As a result of gravity, a large cloud of hydrogen and helium gas contracts and the gas gets denser and denser. Then what happens at the center of the gas cloud?

a) the temperature increases
b) the temperature decreases
c) the pressure increases
d) the pressure decreases
e) both a) and c)

As a result of gravity the proto-star continues to collapse until something happens in the core of the star to stop the collapse?

a) hydrogen fusion "ignition"
b) helium fusion "ignition"
c) coulomb repulsion exceeds the gravitational pressure
d) electron degeneracy pressure exceeds the gravitational pressure
e) neutron degeneracy pressure exceeds the gravitational pressure

Following the fusion of two hydrogen (protons) the following is said (in the video) to form:

a) di-hydrogen
b) deuterium
c) tritium
d) quartium
e) pentium

Chapter 12  

video: Becoming a Red Giant

As hydrogen fuses to helium, stopping the implosion of the star, helium starts to build up in the core and the video says:

a) the star is on the "main sequence"
b) fusion releases "a ton of energy"
c) the core begins to shrink
d) a) and b)
e) a) and b) and c)

As helium builds up in the core of the star then the video says the core becomes:

a) opaque to energy transport
b) more and more massive
c) denser and denser
d) b) and c)
e) none of the above were said to happen

Once hydrogen is used up in the now helium core, the video says hydrogen fuses in a "shell" around the core where:

a) the pressure is higher than when there was a hydrogen core
b) the hydrogen is fusing even faster than when there was a hydrogen core
c) fusion is occurring over a larger radius than when there was a hydrogen core
d) a) and b)
e) a) and b) and c)

During the "red giant phase" our Sun is expected to increase in diameter by:

a) 25 times
b) 50 times
c) 100 times
d) 250 times
e) 500 times
5) In the Sun's "red giant phase" the video says that helium fuses predominantly into:
   a) beryllium
   b) carbon
   c) oxygen
   d) a) and b)
   e) b) and c)

   video: White and Black Dwarfs

1) Our Sun is now "brighter and hotter" than when it was formed _______ years ago?
   a) 4.4 to 4.5 billion
   b) 4.5 to 4.6 billion
   c) 4.6 to 4.7 billion
   d) 4.7 to 4.8 billion
   e) 4.8 to 5.0 billion

2) In the Sun's "red giant phases", the Earth's orbit will be at about:
   a) 1/4 times the Sun's radius
   b) 1/2 times the Sun's radius
   c) 1 times the Sun's radius
   d) 3/2 times the Sun's radius
   e) 2 times the Sun's radius

3) As a result of gravity the helium core of a red giant continues to collapse until something happens in the core of the (1 solar mass) star to stop the collapse?
   a) ignition of the hydrogen (in the shell just outside the helium core) in a "hydrogen flash"
   b) ignition of helium fusion (in the helium core) in a "helium flash"
   c) coulomb repulsion exceeds the gravitational pressure
   d) electron degeneracy pressure exceeds the gravitational pressure
   e) neutron degeneracy pressure exceeds the gravitational pressure

4) In the case of our Sun, the temperature in the core will never get to the point for the fusing of:
   a) hydrogen
   b) helium
   c) carbon
   d) oxygen
   e) c) and d)

5) In the video for a solar mass star it says that eventually the remnant star is composed of an inert mass of:
   a) hydrogen
   b) helium
   c) carbon and oxygen
   d) a) and b)
   e) b) and c)

   video: Life Cycle of Massive Stars

1) In the video on the life cycle of MASSIVE stars the mass of a MASSIVE star was defined to be GREATER than:
   a) 6 times the mass of the sun
   b) 7 times the mass of the sun
   c) 8 times the mass of the sun
   d) 9 times the mass of the sun
   e) 10 times the mass of the sun

2) The lifespan of MASSIVE stars is _______ times SHORTER than the lifespan of our Sun?
   a) 10
   b) 100
   c) 1000
   d) 10,000
   e) 100,000

3) In the video it talks about fusing up to what isotope of iron?
   a) iron-54
   b) iron-56
   c) iron-57
   d) iron-60
   e) iron-62

4) Fusing of iron, to elements heavier than iron, is a(n) _______ reaction?
   a) endothermic
   b) exothermic
   c) hydrothermic
   d) astrothermic
   e) mesothermic

   video: Supernova (Supernovae)
   [additional clarification in video: Supernova clarification]

1) Electron degeneracy pressure temporarily stabilizes the collapse of the iron core of a super-massive star until occurs (in the core of the star):
   a) electron capture
   b) neutron capture
   c) electron decay
   d) neutron decay

2) Electron degeneracy pressure temporarily stabilizes the collapse of the iron core of a super-massive star until "electron capture" occurs (in the core of the star) to form a dense ball of:
   a) neutrinos
   b) neutrons
   c) positrons
   d) protons
   e) alpha particles

3) During "electron capture" an enormous amount of energy is released in the form of (energetic):
   a) neutrinos
   b) neutrons
   c) positrons
   d) protons
   e) alpha particles

4) Nova (in supernova) comes from the _______ word for "new"?
   a) Arabic
   b) Greek
   c) Hittite
   d) Latin
   e) Sumerian

   (go to next page)
5) In a supernova, the video said that material in the outer shells of the star is expelled with velocities up to:
   a) 1% the speed of light
   b) 5% the speed of light
   c) 10% the speed of light
   d) 20% the speed of light
   e) 50% the speed of light

6) In the video it is said that if the initial mass of the star is GREATER than ______ times the mass of the sun then even neutron degeneracy pressure is not sufficient and the remnant is a black hole:
   a) 16 times
   b) 17 times
   c) 18 times
   d) 19 times
   e) 20 times

7) The supernova that resulted in the Crab Nebula is about how far away?
   a) 3,500 light years
   b) 4,500 light years
   c) 5,500 light years
   d) 6,500 light years
   e) 7,500 light years

8) The first light from supernova that resulted in the Crab Nebula arrived at the Earth about ______ years ago?
   a) 500
   b) 1,000
   c) 1,500
   d) 2,000
   e) 2,500

9) The Khan Academy video gives the Crab Nebula as an example of a supernova remnant with the current size of the remnant nebula cloud of about ______ in diameter?
   a) 2 light years
   b) 4 light years
   c) 6 light years
   d) 8 light years
   e) 10 light years