Answer the **four multiple choice questions** below by choosing the one, best answer. Then ask a question about the lecture.

1) What is the continuity equation in words?
   a) Rate of increase = (inflow – outflow) + drift - diffusion
   b) Rate of increase = (inflow – outflow) + generation - recombination
   c) Rate of increase = (inflow - outflow)
   d) Rate of increase = (inflow + outflow)
   e) Rate of increase = (outflow + inflow) + generation - recombination

2) What approximations / assumptions are made in deriving the minority carrier diffusion equation.
   a) Steady-state conditions
   b) No recombination
   c) No generation
   d) Low level injection
   e) Validity of Einstein Relation

3) If minority carrier electrons are injected at the left face of a p-type semiconductor, and there is **no recombination-generation** in the semiconductor, and the right contact enforces equilibrium conditions (i.e. $\Delta n = 0$), how does the steady-state minority electron profile, $\Delta n(x)$, vary with position?
   a) $\Delta n(x)$ decreases linearly with position from left to right.
   b) $\Delta n(x)$ increases linearly with position from left to right.
   c) $\Delta n(x)$ decreases as the square of distance from left to right.
   d) $\Delta n(x)$ increases as the square of distance from left to right.
   e) $\Delta n(x)$ decreases exponentially with position from left to right.
4) If minority carrier electrons are injected at the left face of a p-type semiconductor, and there is **significant recombination** in the semiconductor, and the right contact enforces equilibrium conditions (i.e. $\Delta n = 0$), how does the steady-state minority electron profile, $\Delta n(x)$, vary with position?

   a) $\Delta n(x)$ decreases linearly with position from left to right.
   b) $\Delta n(x)$ increases linearly with position from left to right.
   c) $\Delta n(x)$ decreases as the square of distance from left to right.
   d) $\Delta n(x)$ increases as the square of distance from left to right.
   e) $\Delta n(x)$ decreases exponentially with position from left to right.

5) What question(s) do you have about this lecture?

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*Turn in to Ms. Wanda Dallinger, EE-326 before 4:30 PM Friday, Feb. 22*