DIGITAL IMAGE PROCESSING

ASSIGNMENT 4

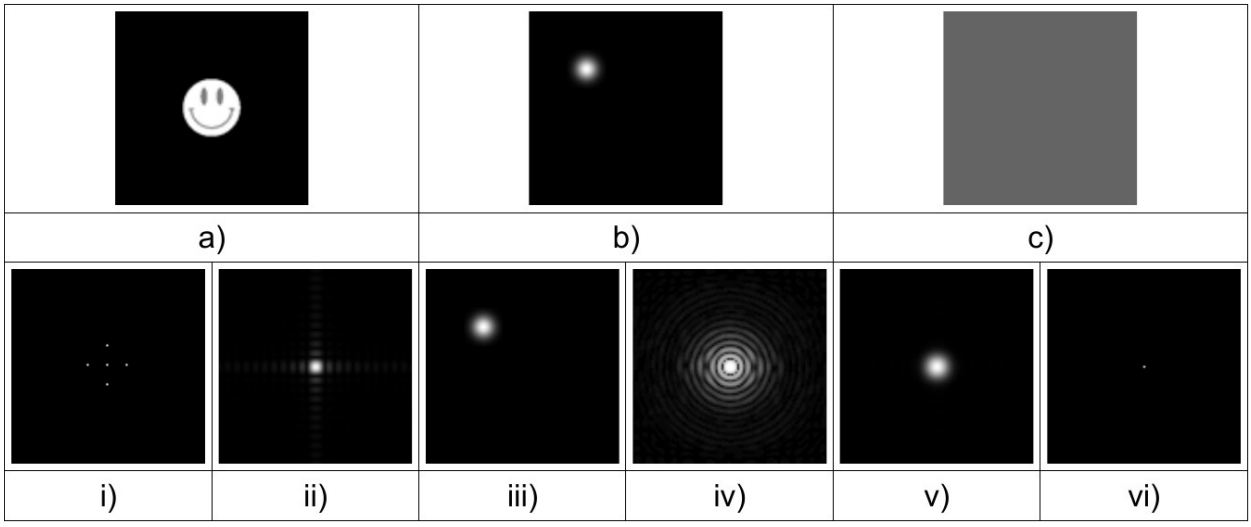
Name : Anupama Rajkumar; **Student Id**: 415252

1. What is the **ringing effect** in the context of image filtering? How is it caused and how can it be avoided?

Ans: The ringing effect in spatial domain while image filtering is due to convolution theorem. Ideal low pass filter looks like box filter in frequency domain which is since in spatial domain. Convolving an image with sinc function copies sine at the location of impulse. Center lobe of sinc is responsible for blurring while outer smaller lobes are majorly responsible for ringing.

Ringing effect can be avoided by using butterworth filters for image filtering

2. Figures a)-c) show three different images, while Figures i)- vi) depict the **amplitude** of six different Fourier Spectra. State which of the given spectra corresponds to which of the images and why? Note: A spectrum can be assigned multiple times and not all spectra have to be used



Ans: a – iv ; b – v; c - vi