

Date 10/08/2025

Q Describe the Big Bang theory and its significance in understanding the origin and evolution of the universe. What are some key evidence supporting this theory?

BIG BANG THEORY

Big Bang Theory is cosmological model explaining the origin and evolution of universe.

Explaining Origin of Universe:

It states that origin point of universe is "singularity". Entire universe was inside small bubble, smaller than size of pinhead, it suddenly exploded creating universe, time space matter within it.

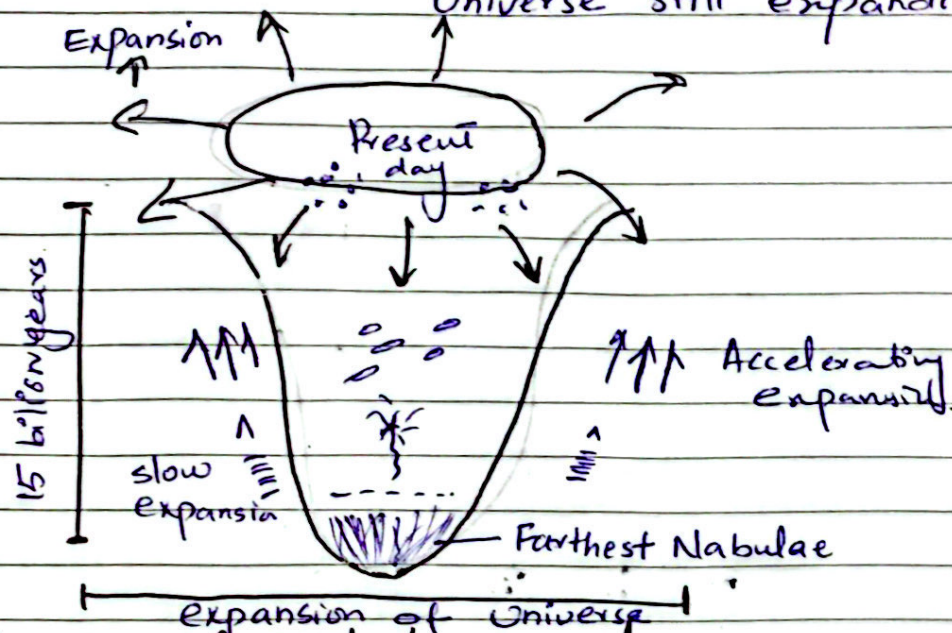
Understanding Cosmic Evolution:

As universe kept growing, expanding even today. These energy changes led to particles of matter and antimatter. Some of that matter survived, while other got destroyed. Certain events that thought to be took place are below.

Universe one second old; more stable particles called neutron and proton started to form. Universe in next 3 minutes; consisted of 90% of hydrogen and 10% helium. Temperature dropped to 4 billion degrees. Now it was cool enough for merging of proton and neutron.

After 300,000 years, atoms finally formed, and universe cooled down to 3000 degrees. Now atom nuclei were ready to catch ~~atoms~~ and form ~~proton~~ protons and form atoms. Universe was filled with hydrogen and helium gases. Celestial bodies also formed.

Date _____
1 billion years old; First galaxies appeared.
15 billion years old; The present day ... with
universe still expanding.



Significance of and key evidences.

1) Cosmic wave Background Radiation (1940's)

Big bang theory is not just historical thought framework, it gives framework for scientific investigation. As Arno Penzias and Wilson detected Cosmic microwaves, while studying radio signals. These are thought to be heat left from original explosion, resulting in universe. which is explained by big bang theory.

2) Red shifting — spectrum of light,

Big bang explains that universe is still expanding today, which is evident by red shifting of galaxies. They are getting redder with time - This provide support to model.

3) Abundant Light Elements.

Right amount of hydrogen and helium also supports theory of big bang.