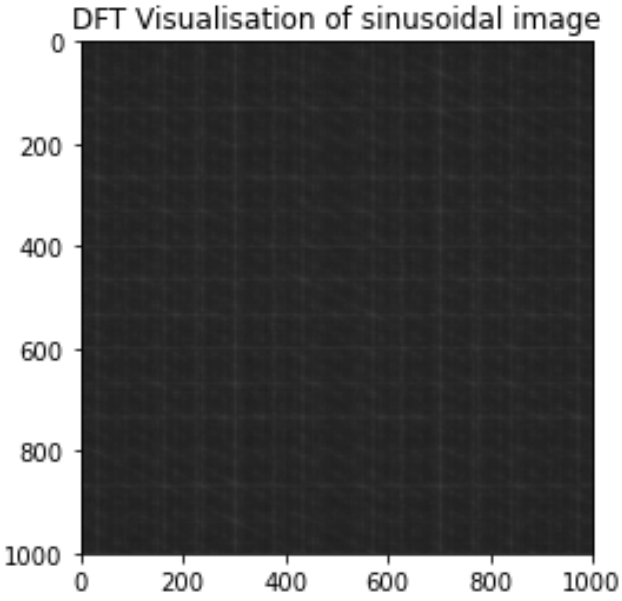
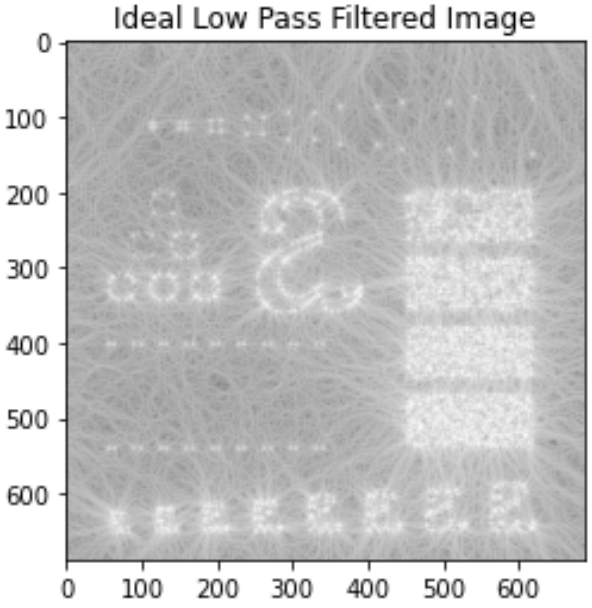
DIP Assignment 3 Results

Q1. a) DFT of sinusoidal image:

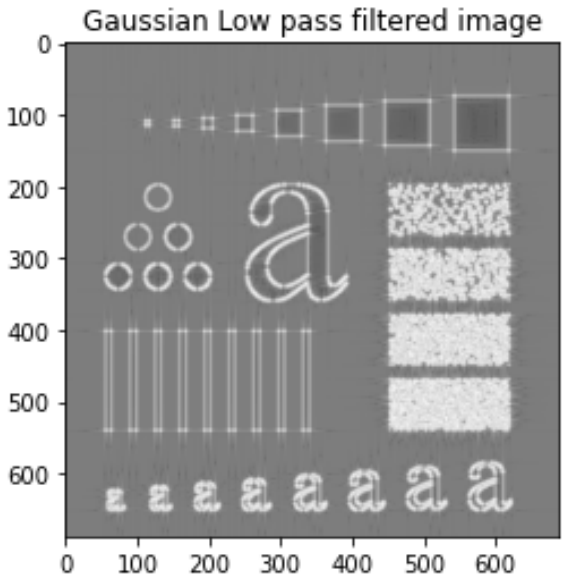


b) Ideal Low Pass filtered image:



In the above image, we can see that the ILPF preserves low-frequency components while removing high-frequency components. This introduces ringing artefacts in the filtered image.

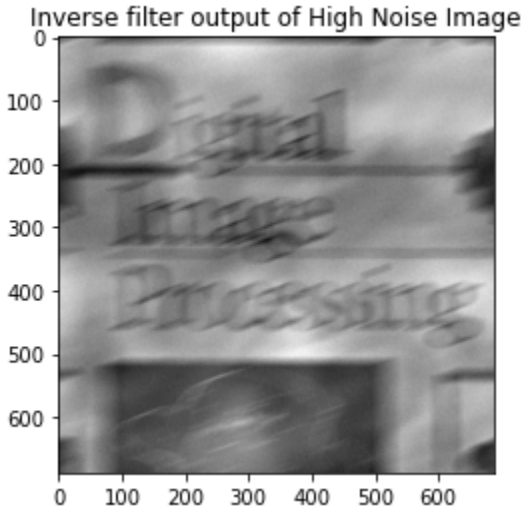
c) Gaussian Low pass filtered Image:

