

REMEMBER TO BRING A PENCIL and ID TO THE MIDTERM!!!

TEST: Thursday, October 18th, 2018 in class

Thursday, October 24th 2019 in class

1. Evidence of the expansion of the universe is shown by
 - a) The Einstein Cross
 - b) The 4.5 billion year age of the Earth
 - c) The abundances of the elements in stars
 - d) The redshifts of distant galaxies
2. Hubble's Law says that
 - a) The universe is primarily composed of dark energy
 - b) The galaxies were once much closer together
 - c) The universe is mostly dark
 - d) The Earth and Sun are getting gradually farther apart
3. What can you calculate by taking the inverse of the Hubble constant?
 - a) the age of the Solar System
 - b) the recession velocity of the Universe
 - c) the age of the Universe
 - d) the Doppler Shift
 - e) the distance to the centre of the Universe
4. Galaxies
 - a) all have a spiral-like structure
 - b) are gradually shrinking under their own gravity
 - c) are gradually expanding by the action of Hubble's Law
 - d) can be bigger than the Milky Way is
5. Lookback time
 - a) is a consequence of the finite speed of light
 - b) shows us what the Earth looked like when it formed
 - c) allows astronomers in the Andromeda galaxy to see the Milky Way as it is in the future
 - d) all of the above
6. Radio waves travel through space at what speed?
 - a) much faster than the speed of light
 - b) faster than the speed of light, since their wavelength is longer
 - c) at the speed of sound
 - d) at the speed of light, 3×10^8 m/s

7. The observational fact about a Cepheid variable star that leads to a measurement of its distance from the Earth is that its period of variation is directly related to its
- a) absolute magnitude or luminosity.
 - b) apparent magnitude.
 - c) speed away from us, using the relativistic effect upon pulsation period
 - d) surface temperature.
8. What is the basic difference between ultraviolet, visible, and infrared radiation?
- a) half-life
 - b) age
 - c) wavelength
 - d) velocity
9. Which of the following characteristics does **NOT** apply to giant elliptical galaxies?
- a) rapidly rotating
 - b) not forming many stars
 - c) lacking spiral arms
 - d) found in the centres of galaxy clusters
 - e) all of the above
10. Ann sees Bob travel by her in a very fast spaceship
- a) Ann observes Bob's clock to be running slowly and Bob observes Ann's clock to be running slowly
 - b) Ann observes Bob's clock to be running slowly and Bob observes Ann's clock to be running fast
 - c) Ann observes Bob's clock to be running fast and Bob observes Ann's clock to be running slowly
 - d) Ann observes Bob's clock to be running fast and Bob observes Ann's clock to be running fast
 - e) something else
11. Parallax is
- a) the circular or elliptical motion of a star in a binary system, as the two stars orbit around each other.
 - b) the apparent shift that we see in the position of a nearby star as we orbit the Sun.
 - c) the difference between the apparent brightness and the intrinsic
 - d) the apparent change in the distance to a star if its light is dimmed by dust
12. About where is our solar system located within the Milky Way Galaxy?
- a) at the center of the galaxy
 - b) about two-thirds of the way from the center of the galaxy to the outskirts of the galactic disk
 - c) about 10 percent of the way from the center of the galaxy to the outskirts of the galactic disk
 - d) in the halo of the galaxy above the galactic disk
 - e) none of the above