Electronic Constructions

Final Evaluation

II Term 2016-2017

1) Solid state physics (10p)

a) Sketch and explain the difference between amorphous, monocrystalline and policrystaline atomic array (3p)

b) Why can´t we identify atomic array of matter with a microscope? Which is the current method? (3p)

c) Sketch and explain absorption and emission of photons in an atom. (4p)

2) Semiconductor (25p)

a) Sketch and explain the atomic arrange of silicon (3p)

b) Why is silicon the most common element in the semiconductor industry? (2p)

c) List three properties of silicon (3p)

d) Explain what the piezoeresistive effect is. (4p)

e) List 3 applications for piezoresistors (3p)

f) Sketch and explain the difference between direct and indirect semiconductors. Which one is silicon? (4p)

g) What is band gap? Sketch and explain for the three different cases. (4p)

h) Which is the most common material for n-doping? And for p-doping? (2p)

3) Semiconductor manufacturing process (15p)

a) Sketch and explain the process flow for semiconductor manufacturing process and detail parameters and characteristics of the procedures (15p)

4) Bonus (3p)

a) List and describe three methods for materials and structures characterization