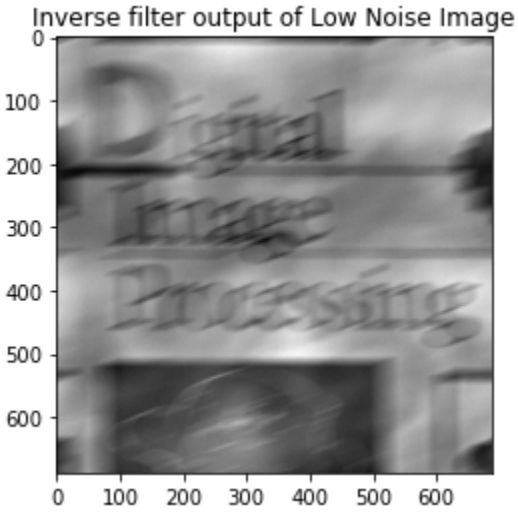


Gaussian low pass filter performs better compared to Ideal Low pass filter.

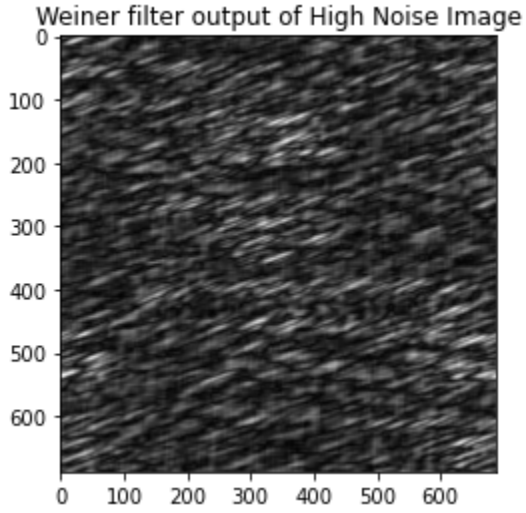
Q2. a) Inverse Filter outputs:

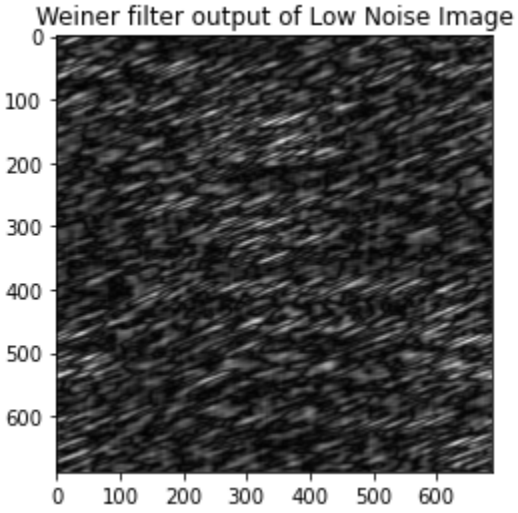
Simple Inverse filtering often leads to noise amplification because H(u,v) could be 0 or very small at some frequencies.



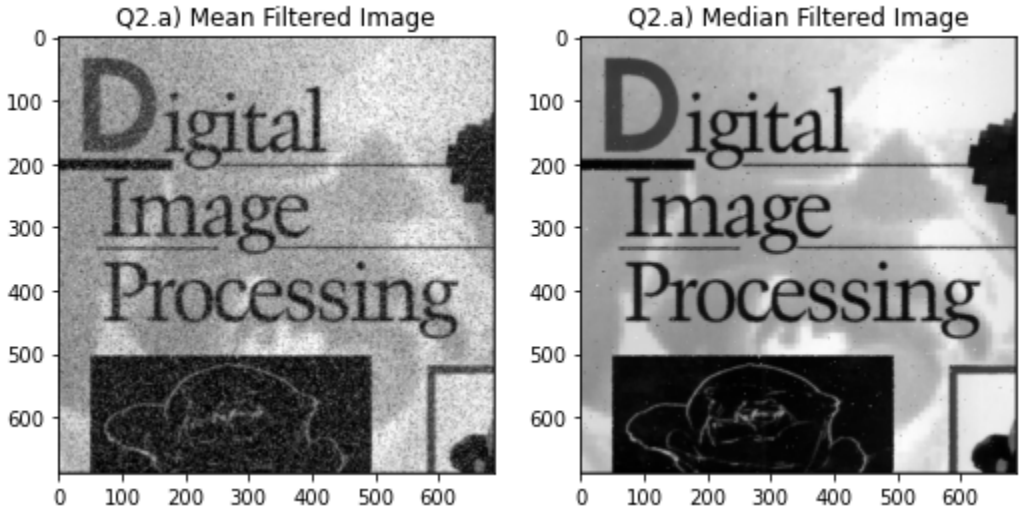


b) Wiener Filter outputs:





Q3. a) Noisy Image output filtered using mean and median filters:



b) Noisy Image output filtered using Bilateral and Gaussian filters: