

# First Chapter

## Question No 1

Describe different method of estimate the age of the universe?

### (1) Definition of universe

universe contain all the planets, objects and space in it. it is home of our Earth.

### (2) Methods to Estimate the age of universe.

There are two method to estimate the age of universe

(1) to look the age of oldest stars.

(2) Through Expansion of universe and Extrapolating of Big Bang

(3) To Look oldest stars

(3.1) Magnitude of star.

The oldest stars are used  
its energy slow. it is red-orange  
in color

(3.2) Speed of star:-

The fast moving stars  
use its energy most fastly  
and become die.

(3.3) Surface of star.

If the universe surface  
is flat it can be measure  
through

but due to different matter  
and its oval shape we can  
measure it  $a = vt$

$$t = \frac{a}{v}$$

$$v = Hd$$

$$v = \frac{a}{Hd^2}$$

$$v = \frac{1}{H_2}$$

This formula gives estimated age

of universe

#### (4) Big Bang Theory.

Scientists believed that universe is a result of suddenly expansion of big bang. So the age of universe can be measure through Expansion of universe and Extrapolating of big bang

3.5

Because the Criminal Expert detect the bullets holes in the wall

So Extrapolating back to big bang tells the exit age of universe.

#### Questions

Difference b/w stars and planets? what is the magnitude of stars and how the color star correlate with its

# Temperature?

Difference between stars and Planets	
Stars	Planets
1) Stars are brighter celestial body	Planets gets energy through sun.
2) It is <del>revolve</del> <u>revolve</u> around galaxies	it <del>revolve</del> <u>revolve</u> around sun
3) Stars produce energy during nuclear fusion	it does not produce energy during nuclear fusion
4) it has highest temperature	it is <del>not as</del> <u>not as</u> <del>near to sun</del>
5) it has <del>its</del> <u>its</u> own energy	it does not have <del>its own</del> <u>its own</u> energy
6) There are million of stars in universe	There are eight planets in universe
it <del>revolve</del> <u>revolve</u> around galaxies	orbit <del>revolve</del> <u>revolve</u> around it called satellite

## First Chapters

### (2) Magnitude of stars?

The magnitude is used to measure the brightness of star. It is divided into six classes. The brightest star exist in class first.

### (3) How the color of star tells the magnitude?

Because the highest energy makes stars more glowing so hottest stars have blue-white in color while the cool stars are orange-red.

#### Example

Betelgeuse

### (4) Stellar magnitude scale.

It also use to measure the magnitude of

3.5



in this scale positive and negative number are mentioned that help to measure magnitude.

Describing the most popular theory to the origin of universe?

(1) universe

universe contain all the objects and planets in it

(2) Theory of universe origin

These are three theory of universe creation

(1) old theory

- (2) New theory  
(3) Big Bang theory  
(3.1) Old theory ..

According to this theory universe is ~~dynamic~~ static infinite and unchangingable.

(3.2) New theory.

According to this theory which was invented in 17th century after the invention of telescope universe is finite, dynamic and changeable.

(3.3) Famous theory are Big Bang.

Big Bang theory was given by George Lemaitre and George Gamow. They told that 15 to 20 billion years ago the jagatic expansion was the result of big bang. There is no time space before big bang 13.7 million years ago universe

was small and enveloped in a bubble which is smaller than pinhead called singularity  
(4) Creation of universe.

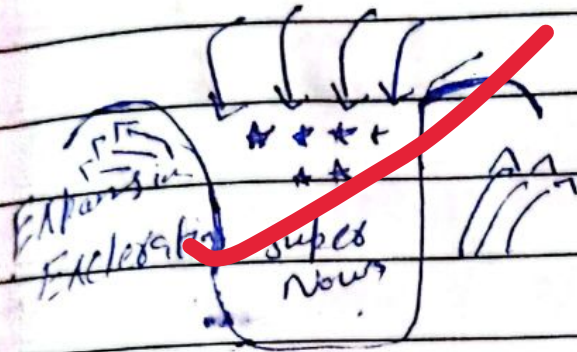
The sudden expansion caused universe formation. The small size of universe expanded and bigger than galaxies and till at that time universe is expanding.

#### (4.1) Formation of other matter.

After one second universe cool 1 billion celcius which is enough to the formation of atoms, protons. The similar atom cancel each other the remaining stable particle exist. That are proton and neutron After 3000 years later universe cool 300000 celcius which helps atomic clouds to attract electrons to combine



with atoms of proton and  
 forms Hydrogen, Helium.  
 universe contains dust particle  
 stellar remnants etc.



Big Bang

### (5) Evidence of Big Bang:

Who came first egg or  
 hen? How universe was  
 created is a mystery. How  
 create it. if it is end one  
 day. why it is created?

The astronomers look the  
 movement of stars & galaxies moving  
 toward earth or away. if it is  
 moving toward earth. It form  
 a short wavelength shift called  
 blue shift

if it is move away from earth it form a large ship that are redshift.

