

Css 2020 (Qs)

Q. Define Astronomy. Describe the major branches of astronomy.

Introduction:

Astronomy is one of the oldest sciences, concerned with study of celestial bodies and phenomena beyond Earth's atmosphere. It is broadly divided into several branches.

Definition:

Astronomy is the scientific study of universe and celestial bodies, gas and dust within it. It includes observations and theories about stars, solar system, galaxies and the general structure of the space.

Branches of Astronomy:

There are four branches of astronomy which are given below:

1) Astrophysics:

Astrophysics is branch of astronomy that applies the principles of physics and chemistry to understand the nature of celestial bodies and phenomena.

• Key areas

- Composition of stars and galaxies
- Nuclear fusion and stellar evolution
- Black holes, quasars and dark matter
- Cosmic background radiation

Example:

Studying the life cycle of star from its birth (nebula) to death.

2. Astrobiology:

Astrobiology investigates the origin, evolution and possibility of life beyond Earth.

• Key areas:

- Conditions necessary for life on space.
- Exploration of Mars and other planets for microbial life.
- Study of extremophiles (organisms surviving in extreme conditions on Earth).

Example:

NASA's Mars rover mission to find traces of water and microbial life.

3. Astrometry:

Astrometry deals with precise measurement of positions, motions and distances of celestial bodies.

• Key areas

- Tracking planetary orbits.
- Calculating distances between stars.
- Monitoring the movement of near-Earth objects.

Example:

Astrometry helps in detecting exoplanets by observing star's slight movement caused by an orbiting planet.

4. Cosmology

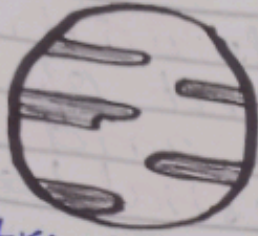
Cosmology defines the study of the origin, structure and future of the universe.

• Key Areas:

- Big Bang theory
- Expansion of the universe
- Dark matter and dark energy.

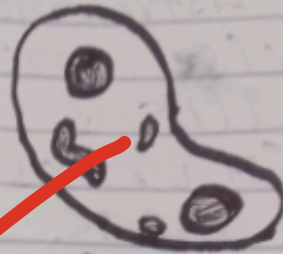
Diagram:

Branches of Astronomy



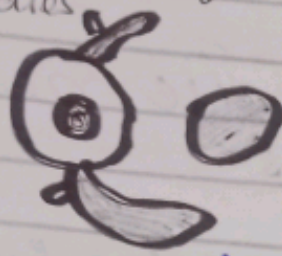
Astrophysics

- studies the physical properties of celestial bodies



Astrobiology

- searches for life in the universe



Astrometry

- measures the positions & movement

Conclusion:

Each branch of astronomy plays a vital role in understanding the universe. From measuring distances to finding potential alien life, astronomy continues to be a frontier of scientific exploration.

good attempt overall!!!