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| **Course Name:** | **Networks, Signals and Systems** | **Semester:** | **III** |
| **Date of Performance:** |  | **Batch No:** | **A - 3** |
| **Faculty Name:** |  | **Roll No:** | **16014022050** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **\_\_\_ / 25** |

**Experiment No: 7**

**Title: Study of Continuous Time signal**

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| **Aim and Objective of the Experiment:** |
| Generation and operation on Continuous Time Signal with case study on real life application. |

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| **COs to be achieved:** |
| **CO4**: Understand operations of continuous signals and systems. |

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| **Theory:** |
| **Continuous-Time Signals –**  This signal will have some value at every instant of time. The electrical signals derived in proportion with the physical quantities such as temperature, pressure, sound etc. are generally continuous signals. Other examples of continuous signals are sine wave, cosine wave, triangular wave etc. |

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| **Stepwise-Procedure:** |
| **Continuous time signal –**   1. **Obtain the continuous signal from the application from the case study selected by the student.** 2. **Perform the following operations on the selected signal:**    1. **Amplitude scaling**    2. **Time scaling**    3. **Folding**    4. **Time shifting**   clear all;  close all;  clc;  % Creating the time vector  t = 0:0.01:1;  % Defining the original signal  x = sin(2\*pi\*4\*t);  % Amplitude scaling  amp\_scale = 2;  x\_amp\_scaled = amp\_scale \* x;  % Time scaling  time\_scale = 2;  t\_scaled = time\_scale \* t;  x\_time\_scaled = sin(2\*pi\*4\*t\_scaled);  % Folding  t\_folded = -t;  x\_folded = sin(2\*pi\*4\*t\_folded);  % Time shifting  t\_shifted = t + 0.5;  x\_shifted = sin(2\*pi\*4\*t\_shifted);  % Plotting the results  subplot(2,3,1);  plot(t,x);  xlabel('Time');  ylabel('Amplitude');  title('Original Continuous Signal (ketaki)');  subplot(2,3,2);  plot(t,x\_amp\_scaled);  xlabel('Time');  ylabel('Amplitude');  title('Amplitude Scaled Signal (ketaki)');  subplot(2,3,3);  plot(t\_scaled,x\_time\_scaled);  xlabel('Time');  ylabel('Amplitude');  title('Time Scaled Signal (ketaki)');  subplot(2,3,4);  plot(t,x\_folded);  xlabel('Time');  ylabel('Amplitude');  title('Folded Signal (ketaki)');  subplot(2,3,5);  plot(t,x\_shifted);  xlabel('Time');  ylabel('Amplitude');  title('Time Shifted Signal (ketaki)');   1. **Obtain simulation result of step 2.** 2. **Upload the results in the experiment document.** |

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| **Observations for Continuous time signal:** |
| **Original Continuous Signal –** |
| **Amplitude Scaling –** |
| **Time Scaling –** |
| **Folding –** |
| **Time Shifting –** |

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| **Post Lab Subjective/Objective type Questions:** |
| 1. **Generate any continuous signals perform the operations on it, which are performed in the and upload the hand written solution.**        1. **Generate any discrete signals and perform the operations on it, which are performed in the and upload the hand written solution.** |

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| **Conclusion:** |
| In conclusion, the experiment provided valuable insights into the generation and manipulation of continuous time signals, demonstrating their importance in real-life applications. The operations performed, including amplitude scaling, time scaling, folding, and time shifting, were successfully implemented, showcasing the versatility and flexibility of these techniques in signal processing. |

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| **Signature of faculty in-charge with Date:** |