

Review Exam 5

Chapter 25

Vocabulary

Dark Galaxies

Head-Tail Radio Galaxies

Galactic Cannibalism

Redshift Survey

Great Wall

Voids

- Know why we use rotational curves with galaxies
- Know how line broadening is used in mass determination
- Know how we use binary galaxies in mass determination
- Know how we can determine the mass of a galaxy cluster
- Know that rotational curves of other galaxies shows that some part must be dark
- Know what a dark galaxy is
- Know how much of a galaxy cluster is thought to be dark
- Know how much of the universe is thought to be dark
- Know where the intracluster gas came from and what makes it so hot
- Know why you have galaxies known as head-tail radio galaxies
- Know that clusters of galaxies have collisions between them
- Know that we can't see the whole process of galaxy collision
- Know what is meant by galactic cannibalism
- Know that astronomers think mergers have produced much larger structures
- Know that large redshift galaxies are much smaller than near-by galaxies
- Know that gravitational interaction can rearrange the structure of a galaxy and lead to star birth
- Know what a star burst galaxy is
- Know that mergers may cause galaxies to follow the Hubble Tuning Fork model
- Know that down in the center of a galaxy cluster you find only giant ellipticals, which are due to numerous mergers
- Know that quasars are found in much higher number in the past
- Know what is thought to power active galaxies
- Know how it is thought that the supermassive black holes may have formed
- Know why the quasars finally turned off
- Know that the Milky Way and most major galaxies have supermassive black holes in them
- Know that black holes can merge
- Know that the giant ellipticals are the brightest active galaxies
- Know what a supercluster is
- Know the name of our supercluster
- Know that there is structure to the galaxies and clusters
- Know what the redshift survey is
- Know what the Great Wall is
- Know what the voids are
- Know how we use quasar absorption lines to study the universe
- Know why quasar mirages occur
- Know what the Einstein Cross is
- Know how we are mapping dark matter in the universe

Chapter 26

Vocabulary

Sloan Great Wall	Homogeneous	Isotropic
Cosmology	Cosmological Principle	Olber's Paradox
Big Bang	Critical Density	Big Crunch
Cosmic Density Parameter	Closed Universe	Open Universe
Critical Universe	Dark Energy	Cosmological Constant
Cosmic Microwave Background		

- Know what the Sloan Digital Sky Survey is
- Know what the Sloan Great Wall is and about how big it is
- Know why making larger surveys is difficult
- Know what a pencil beam survey is
- Know how big the largest structures in the universe are
- Know what is meant by homogeneous and isotropic
- Know what cosmology means
- Understand what the cosmological constant is
- Know why there is no edge nor center to the universe
- Understand what Olber's Paradox is
- Know how old the universe is thought to be
- Know what is meant by the Big Bang
- Understand how things look different depending on where you are in the universe
- Know that the Big Bang involved the entire universe
- Understand the analogy of the raisin bread
- Know why the expansion of the universe causes the cosmological redshift
- Know that we must use relativity to describe the universe and what is happening in it
- Understand the concept of critical density
- Know what 2 possible fates may await the universe
- Know what the Big Crunch is
- Know what is meant by the term cold death
- Know that energy like matter can cause space to warp
- Know what is meant by the cosmic density parameter
- Know what is meant by a closed universe, an open universe, and a critical (flat) universe
- Understand why it is difficult to measure the density of the universe
- Know that there may be more dark matter than we thought
- Know that astronomers now believe that the universe is accelerating outward
- Know that it is thought to be due to some repulsive force called dark energy
- Know what the cosmological constant is
- Understand that as the universe gets bigger, gravity gets less and the universe accelerates apart
- Know how much of the universe is thought to be dark energy
- Know how globular clusters have been used to verify the age of the universe

- Know how the cosmic microwave background radiation was discovered and why it was such an important discovery
- Know what the temperature of space tells us about the age of the universe

Chapter 28

Vocabulary

Cosmic Evolution

Chemical Evolution

Amino Acids

Microspheres

Biological Evolution

Cultural Evolution

Drake Equation

Habitable Zone

Water Hole

- Know what is meant by cosmological evolution
- Know the 4 things that scientists agree on about life
- Know the assumptions of mediocrity
- Know that we have no evidence for the earliest Earth
- Know what gases the volcanoes released into the atmosphere
- Know where large amounts of energy came from to power processes on the Earth
- Know what was produced from the gases and water
- Know what the amino acids and the nucleotides produce
- Know about the experiment done in 1953 with the “primordial soup”
- Know what we have produced under the influence of heat
- Know what the microspheres are
- Know that one theory is that the materials that gave rise to life may have come from space
- Know where icy grains may have come from in space
- Know where large amounts of organic material was detected in space
- Know what was found in the Murchison meteorite fall in Australia
- Know what the first organisms were that appeared on Earth 3.5 billion years ago
- Know what is meant by biological evolution and what evidence we have for it
- Know why some organisms survived while others didn't
- Know what intelligence is selected for by natural selection
- Know what the biggest development was by humans
- Know what is meant by cultural evolution
- Know what is meant by the term “life as we know it”
- Know what we look for as evidence of where life might form
- Know the 2 possibilities for where life may be in the solar system
- Know which planet is thought to have had life at one time
- Understand that life on Earth has been found in extreme environments
- Understand that we assume life will be carbon based
- Know what the Drake Equation is
- Know how the rate of star formation would affect the possibility of life
- Understand the condensation theory and that astronomers think that most stars have planets
- Know what is meant by the habitable zone
- Know which planets in our solar system were in the habitable zone
- Know how where you are in the galaxy can affect your formation
- Know how a planet around a binary star would fare

- Understand about how many organic groups are actually formed compared to the billions of possible combinations
- Know that our culture arose from several civilizations
- Know that we have no way of knowing how long a technological civilization survives
- Understand that the longer a technological civilization survives, the more there are
- Know the difficulties in trying to contact our neighbors
- Know what was on the Pioneer 10 and the Voyager 1 and 2 spacecraft to communicate to others
- Know that we are passively listening with giant radio telescopes for signals
- Know why we chose radio astronomy to listen
- Know what type of stars we are going to target
- Understand that we are broadcasting signals away from Earth called TV and Radio Shows
- Know what wavelengths we are listening to intently
- Know what SETI is