

Nanoscience I 2009. Final exam 6.6 2010

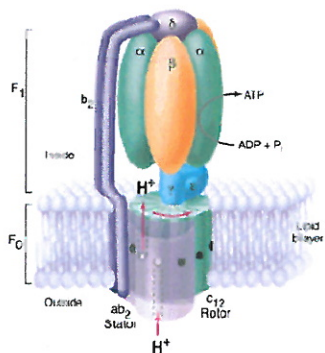
Remember to write your name, student number (or Finnish social security number) and from which University you are (HY/TKK). You may answer in Finnish, Swedish, English, or German.

1. (2 p/subpoint) Define briefly ($\lesssim 1/3$ page) the following concepts and (if it is not obvious) how they relate to nanoscience

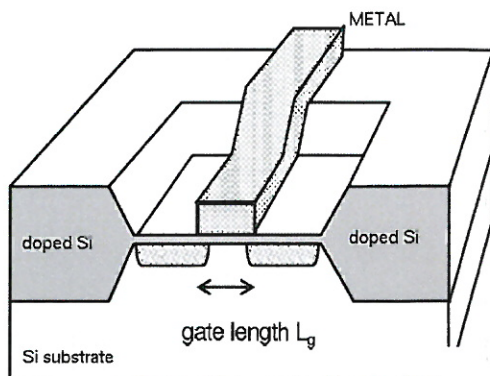
- a. Quantum dot
- b. Chemical Vapor deposition
- c. Stranski-Krastanov growth mode
- d. Giant magnetoresistance (GMR)
- e. Macromolecule
- f. Electromigration
- g. Dendrimer
- h. Atomic force microscopy

2. (4 p/subpoint) Recognize and describe briefly the following nanostructures

a.



b.



TURN OVER!

3. (4 p) Describe how and why nanostructures can be made with polymers using the block copolymer approach.

4. (4 p) Consider the following graphene plane. What chiral index (a, b) will a nanotube that is based on the vector \vec{OA} have, when the plane is cut along the dashed lines. Draw or explain how you found your solution.

