1. Use a schematic capture tool such as ORCAD or PROTEL to do one video design. Go to www.ti.com and select one of the NTSC video encoders or decoders. Using the schematic capture and copy the application circuit shown in the device datasheet. Please turn in the hardcopy and send me your design project as well.

2. As a video architect, you are asked to develop a PAL video transmitting and receiving system. Assume you have the following specifications.
   a. 625 lines
   b. 25Hz frame rate and 50Hz field rate
   c. 25 line loss per field
   d. 64μS nominal line period
   e. 12μS line blanking interval
   f. 4:3 aspect ratio
   g. Kell factor of 0.7
   h. Carrier sub-carrier is 4.434618MHz
   i. Line frequency is 15.625KHz

   a) Derive the video bandwidth equation for PAL video broadcast system in Europe; b) calculate the minimum video bandwidth; c) do an architectural design of the PAL transmitter and the PAL receiver similar to what we did in class; d) discuss design techniques to minimize video artifacts such as luminance and chrominance cross-color.

3. Compare the NTSC (interlace, 525 lines, 60Hz field rate, 30Hz frame rate) and PAL (interlace, 625 lines, 50Hz field rate, and 25Hz frame rate) video standards. Discuss the advantages and disadvantages of the two standards and why the 50Hz and 60Hz field rates were selected.

4. Discuss the advantages and disadvantages of interlace versus progressive scanning techniques. Provide technical reasons why one scheme is selected over the other.