PMA 146: Astronomy Notes - Don Winn

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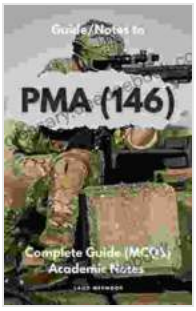
Section 1: to Astronomy

Astronomy is the study of the universe beyond the Earth's atmosphere. It is the oldest of the natural sciences, dating back to the earliest civilizations. Astronomers have made great progress in understanding the universe in

recent centuries, but there is still much that we do not know. Astronomy is a fascinating and challenging field, and it is one that is constantly evolving.

The universe is vast and complex. It is made up of billions of galaxies, each containing billions of stars. The stars are the basic building blocks of the universe, and they are responsible for producing the light that we see. The universe is also filled with gas and dust, which can obscure our view of the stars. Astronomers use telescopes to study the universe. Telescopes allow us to see objects that are far away and to collect light from them. This light can be used to learn about the properties of the objects, such as their temperature, composition, and motion.



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Astronomy is a diverse field, and there are many different areas of research. Some astronomers study the solar system, while others study stars and galaxies. Still others study cosmology, which is the study of the universe as a whole. Astronomy is a challenging field, but it is also a rewarding one. Astronomers have made great progress in understanding the universe, but there is still much that we do not know. The future of

astronomy is bright, and there are many exciting discoveries yet to be made.

Section 2: The Solar System

The solar system is the gravitationally bound system of the Sun, eight planets, dwarf planets, and many moons, asteroids, comets and meteoroids. It is located in the Milky Way galaxy.

The Sun is a G-type main-sequence star that makes up 99.86% of the mass of the solar system. The planets are divided into two groups: the inner planets and the outer planets. The inner planets are Mercury, Venus, Earth, and Mars. They are made mostly of rock and metal.

The outer planets are Jupiter, Saturn, Uranus, and Neptune. They are made mostly of gas and ice. The solar system also contains dwarf planets, such as Pluto and Ceres, as well as many moons, asteroids, comets and meteoroids.

The solar system is thought to have formed about 4.6 billion years ago from the collapse of a giant molecular cloud. The Sun formed at the center of the cloud, and the planets formed from the remaining gas and dust. The solar system has been evolving ever since, and it is likely to continue to change for billions of years to come.

Section 3: Stars

Stars are the basic building blocks of the universe. They are huge balls of hot gas that emit light and heat. Stars are formed when gravity causes a cloud of gas and dust to collapse. As the cloud collapses, it heats up and begins to glow. The center of the cloud becomes very hot and dense, and nuclear fusion begins to occur. This is the process by which stars produce energy.

Stars vary in size, mass, and temperature. The smallest stars are about the size of Jupiter, while the largest stars are hundreds of times larger than the Sun. The mass of a star determines its gravity, which in turn determines its size and temperature. The hotter a star is, the bluer it will appear. The coolest stars are red, while the hottest stars are blue.

Stars have a life cycle. They begin as clouds of gas and dust, and they end as white dwarfs, neutron stars, or black holes. The life cycle of a star depends on its mass. The more massive a star is, the shorter its life will be.

Section 4: Galaxies

Galaxies are large collections of stars, gas, and dust. They are held together by gravity. There are billions of galaxies in the universe, and they come in a variety of shapes and sizes. The Milky Way galaxy is a spiral galaxy. It is about 100,000 light-years across and contains about 100 billion stars.

Galaxies are classified according to their shape. There are three main types of galaxies: elliptical galaxies, spiral galaxies, and irregular galaxies. Elliptical galaxies are round or oval in shape. Spiral galaxies have a flat disk with a central bulge. Irregular galaxies have no regular shape.

Galaxies are also classified according to their size. There are dwarf galaxies, which contain only a few billion stars, and giant galaxies, which contain trillions of stars. The Milky Way galaxy is a medium-sized galaxy.

Section 5: Cosmology

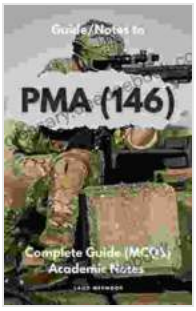
Cosmology is the study of the universe as a whole. Cosmologists study the origin, evolution, and fate of the universe. They also study the large-scale structure of the universe.

The universe is thought to have begun about 13.8 billion years ago with the Big Bang. The Big Bang was a hot, dense state of the universe that rapidly expanded and cooled. As the universe expanded, it began to form stars and galaxies.

The universe is still expanding today. Cosmologists believe that the universe will continue to expand forever, and that it will eventually become a cold, dark place.

Section 6: The History of Astronomy

Astronomy is one of the oldest sciences. The earliest astronomers were the Babylonians, who



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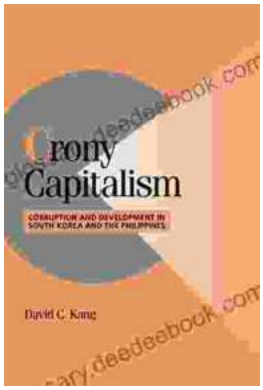

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