

Quiz: Lecture 3.2
Principles of Electronic Nanobiosensors
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Answer the **five questions** below by choosing the **one, best answer**.

- 1) Salt is ionized (dissociated) in water because
 - a) Water is a good solvent for all materials.
 - b) The ionic attraction between Na and Cl is reduced by water.
 - c) Salt molecules are dissociated by the kinetic energy of water molecules.
 - d) None of the above.

- 2) At low salt concentration, the screening distance is given by
 - a) The Debye length.
 - b) Fractal dimension.
 - c) Peclet number.
 - d) Size of the molecule.

- 3) The Debye length depends on
 - a) The salt concentration.
 - b) Dielectric constant of the fluid.
 - c) Temperature of the fluid.
 - d) All of the above.

- 4) Gouy-Chapman theory is used to calculate the effect of salt screening at high salt concentration. At high salt concentration, the charges of the biomolecules are
 - a) mostly neutralized by salt.
 - b) mostly neutralized by the MOSFET charge.
 - c) Divided equally between MOSFET and salt.
 - d) None of the above.

- 5) The Gouy-Chapman theory as discussed in the lecture
 - a) Is appropriate for salt concentration found in physiological conditions.
 - b) Explains the logarithmic dependence of the potentiometric sensor on salt concentration.
 - c) Explains the logarithmic dependence of the potentiometric sensor on analyte concentration.
 - d) All of the above.

End of quiz. This quiz contains 5 questions.