

Quiz: Lecture 3.6
Principles of Electronic Nanobiosensors
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Answer the **five questions** below by choosing the **one, best answer**.

- 1) The high frequency operation helps beat the diffusion limit because
 - a) The DNA polymer cannot follow the high frequency response.
 - b) The salt atoms cannot follow the high frequency response.
 - c) The potential in the channel cannot follow the high frequency response.
 - d) None of the above.

- 2) Assume that a new receptor DNA has been designed which carries no charge its backbone. In this case, this of the following statements is true?
 - a) The repulsion between the receptor and target is reduced.
 - b) The salt concentration can now be decreased.
 - c) The sensor will see further along the target molecule.
 - d) All of the above.

- 3) In principle, NP-NW pair can amplify pH better than double-gated(DG) MOSFET. This is because
 - a) NP-NW transistor is a horizontal structure, while DG-FET is a vertical structure.
 - b) The channel materials for NP-NW pair can be different.
 - c) The NP-NW can be made thinner compared to DG-FET.
 - d) Quantum effects are important for NW-NP devices, but not for DG-FET devices.

- 4) The condition for signal amplification by NW-NP pair is
 - a) Both NW and NP transistors are noise-free.
 - b) The NW is noise-free.
 - c) The instrument noise is larger than that of both NP and NW.
 - d) The instrument noise is larger than that of the NW.

- 5) Which of the following sensors is not limited by screening
 - a) Optical based sensors.
 - b) Amperometric sensors.
 - c) Cantilever based sensors.
 - d) All of the above.

End of quiz. This quiz contains 5 questions.