PHYSICS 6C PRACTICE QUIZ 9

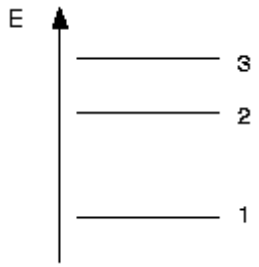
THE FOLLOWINGMULTIPLE CHOICE QUESTIONS ARE NOT TO BE TURNED IN FOR GRADING. THEY ARE INTENDED AS A SELF EVALUATION QUIZ AND PRACTICE FOR THE FINAL EXAM

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) One of the emission lines described by the original version of Balmer's formula has wavelength 377 nm. What is the value of n in Balmer's formula that gives this emission line?
   A) 11
   B) 12
   C) 13
   D) 14

2) Part of the energy level diagram of a certain atom is shown in Figure 1. The energy spacing between levels 1 and 2 is twice that between 2 and 3. If an electron makes a transition from level 3 to level 2, the radiation of wavelength λ is emitted.

Figure 1



What possible radiation wavelengths might be produced by other transitions between the three energy levels?
   A) Only 2λ
   B) Both 2λ and 3λ
   C) Both $\lambda/2$ and $\lambda/3$
   D) Only $\lambda/2$

3) The kinetic energy of an electron in a Bohr orbit of the hydrogn atom is 8.57×10^{-20} J. What is the radius of the orbit?
   A) 4.12×10^{-9} m
   B) 5.29×10^{-11} m
   C) 2.01×10^{-9} m
   D) 1.35×10^{-9} m
   E) 2.64×10^{-9} m

4) The energy required to remove the electron from a hydrogen atom in the n = 11 state is closest to:

A) 0.11 eV

B) 0.094 eV

C) 0.080 eV

D) 0.14 eV

E) 0.17 eV

5) An electron has the same de Broglie wavelength as a 1.8 eV photon. The speed of the electron is closest to:

A) 840 m/s

B) 1100 m/s

C) 980 m/s

D) 910 m/s

E) 770 m/s

6) The correct ground state electron configuration of boron (Z = 5) is:

A) $1s^2 1p^2 2s$

B) $1s^2 2p^3$

C) $1s^2 2p^2 3s$

D) $1s^2 2s^2 p^3$

E) $1s^2 2s^2 2p$