1 A typical frequency of visible light is ...

A 1011 Hz
B 1013 Hz
C 1015 Hz
D 1017 Hz
E None of the above

2 What happens when an electron is placed in a bonding molecular orbital (MO) formed by combination of orbitals on two atoms?

A Potential energy becomes more negative.
B Potential energy becomes more positive.
C Kinetic energy becomes less positive.
D None of the above

3 An electron is in a bonding MO. What happens when the atoms forming the MO move closer together, from an very large initial separation?

A Potential energy becomes more negative.
B Kinetic energy becomes more positive.
C Total energy always becomes more negative.
D A & B
E None of the above

4 An electron is in a bonding MO. What happens when the atoms forming the MO move very close together?

A Potential energy becomes less negative
B Kinetic energy becomes less positive
C Total energy becomes less negative
D A & B & C
E None of the above

5 What happens when an electron is placed in an antibonding MO formed by combination of orbitals on two atoms?

A Potential energy becomes more negative.
B Potential energy becomes more positive.
C Kinetic energy becomes less positive.
D None of the above

6 An electron is in an antibonding MO. What happens when the atoms forming the MO move closer together, from an large initial separation?

A Potential energy becomes more negative.
B Kinetic energy becomes less positive.
C Total energy always become more negative.
D A & B
E None of the above

7 An electron is in an antibonding bonding MO. What happens when the atoms forming the MO move very close together?

A Potential energy becomes more negative
B Kinetic energy becomes less positive
C Total energy becomes more positive
D A & B & C
E None of the above

8 The length of a bond is the position of the minimum in the bonding MO total energy. At this distance, compared to the bond stabilization, the antibond destabilization is ...

A always less.
B always the same.
C always more.
D Further information needed.

9 H2 has two bonding electrons and no antibonding electrons. The total energy, relative to separated atoms, when two H atoms approach is ...

A always positive.
B always zero.
C negative at large separations and then positive at smaller separations.
D Further information needed.

10 He2 would have two bonding electrons and two antibonding electrons. The total energy, relative to separated atoms, when two He atoms approach is ...

A always positive.
B always zero.
C negative at large separations and then positive at smaller separations.
D Further information needed.