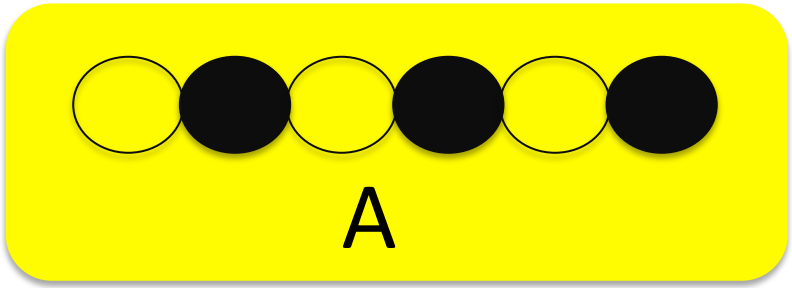
Concept Te$t

Which of the following sketches best illustrates the orbitals at the very top of a band in a solid?



A

B

C

D

Concept Te$t

How many vibrational modes are possible for methane?

A. 4

B. 9

C. 10

D. 15

3N-5 modes for linear molecules; 3N-6 for nonlinear.

Concept Te$t

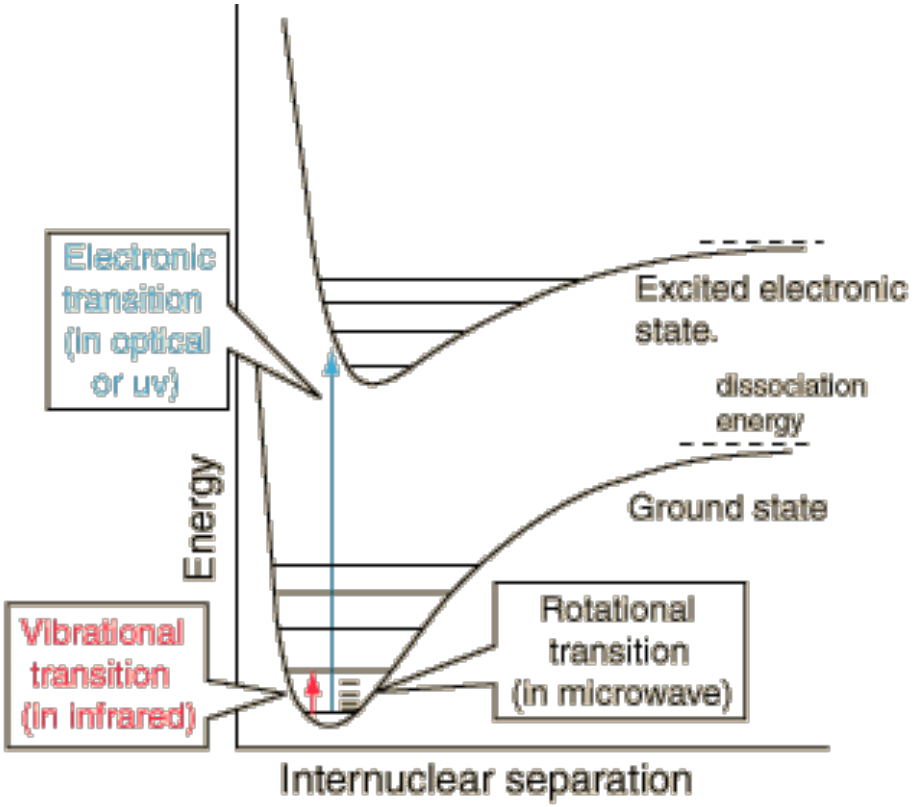
Which of the following statements about Joblonski diagrams is FALSE?

A. The bottom of the well corresponds to the most stable nuclear-nuclear distance.

B. Electronic transitions usually occur between the bottom of the ground state well and the bottom of the excited state well.

C. IR light of the proper wavelength can cause molecules to become vibrationally excited.

D. When molecules in food become rotationally excited they can transfer their energy to their surroundings, which cooks the food.



Concept Te$t

You make a new material and want to determine whether it is a semiconductor or metal. You measure the conductivity of the material at several temperatures and discover that the conductivity increases as T increases. Your material is a

A. Semiconductor

B. Metal

Concept Te$t

Which of the following statements about semiconductors is TRUE?

A. Electrons "roll" uphill in energy while holes run downhill.

B. Electrons and holes move to lower energy orbitals.

C. Conduction and valence band edges "bend" at the interface of a p-n junction.

D. At least 50% of an impurity atom must be added with Si to make it p or n doped.