

ASTR1: Exam 3 Review (PartIV)

CH11 Summary: Our Star

- What powers the Sun?
- What is gravitational contraction?
- Describe the two types of equilibrium?
- What layer of the Sun do we consider as the surface? What is the temperature at this layer?
- What layer of the Sun does nuclear fusion occur? What is the temperature at this layer?
- Fission vs fusion.
- Know proto-proton chain : $4\text{H} \rightarrow 1\text{He} + \text{energy}$
- 3 ways we know what is happening inside the Sun.
- What are sunspots?
- Describe what causes solar flares.
- What causes solar prominences?
- What is the 11 year cycle?

CH12 Summary: Surveying the Stars

- Luminosity vs Apparent brightness.
- What is parallax?
- Know spectral type temperatures (OBAFGKM)
- What are the 3 ways to detect binary star systems?
- Know how to read the HR diagram. (size, age, mass, luminosity, heat, main sequence, life path through diagram)
- Know size scale I,II,III,IV,V
- Be able to compare full star classifications (for example G2V vs M2I who is bigger? Hotter?)
- Star luminosity, temperature & mass upper and lower limits.
- What is the Sun's life expectancy?
- What are the 2 types of star clusters?

KNOW THE HR DIAGRAM WELL

CH13 Summary: Star Stuff

- Describe how a star forms (this is exactly how the solar system formed)
- What is a protostar?
- What is a brown dwarf?
- Describe degeneracy pressure.
- What is a helium flash (hint: $3\text{He} \rightarrow 1\text{C}$)
- Describe how double shell fusion affects the size of a star?
- What is a planetary nebula?
- Describe how a low mass star turns into a white dwarf.
- Summarize life stages of both low mass stars and high mass stars.
- What is multiple shell burning?
- What is the heaviest element in a star that can be created by fusion?
- What is a supernova?
- What can happen with binary star systems

CH14 Summary: Stellar Graveyard

- What is the size of a white dwarf?
- What is the mass limit for a white dwarf?
- What is a nova?
- Describe how accretion can create a nova?
- What conditions are needed for a white dwarf supernova to occur?
- What are the two types of supernovas?
- What is a neutron star?
- What is the size of a neutron star?
- What is a pulsar?
- What can happen with neutron stars in a binary system?
- What is the neutron star mass limit?
- Describe a black hole?
- What is the event horizon? What is the size?
- What can escape from the event horizon?
- What is a singularity?
- What happens to time as you approach the event horizon?
- What would happen to you if you got near the event horizon?
- What is the black hole mass lower limit?
- How can we detect black holes?
- What do we think is being created in Gamma-Ray burst?