

Answer Key

Testname: AS101MIDTERM1SUMMER2006

- 1) B
- 2) E
- 3) A
- 4) A
- 5) B
- 6) E
- 7) D
- 8) C
- 9) C
- 10) C
- 11) A
- 12) A
- 13) A
- 14) B
- 15) B
- 16) B
- 17) D
- 18) D
- 19) A
- 20) B
- 21) Average distance from Earth to the Sun
- 22) 12 hours
- 23) New Moon
- 24) The same
- 25) Yes
- 26) $F=ma$. Earth's acceleration is much greater than the Sun's because Earth's mass is much smaller than the Sun's.
- 27) 300C
- 28) Escape velocity
- 29) Twelve and a half hours
- 30) Absorption
- 31) Nucleus
- 32) Pressure
- 33) Blue (or purple or something similar)
- 34) Wavelengths decrease
- 35) Speeds of their light are the same
- 36) Earth's atmosphere absorbs ultraviolet light
- 37) Mercury, Mars, or Pluto
- 38) Mars and Jupiter
- 39) Hydrogen and helium
- 40) Gravity

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41) Angular resolution $= 2.5 \times 10^5$ arcseconds \times wavelength/diameter
 $= 2.5 \times 10^5$ arcseconds $\times (500 \times 10^{-9} \text{ m}) / (5 \times 10^{-3} \text{ m})$
 $= 2.5 \times 10^5$ arcseconds $\times (5 \times 10^{-7}) / (5 \times 10^{-3})$
 $= 2.5 \times 10^5$ arcseconds $\times 10^{-4}$
 $= 25$ arcseconds

42) (orbital periods in years)² = (average distance from Sun in AU)³
(orbital periods in years)² = 4³
(orbital periods in years)² = 64
orbital periods in years = 8

43) Any five from:

- Terrestrial planets have smaller size than jovian planets
- Terrestrial planets have smaller mass than jovian planets
- Terrestrial planets have higher density than jovian planets
- Terrestrial planets have few (if any) moons, jovian planets have many moons
- Terrestrial planets have no rings, jovian planets have rings
- Terrestrial planets are made mostly of rock and metal/iron, whereas jovian planets are made mostly of hydrogen, helium, and hydrogen compounds (water, methane, ammonia)
- Terrestrial planets are closer to the Sun than jovian planets
- Terrestrial planets are closer together than jovian planets are
- Terrestrial planets have warm surfaces, jovian planets are cool at their cloudtops