

Quiz: Lecture 3.1
Principles of Electronic Nanobiosensors
Muhammad A. Alam, nanoHUB-U Fall 2013

Answer the **five questions** below by choosing the **one, best answer**.

- 1) A pH-meter that measures acidity of the orange juice made Dr. Beakman a rich man. Beakman's pH-meter was a
 - a) Amperometric sensor.
 - b) Potentiometric sensor.
 - c) Cantilever based sensor.
 - d) Optical index based sensor.

- 2) The accumulation mode of a transistor operation is defined by
 - a) Increase of mobile carriers of the same sign as the substrate doping.
 - b) Depletion of mobile carriers away from the interface.
 - c) Exponential increase of mobile carriers with biomolecule density.
 - d) None of the above.

- 3) Each string of human DNA contains 1nC of charge, and the two strings (in a double helix) are approximately 1nm apart. The resulting force is
 - a) Attractive.
 - b) Negligible.
 - c) Sometimes attractive, sometime repulsive.
 - d) Always repulsive

- 4) If the dielectric constant of water is 78, the repulsion between the DNA in water would
 - a) Increase with respect to air.
 - b) Decrease with respect to air.
 - c) Stay about the same.
 - d) Depends whether the bonding is covalent or not.

- 5) The puzzle discussed in this lecture is the following ...
 - a) Why does potentiometric sensor has such a large market segment.
 - b) The linear response of a potentiometric sensor.
 - c) The logarithmic response of a potentiometric sensor.
 - d) Why DNA molecule is charged.

End of quiz. This quiz contains 5 questions.