ELCT 222
Signals and Systems
Computer Assignment 3

Important:

- This assignment must be typed (e.g., a Word document) – no handwritten work accepted.
- Providing only MATLAB code or only MATLAB output without any discussion will receive 0 points.
- Unclear or illegible work will not receive full credit.
- For answers, provide your discussions or your approach to solving the problems and describe in clear English how your routine works in a few sentences.
- Include MATLAB code at the END of the assignment as an appendix.
- Label all axes in MATLAB.

1. For two cases (i) $RC = 0.1$ and (ii) $RC = 1$:
   a. (20 pts) Calculate the frequency response analytically
   b. (20 pts) (20 pts) Plot the frequency response (magnitude and phase on different plots) as a function of f in Hertz between 0 to 10 Hertz. Which one does suppress the higher frequency tones better?
   c. (20 pts) Compute the output $y(t)$ if the input to the system is given by

$$x(t) = 1 + \cos(5t) + \cos(10t) + \cos(15t)$$

   d. (20 pts) Plot both absolute value of the input and output signals
   e. (20 pts) Discuss the behavior of the circuit to different tones based on the plots above.