

Physics U111 – Introduction to Astronomy – Fall 2007  
Professor Vaughn  
Quiz #9 – 5 December 2007 – answers

**True or False** (2 points each)

1. The cores of many type II supernovae collapse and form black holes. (T)
2. As stars get older, they slide down and to the right on the main sequence. (F)
3. The heaviest element to be found in the core of a burning star is lead. (F)
4. A white dwarf will eventually have a core of iron. (F)
5. Most pulsars are believed to be rapidly rotating neutron stars. (T)

**Fill in the blanks** (3 points each)

1. The end of nuclear fusion in a star of ten solar masses is followed by a violent explosion known as a (type II) supernova.
2. A pair of stars in orbit around each other is known as a binary system.
3. A slowly expanding envelope of gas surrounding a small, hot central star identifies an object called a planetary nebula.
4. The Crab nebula is the remnant of a supernova seen by Chinese astronomers in 1054.

**Multiple choice** (3 points each)

1. A solar mass star will eventually burn all its nuclear fuel and end as a  
a) red giant                      b) white dwarf                      c) neutron star  
d) type II supernova                      e) black hole
2. The temperature required to ignite helium fusion (to carbon) is about  
a) one million K                      b) ten million K                      c) 100 million K  
d) 600 million K                      e) 10 billion K
3. The onset of helium burning in a solar mass star is signaled by a  
a) big bang                      b) type I supernova                      c) helium flash  
d) globular cluster                      e) nova