

STUDY GUIDE FOR TEST I

CHAPTER 1: THE ESSENCE OF ASTRONOMY

1. concept of celestial sphere
2. astronomical unit
3. light year
4. Astronomy vs. Astrology

CHAPTER 2: CYCLES AND SEASONS: MOTIONS IN THE SKY

1. solar day
2. sidereal day
3. meridean
4. zenith
5. north and south celestial poles
6. celestial equator
7. equatorial coordinate system
8. declination
9. right ascension
10. first point of Aries
11. age of Aquarius
12. precession
13. ecliptic
14. zodiac
15. zenith distance
16. altitude
17. tropical zone
18. arctic circle
19. reasons for seasons
20. summer solstice
21. winter solstice
22. vernal equinox
23. autumnal equinox
24. sidereal year
25. tropical year
26. Julian calendar
27. Gregorian calendar
28. sidereal period of the moon
29. synodic period of the moon (lunar month)
30. synchronous rotation
31. phases of the moon (figure 2.16) and terms for configurations (full moon, new moon, opposition, conjunction, quadrature,

waxing crescent, first quarter, waxing gibbous, waning gibbous, third quarter, waning crescent)

32. solar eclipse
33. lunar eclipse
34. conditions for total and partial eclipses
35. annular eclipse
36. Bailey's beads
37. umbra
38. penumbra
39. inferior planets
40. superior planets
41. greatest elongation
42. inferior conjunction
43. superior conjunction
44. transit
45. quadrature
46. retrograde of planets motion and its cause

CHAPTER 3: EARLY ASTRONOMY

1. Babylonian accomplishments
2. Thales
3. Anaximander
4. Pythagoras
5. Anaxagoras
6. Plato
7. Eudoxus
8. Aristotle
9. Aristarchus
10. Eratosthenes
11. Apollonius
12. epicycle
13. deferent
14. Hipparchus
15. Ptolemy
16. stellar parallax

CHAPTER 4. THE RENAISSANCE

1. Copernicus and his accomplishments
2. Brahe and his accomplishments
3. Kepler and his three laws of planetary motion
4. Galileo and his accomplishments

CHAPTER 5: ISAAC NEWTON AND THE LAWS OF MOTION

1. contents of *Principia*
2. inertia
3. Newton's first law of motion
4. acceleration
5. Newton's second law of motion ($F = ma$)
6. Newton's third law of motion
7. Newton's law of universal gravitation
($F = \frac{Gm_1m_2}{r^2}$)
8. contrast weight and mass
9. energy (erg, joule)
10. power (watt)
11. cgs system of units
12. MK (or SI) system of units
13. angular momentum
14. perihelion
15. aphelion
16. perigee
17. apogee
18. absolute zero
19. tidal force
20. synchronous rotation

CHAPTER 6: THE NATURE OF LIGHT

1. wavelength
2. spectrum
3. electromagnetic spectrum (relative positions of each type of electromagnetic radiation [figure 6.3]: radio, infrared, visible, ultraviolet, X-rays, Gamma rays)
4. relative positions of each color of visible light in spectrum

5. frequency (hertz)
6. diffraction
7. polarization
8. continuous radiation
9. thermal radiation
10. inverse square law of light propagation
11. Wien's law
12. Stefan-Boltzmann law
13. luminosity
14. emission lines
15. absorption lines
16. Kirchoff's 3 rules
17. photon
18. quantum
19. ionization
20. excitation
21. Doppler effect (of light waves)
22. blueshift
23. redshift
24. radial velocity

CHAPTER 7: TELESCOPES ON EARTH AND IN SPACE

1. resolution
2. refractors
3. chromatic aberration
4. reflecting telescope
5. focal arrangements for reflecting telescopes (prime focus, Newtonian, Cassegrain; figure 7.6)
6. Multiple-Mirror Telescope
7. spectrograph
8. photometer
9. "seeing"
10. infrared "telescopes" and the *Infrared Astronomical Satellite* (IRAS)
11. ultraviolet astronomy and the *International Ultraviolet Explorer*
12. X-ray astronomy
13. radio telescopes
14. interferometry
15. the 10 meter Keck Telescope
16. the Hubble Space Telescope