

**ASTRONOMY 2 — Overview of the Universe**  
**Third Practice Problem Set**

**1. True or False:** Mark **T** if you believe the statement to be true in its entirety. Mark **F** if any part of the statement is false.

- (1) The energy of an optical photon is less than the energy of a radio photon
- (2) Time on a stationary clock appears to tick slower than time on a moving clock
- (3) The formula:  $E = h\nu$  is one of Maxwell's equations and explains the wave nature of electromagnetic radiation
- (4) There are absorption lines in the spectrum of the Sun that indicate the presence of Calcium atoms in its outer regions
- (5) Most of the stars in an Sc galaxy's disk participate in organized rotation about its center
- (6) The shape of an E7 galaxy is closer to spherical than the shape of an E1 galaxy
- (7) The basic structural components of an elliptical galaxy include a disk with spiral arms, a centrally concentrated bulge, and an extended spherical halo
- (8) A Cepheid variable is a star that is named for the fact that its luminosity varies with time.
- (9) The further away a galaxy is from us, the faster it recedes from us over time.
- (10) Stars in the disk of a spiral galaxy are older on average than stars in the bulge or halo of the galaxy