Exercises to inf5442_h14_3

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1. Define conversion gain
2. A 2.2um 4T pixel has maximum output voltage swing of 1.1V, and FWC is 14ke-. What is the conversion gain? You can assume source follower gain of 0.8.
3. If temporal noise floor is 2.3e- rms, what is the dynamic range of this pixel?
4. Why does QE for short wavelengts eventually drop to zero?
5. Why does QE for long wavelengts eventually drop to zero?
6. Why does Bayer RGB pattern have twice as many green pixels as red and blue?
7. Can you list three types of fixed pattern noise sources?
8. List three types of temporal noise sources
9. Explain how FPN can be removed in pictures
10. Explain how temporal noise can be removed in pictures
11. Calculate the standard deviation of a pixel value whose average (mean) value is 1000e-. What is the signal/noise ratio?
12. Why is smear only visible in CCDs, not visible in CMOS image sensors?