some steps** have mathematical errors.	**Most steps** have mathematical errors.	The solution is **incorrect**.	/4 x 6
Correctness (x1)	The answer is **correct**.	The answer is **correct but with the wrong units**.	The answer has **no units.**	The answer is **incorrect.**	/4 x 6