

NAME: _____

DATE: _____

PHYS 1040 Homework #8

1. What are the three main types of galaxy?
2. What is meant by the term "dark matter"?
3. What mechanism has been suggested to power active galaxies?
4. What is a gravitational lens?
5. What is the cosmic microwave background? What is its origin?
6. What determines whether the Universe will expand forever or recollapse?
7. What is Olbers' Paradox?

8. The Local Group

- (a) contains about thirty member-galaxies
- (b) is a poor cluster
- (c) is the galaxy cluster to which the Milky Way belongs
- (d) is a rich cluster
- (e) is all of the above except (d)

9. Astronomers believe that dark matter exists because

- (a) they can detect it with radio telescopes
- (b) the outer parts of galaxies rotate faster than expected on the basis of the visible material within them
- (c) the galaxies in clusters move faster than expected on the basis of the visible material within them
- (d) it is the only way to explain the black holes in active galaxies
- (e) both (b) and (c) are correct

10. What is meant by inflation in the early Universe?

- (a) the force of gravity suddenly grew stronger in the distant past
- (b) Protons expanded to the size of stars, which was how our Sun formed
- (c) the Universe increased dramatically in size in an extremely brief period of time
- (d) the number of galaxies that we see at large distances is much greater than the number we can see near us
- (e) the diameter of distant galaxies is much greater than the diameter of galaxies near us

11. A spiral galaxy has a small bright central region, and its spectrum shows that it contains hot, rapidly moving gas. It is most likely a _____ galaxy.

- (a) barred spiral
- (b) Seyfert
- (c) radio
- (d) BL Lac
- (e) quasar

12. A large galaxy contains mostly old (Pop II) stars spread smoothly throughout its volume, but has little dust or gas. What type of galaxy is it most likely to be?

- (a) Irr
- (b) S
- (c) SB
- (d) E
- (e) all of the above are possible

13. What would happen if the density of the Universe were greater than the critical density?

- (a) matter would never have formed
- (b) galaxies would not form
- (c) too many galaxies would form
- (d) all the matter formed would be neutrons
- (e) the Universe would re-collapse