Fundamentals of Nanotransistors

L3.2 Quiz

ANSWERS

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Lecture 3.2: Landauer Approach

1) Which of the following best describes a "Landauer contact"?

a) It has strong elastic scattering that maintains thermodynamic equilibrium.
b) It has strong inelastic scattering that maintains thermodynamic equilibrium.
c) It is large, i.e. it has many more channels than the device.
d) It has strong elastic scattering that maintains thermodynamic equilibrium **and** is large, i.e. it has many more channels than the device.
e) It has strong inelastic scattering that maintains thermodynamic equilibrium and is large, i.e. it has many more channels than the device.

2) In the Landauer Approach for a device with two contact labeled 1 and 2, the net current at energy, *E*, entering contact 2 is proportional to which of the following?

a) $f_1(E)$
b) $f_2(E)$
c) $f_1(E) - f_2(E)$
d) $f_1(E) + f_2(E)$
e) $f_1(E)\,´\,f_2(E)$

3) What is the quantity, $\frac{h}{4}\langle u_x^+(E)\rangle D(E)$?

a) The transmission.
b) The Fermi window.
c) The number of channels at energy, *E*.
d) The total number of channels below energy, *E*.
e) The quantum of conductance.