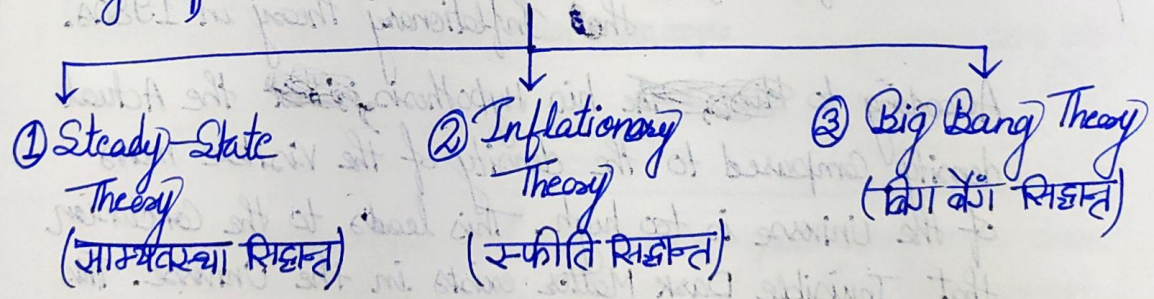


UNIT-ONE (PHYSICAL GEOGRAPHY) B.A. Part-01

Definition

⇒ The Combined form of Matter and Energy that exists is called the "UNIVERSE" (अस्तित्वमान रूप स्वप्न ऊर्जा के सम्मिलित रूप को ब्रह्माण्ड कहते हैं). The Universe is Everything. It includes all of space and all the matter & energy that space contains. It even includes Time itself, and of course it includes us.

⇒ Theories of the Universe → These are mainly three possible & logical theories regarding the origin of the Universe as shown below →



01 > Steady-State theory → The theory was first put forward in 1948 by British scientists Sir Hermann Bondi, Thomas Gold and Sir Fred Hoyle. This <sup>theory</sup> was seen as the ALTERNATIVE view of the Big Bang Theory Model. According to Steady-state theory in Cosmology is that,

2  
" The Universe is always expanding but maintaining a constant average density with matter, being continuously created to form new stars and galaxies at the same rate that old ones become unobservable as a consequence of their increasing distance & velocity of recession."

A Steady-state Universe has NO Beginning or End in time, and <sup>same</sup> from any point within it the view on the Grand Scale - i.e., the average density and arrangement of galaxies is the same. Galaxies of all possible ages are intermingled.

027 Inflationary Theory → American Scientist Alan Guth stated the Inflationary theory in 1980s.

According to ~~the~~ his hypothesis, ~~the~~ the actual density compared to the density of the visible mass of the Universe is too high. This leads to the conclusion that Invisible Dark Matter exists in the Universe. This is a theory of exponential expansion of space in the early Universe. The acceleration of this expansion is due to DARK ENERGY, began after the Universe was already over 7.7 billion years old (5.4 billion years ago).

Inflation theory explain the origin of the large-scale structure of the Cosmos. It <sup>also</sup> explains why the Universe appears to be the same in all

directions (Isotropic), why the Universe is Flat in shape, why the Cosmic Microwave background radiation (is EMR which is a remnant from an <sup>(CMBR)</sup> early stage of the Universe) It's an important source of data on the early universe because it is the oldest EMR in the Universe) is distributed evenly (5) Why NO Magnetic Monopoles have been observed.

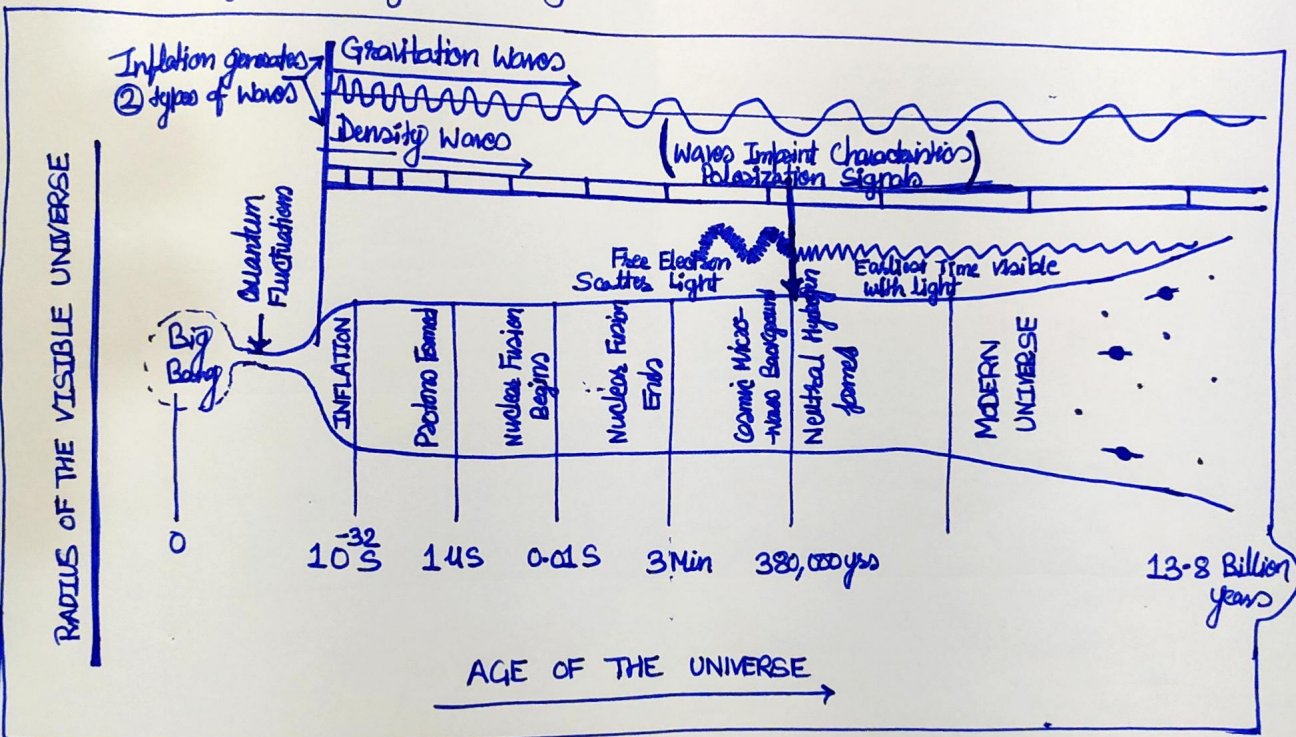


Figure  $\Rightarrow$  History of the Universe - gravitational waves arise from Cosmic Inflation, a faster than light expansion just after the Big Bang.

Thus the Inflationary Universe theory proposes a brief period of extremely rapid accelerating expansion in the very early universe, before the Radiation dominated era called the Hot Big Bang.