Astronomy 311: *Quiz 2 Solutions*

1. (b)
2. (d)
3. (a)
4. T, F, T, F
5. the early universe was both small and massive, its description requires a unification of our currently known forces, ie. a consistent theory of gravity combined with quantum mechanics. No one has succeeded in combining these theories and so the first moments of and after the Big Bang are beyond the validity of theoretical & experimental physics
6. any reasonable answer, with explanation/description
7. unification has been verified (EM force, electroweak force) or postulated (GUT force); appears likely to occur as temperatures and densities increase
8. - CMB at 3 K matches Big Bang prediction of stretched visible 3000K radiation
   - Helium content of universe exactly matches Big Bang fusion predictions
   - Night sky is dark (Olber's Paradox resolved by a finite, changing Universe)
   - redshift of almost all observable galaxies (Hubble's Law & expansion!)
   - appearance of old galaxies (an evolving, finitely old universe)