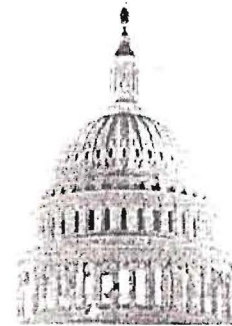
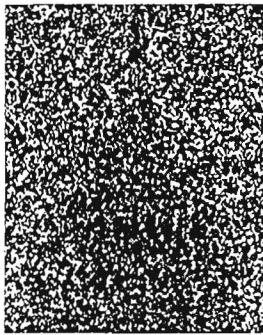
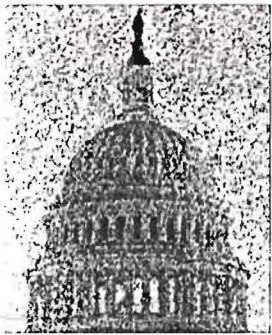
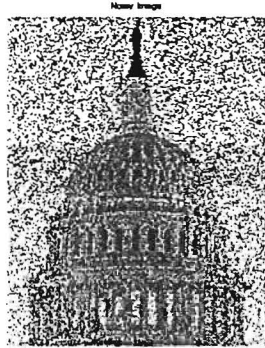


NAME AND NUMBER:

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**Problem 1.** Several spatial filtering operations have been tested (separately) to remove the noise from the image shown below. Some of these results are given in the table below. For each case, name two possible filters that might have been used in the filtering operation.



<p>(a)</p> <p><del>arithmetic mean</del></p> <p><del>Geometric mean</del></p>	<p>(b)</p> <p><del>min filter</del></p> <p><del>contrast harmonic with <math>\rho &lt; 0</math></del></p>	<p>(c)</p> <p><del>median filter</del></p> <p><del>Alpha-trimmed mean filter</del></p>
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**Problem 2.** The transformation function  $s_i = \log_{10}(r_i/2+1)$  is applied to R,G, and B channels of a color image independently. Answer the following questions:

- a) Derive the transformation functions that should be applied to the C,M, and Y channels to produce the same effect.
- b) Will this transformation affect the saturation values of the colors in the image?! Why or why not?!

$R \ G \ B \ \longrightarrow \ C \ M \ Y$

a)  $s_i = \log_{10}(r_i/2 + 1) \ \longrightarrow \ 1 - s_i = \log_{10}((4 - r_i)/2 + 1)$

~~$s_i = 1 - \log_{10}(\frac{4 - r_i}{2} + 1)$~~

$s_i = 1 - \log_{10}(\frac{4 - r_i}{2} + 1)$  for each channel.

b) ~~Yes~~ Yes, because this transformation function is not a linear function.