8.1 Drift diffusion model

Quiz

Answer these questions to get feedback on how well you understand the course. Only one of the answers is correct. You don't have to answer every question. If you don't know the answer you can just leave it blank (default option: “I won't answer this question”) and this won't affect your score. Answering **correctly** will **add 2 points** to your score but on the other hand you'll **lose 1 point** if your answer is **wrong**. The questions are divided in groups of five questions.

Press **See result** after you have finished answering.

Displaying questions **1**..**10** of **10**:

Question 1

Transfer of charge in the volume of semiconductors is mediated by...

Possible answers for question 1:

- … photons.
- … the electrons.
- … the electrons and holes.
- I won't answer this question

Question 2

What forces acting on charge carriers is considered in the drift and diffusion model?

Possible answers for question 2:

- The forces of electric and magnetic fields.
- Diffusive and Lorenz force excluding magnetic effects.
- Gravitational force.
- I won't answer this question

Question 3

What function is used to model doping profiles resulting from the processes of diffusion and ion implantation?

Possible answers for question 3:

- Linear.
- Gaussian.
- Quadratic.
- I won't answer this question

Question 4

What is defined in the model drift and diffusion with doping profile and concentration of charge carriers?

Possible answers for question 4:

- Concentrations of free charge.
- Built-in potential.
- Barrier potential.
- I won't answer this question

Question 5

Current density in semiconductors doped by donors only is given by...

Possible answers for question 5:

- … sum of the flow of electrons and holes.
- … flow of holes.
- … flow of electrons.
- I won't answer this question

Question 6

What is the dominant cause of generation and recombination of free charge carriers in semiconductors in thermal equilibrium?

Possible answers for question 6:

- Transitions of electrons.
- Transitions of photons.
- Transitions of phonons.
- I won't answer this question

Question 7

Description of the Gunn phenomenon at a macroscopic level, it is possible by...

Possible answers for question 7:

- … appropriate modeling electron mobility.
- … tools of quantum mechanics.
- … empirical corrections.
- I won't answer this question

Question 8

Boundary conditionsfor ohmic contact assumed...

Possible answers for question 8:

- … zero normal component of current density.
- … thermal equilibrium of semiconductor and the absence of free charge at the interface.
- … validity of Gauss law.
- I won't answer this question

Question 9

Boundary condition for Shottky contact assumed...

Possible answers for question 9:

- … apriori knowledge of the Shottky barrier value for the given material.
- … infinite speed of thermal recombination.
- … negligible influence of thermal recombination.
- I won't answer this question

Question 10

What are the dependent variables of the drift and diffusion model?

Possible answers for question 10:

- Time and temperature
- Drift velocity of charge carriers and electric potential.
- Electric potential and concentration of electrons and holes.
- I won't answer this question

see result