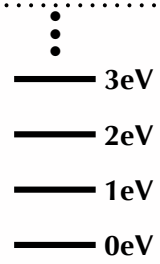
Physics 3410 Quiz 10

Please write the letter of the correct answer in the box provided. Name: _____

Questions 1–4 refer to a finite number of identical particles at temperature T, which can be in one of a number of energy microstates ("states" for short).



☐ 1. Which states have the higher average occupancy?
A) the higher energy states B) the lower energy states

☐ 2. The particles are considered "non-interacting" for energies much … than μ.
A) larger B) smaller

☐ 3. The occupancy of an energy state is never greater than one if the particles are
A) bosons B) fermions

☐ 4. For bosons, the energy state where $E=\mu$
A) is occupied with probability 50%
B) is the occupied state with the largest energy
C) is impossible

☐ 5. The Fermi energy E_F of an electron gas … as we increase the number of electrons.
A) increases B) decreases

☐ 6. When a Fermi gas is compressed (i.e. its volume decreases), its total energy
A) increases B) decreases

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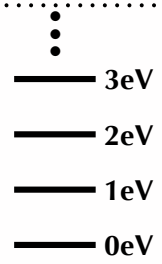

B

1. Which states have the higher average occupancy?
A) the higher energy states **B) the lower energy states**

A

2. The particles are considered "non-interacting" for energies much … than μ.
A) larger **B) smaller**

B

3. The occupancy of an energy state is never greater than one if the particles are
A) bosons **B) fermions**

C

4. For bosons, the energy state where $E=\mu$
A) is occupied with probability 50%
B) is the occupied state with the largest energy
C) is impossible

A

5. The Fermi energy E_F of an electron gas … as we increase the number of electrons.
A) increases **B) decreases**

A

6. When a Fermi gas is compressed (i.e. its volume decreases), its total energy
A) increases **B) decreases**