Quiz # 2

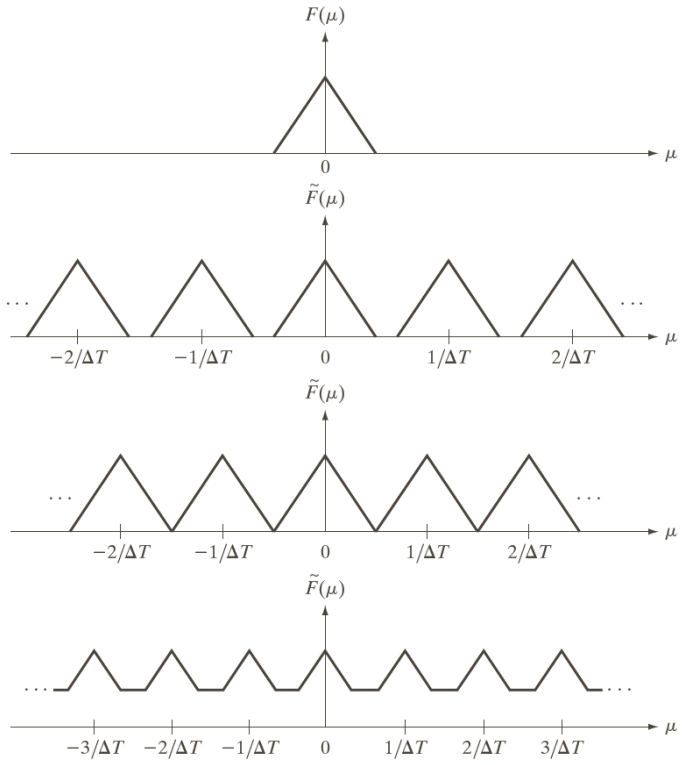
Course: CPE415 – Digital Image Processing
Semester: 8th (FA19-BCE-A/B)
Total Marks = 15

Date: 18-04-2023
Time Allowed: 30 min

Name: _____ **Reg. No:** _____

Question 1: Relate the concepts of image enhancement in the frequency domain, and image restoration to answer the following short questions.

A. In the time domain, a signal is multiplied with an impulse train. Show the signal spectrum in the frequency domain, and illustrate the three cases of under sampling, critical sampling, and oversampling. (3 Marks**)**



Spectrum of band limited signal

Over sampling

Critical Sampling

Under Sampling

B. What kind of frequency domain filter always produces ringing effect? why? (2 Marks)

The Ideal filter designed in frequency domain always produces ringing effect. (1)
That is because of the zero-crossings in the filter response. (1)

C. Do you expect the same result or different result while applying Gaussian filter in the spatial domain Vs in the frequency domain? (1 Mark**)**

Same result is expected since Gaussian filter response is same in both time and frequency domain.

D. In image restoration, if a noisy image is available. How can you estimate the type of noise which affected the image? (2 Mark**)**

We can take strip from a constant intensity region of the noisy image and plot the histogram. (1)
The type of noise present in the image can be estimated by looking at the histogram which will reveal the noise density distribution. (1)

E. In an image containing Gaussian as well as Impulsive noise, which spatial filter is best suited to remove such combinational noise? (1 Mark**)**

Alpha-trimmed filter is best suited in that case.

F. State and show the six popular noise density distributions. (6 Marks**)**