Act 1

The Pauli exclusion principle applies to all fermions in all situations (not just to electrons in atoms). Consider electrons in a 2-dimensional infinite square well potential.

1. How many electrons can be in the first excited energy level?

a. 1 b. 2 c. 3 d. 4 e. 5

Hint: Remember the (n_x,n_y) quantum numbers.

2. If there are 4 electrons in the well, what is the energy of the most energetic one (ignoring e-e interactions, and assuming the total energy is as low as possible)?

a. $(h^2/8mL^2) \times 2$
b. $(h^2/8mL^2) \times 5$
c. $(h^2/8mL^2) \times 10$