

## STUDY GUIDE FOR TEST III

### CHAPTER 18: THE SUN

1. luminosity
2. solar constant
3. hydrostatic equilibrium
4. composition
5. "lifestyle" of a photon created in the Sun's center
6. differential rotation
7. fission
8. fusion
9. steps in the proton-proton chain
10. photosphere
11. chromosphere
12. transition zone
13. corona
14. absorption lines
15. granulation
16. neutrino mystery
17. WIMP
18. limb darkening
19. spicules
20. coronal holes
21. prominences
22. solar wind
23. magnetic storms
24. sunspots and the sunspot cycle
25. cause of the "Butterfly Diagram" (fig. 18.17)
26. solar flares
27. Maunder Minimum

### CHAPTER 19: STELLAR OBSERVATIONS: POSITIONS, MAGNITUDES, AND SPECTRA

1. astrometry
2. proper motion
3. stellar parallax
4. parsec
5. magnitude
6. color index
7. bolometric magnitude

8. the spectral types in order from hottest to coldest
9. optical double
10. visual binary
11. astrometric binary
12. eclipsing binary
13. spectrum binary
14. spectroscopic binary
15. light curve
16. pulsating variable star

### CHAPTER 20: FUNDAMENTAL STELLAR PROPERTIES AND THE H-R DIAGRAM

1. absolute magnitude
2. apparent magnitude
3. H-R diagram
4. main sequence
5. giants and supergiants
6. white dwarfs
7. luminosity class
8. spectroscopic parallax
9. relative sizes of stars of different types
10. determination of rotation from spectrum
11. how fast stars rotate
12. method of mass determination
13. typical masses
14. determination of stellar composition
15. Zeeman Splitting and determination of magnetic field

### CHAPTER 21. STELLAR STRUCTURE: WHAT MAKES A STAR RUN?

1. most important property that determines a stars evolution
2. mass-luminosity relation
3. Russell-Vogt Theorem and updated additions
4. strong nuclear force
5. radiative transport
6. convection (convective transport)
7. lifetime of a star as a function of mass

8. triple-alpha reaction
9. which type stars have both a corona and chromosphere
10. stellar winds and mass loss
11. radiation pressure
12. mass transfer in a binary system

#### CHAPTER 22: STAR CLUSTERS AND OBSERVATIONS OF STELLAR EVOLUTION

1. galactic or open clusters
2. OB associations
3. globular clusters
4. two assumptions about clusters
5. color-magnitude diagram
6. main sequence turnoff and determination of cluster age
7. protostar and its behavior on the H-R diagram as it collapses

#### CHAPTER 23: LIFE STORIES OF STARS

1. zero-age main sequence
2. evolution of the Sun in the future
3. degenerate gas
4. triple alpha reaction
5. helium flash
6. horizontal branch on the H-R diagram and its relevance to globular clusters
7. planetary nebula
8. white dwarf
9. evolution of a 5 solar mass star
10. alpha-capture reactions
11. supernova
12. Type I and Type II supernova
13. neutron star
14. endothermic nuclear reaction and the importance of iron
15. black hole
16. matter exchange amongst binary stars
17. detection of neutrinos from supernova 1987A and some uses and implications of this information (see insert)

#### CHAPTER 24: STELLAR REMNANTS

1. white dwarf
2. gravitational redshift
3. black dwarf
4. upper limit on mass of white dwarf
5. nova
6. cataclysmic variable
7. supernova remnant
8. synchrotron radiation
9. neutron stars and the upper limit on ones mass
10. pulsar
11. the pulsar mechanism and synchrotron radiation
12. accretion disk
13. binary X-ray sources
14. (X-ray) burster
15. black hole and the warping of space
16. Schwarzschild radius
17. event horizon
18. singularity
19. naked singularity
20. mini black hole
21. supermassive black hole
22. what it "looks like" to fall into a black hole (timewise, in particular) to the victim and to an outside observer
23. black hole in a binary system