

National University of Sciences & Technology  
School of Electrical Engineering and Computer Science  
Department of Humanities and Sciences

MATH-232: Complex variables and Transforms (3+0): BEE2k20-12ABC Spring 2022

**Assignment – 2**

**CLO-2: Compute Fourier series and Fourier integral of a given function.**

Maximum Marks: 10

Instructor: Mr. Saeed Afzal

Announcement Date: 13<sup>th</sup> May 2022

Due Date: 20<sup>th</sup> May 2022

**Instructions:**

- Understanding the question is part of the assignment and copying is not allowed.
- Express your answer in the most simplified form. Direct calculations using calculator are not allowed, you need to show the detail of your work to get the maximum marks.
- This is an individual assignment.
- Assignment must be handwritten and properly arranged with page numbers.
- These two pages must be part of every assignment.
- Assignment is not acceptable after deadline.

**Tasks: Attempt all questions.**

Students Name	NUST/Qalam ID	Section

Total Marks	Marks Obtained
10 Marks	

**Q - 1:** Let Voltage,  $V(t) = \begin{cases} t, & 0 < t < 1\text{ms} \\ -1 - t, & -1\text{ms} < t < 0. \end{cases}$   $V(t + 2\text{ms}) = V(t)$ , for all  $t$ .

(a). Sketch the graph of  $V(t)$  .

(b). what is the frequency in both hertz and radians per second of the periodic voltage?

(c). Find a general expression for the complex Fourier coefficients of  $V(t)$  .

(d). The signal is  $V(t)$  is passed through a band pass filter that passes only frequencies from 1.25kHz to 1.75kHz. What signal emerges expressed as sines and cosines?