

Astronomy 1124
Preparation suggestions for Exam 3
The Stars

Format of Exam 3

30 multiple choice questions	2 pts ea = 60 pts
10 matching questions	2 pts ea = 20 pts
15 true / false questions	2 pts ea = 30 pts
<u>5 short answer questions</u>	<u>3 pts ea = 15 pts</u>
60 Total	125 pts

Preparation

1. Review your **class notes**. This includes committing concepts to memory.
2. The material you are responsible for knowing is what was in the **assigned readings** and **discussed in class lectures**. It is your responsibility to know and understand completely the terms and concepts discussed in **textbook chapters 14 – 18**.
3. Memorize definitions to **vocabulary** listed below.
4. Review **homework** assignments. What were the main concepts reinforced in these?
5. Answer the following **review questions**.

Review questions

1. How (and where) does the Sun produce energy? What is *gravitational equilibrium*?
2. What are the Sun's main internal regions? What are the regions of its atmosphere?
3. Explain how the butterfly diagram is related to the sunspot cycle.
4. Know the difference between the **apparent** magnitude of a star and the **absolute** magnitude of a star; why is knowing this useful?
5. List and define the 3 kinds of binary stars; why do we study them?
6. Be able to calculate stellar distance given a value of **parallax**; be clear on units!
7. Briefly explain how astronomers determine the following **stellar properties**: (1) luminosity, (2) temperature, (3) composition, (4) velocity
8. Explain how astronomers determine the mass of stars.
9. Define **spectral class** and relate it to stellar lifetimes; list the spectral classes in order by temperature.
10. Discuss the composition of interstellar clouds. What conditions must be met for an interstellar cloud to collapse and form stars?
11. Understand the processes that lead up to the formation of a protostar and a main sequence star. What is the difference between these two objects? Why is a brown dwarf not a true star?
12. Discuss the relationship of stellar mass to (1) the time it takes for the star to form, (2) the length of the stars life on the MS, (3) the type of death process, (4) the type of stellar corpse.
13. List and discuss the physical characteristics (lifetime, radius, luminosity, mass) and position on an H-R diagram of Supergiants, Giants, White Dwarfs, and main sequence stars.
14. What powers (1) main sequence stars, (2) horizontal branch stars (3) white dwarfs?
15. List and discuss the death processes and end states of low mass stars vs and high mass stars.
16. How do white dwarfs form? Neutron stars? Black holes? What is a **pulsar**?
17. List and define the two main kinds of star cluster. Which is older? How do we know?
18. Define and contrast a planetary nebula vs Type I supernova vs Type II supernova.
19. Be able to describe the observed effects as an object crosses the event horizon of a black hole.

Vocabulary

Absolute magnitude
Apparent magnitude
Accretion disk
Binary stars
Black hole
Brown dwarf
Butterfly diagram
Chromosphere
Convection zone
Corona
Eclipsing binary
Electron degeneracy
Event horizon
Fusion

Gravitational equilibrium
HR diagram
Interstellar Medium
Luminosity
Main sequence
Nebula
Neutron star
Neutron degeneracy
Nova
Nucleosynthesis
Parallax
Planetary nebula
Photosphere
Protostar

Pulsar
Radiative zone
Red giant
Spectral class
Spectroscope
Spectroscopic binary
Spectroscopy
Supernova
Type I supernova
Type II supernova
Visual binary
White dwarf