Question.

what are galaxies? Give its Type. ? is it movable? evidence

(1) Galaxy

it is gravitational bound system. Fundamental unit contain million of stars dust particles, stellar, comets in it. The collection of stars are called clusters.

(2) Classification of galaxies

After the invention of Hubble telescope classification of galaxies are form. These are your types of

- galaxies.
- (1) Elliptical
  - (2) Spiral
  - (3) Lenticular
  - (4) Irregular

### (3.1) Elliptical Galaxies

Elliptical galaxies are abundant in nature. Because of its dense characteristics and brightness it does not contain a spiral arm like its sister galaxies (spiral) it is elliptical in shape.

#### (3.2) Example


M49, M59

#### (3.3) Shape of Elliptical Galaxy.

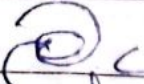



Elliptical Galaxy

#### (4) Spiral Galaxy

Spiral Galaxy gets its name due to its disc like shape. It is divided into three parts to check the wound with it about it contain gas and stars in its swirling arm which is spread outward the arm. Sa, Sb, Sc - are the part (4.1) Sa. are tightly wound and have larger nucleus.  Sa

(4.2) Sb Sb have moderate wound and average nucleus

(4.3) Sc loosely wound with smaller nucleus.  Sc

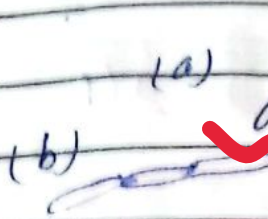
It contains million of stars formation of new stars take place in it is the reason it is bright.  Spiral

(4.4) Example galaxy

Milkyway, Andromeda

(3) Lenticular Galaxy

it have feature of both elliptical and spiral galaxy.

(a)  elliptical galaxy

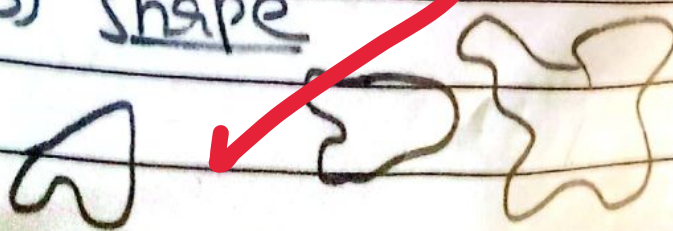
#### (4) Irregular galaxy

It is the smallest galaxy. It contains million of stars, dust, gas and other particles. It is brightest due to formation of stars. Its structure is not neat is not add in elliptical & spiral. It is recently discovered. It is space of Milky way where we live.

(4.2) Example

Catshel, Horsehead

(4.3) shape



(5) is Galaxies are  
moveable? give Evidence

Yes galaxies are  
moveable.

(5.1) Evidence

① They are moving around  
the universe. if they move  
toward the earth. it form  
a short wavelength that also  
called Short Shift or Blue  
Shift.

(2) if it is move away  
from earth it is form a  
longer wavelength Shift that  
are called Red Shift.

Question

Difference b/w big  
Bang and Big  
Crunch? How the  
age of universe is

measured?

Big Bang

Beginning of universe

it is the expansion of universe that universe is expanded till first day.

(2) universe in a small bubble first after the gigantic explosion universe

Come into exist and till today it is expanded at that time when it use it all hydrogen and convert them into helium. and

Big Crunch

End of universe

According to scientist's universe is continuous construct which

result big crush where is a sufficient force of gravity which pull every objects towards its.

(3) it is a reverse of big Bang

(4) Every object collide with each other universe destroy and new universe form after it which is completely different

it close

(2) According to Gurtam

we create universe and  
Heaven First day and  
combine them (Big Bang)  
and one day all the  
object are collide  
with each other and  
all the universe are  
destroy. Every thing  
will be end (Big Crunch)

(3) How to measure the  
age of universe?

Age of universe can be  
measure through 2 procedure.

(1) Age of star.

(2) Big Bang

(3) Age of star.



## Q Explain structure of sun

### 1 sun

Sun is the biggest object of our solar system. It contains 99.8% of the mass. It is the only source of light on earth. It is the heart of our solar system. It is a yellow planet of glowing gases. It has a gravitational force. All the biggest planets as well as small debris revolve around it. Sunlight reaches earth in 8 minutes.

### 2- Source of energy

Nuclear Fusion is the source of energy. At high temperature and pressure, energy is released in the form of gamma rays.

### 3- Composition of Sun

The Sun contains 70% hydrogen, 28% helium and remaining 2% other objects. Its density is equal to  $1.408 \times 10^{-7} \text{ kg/m}^3$  and volume is  $1.41 \times 10^{27} \text{ m}^3$ . It is three times more massive than our earth. It requires 13.7 million earths to fill its mass. Its density is 150 times that of water. It has 4 layers.

### 4- Surface of Sun

It has four layers

- (1) The Core
- (2) Radiative Zone
- (3) Convective Zone
- (4) Photosphere Zone

(1) The Core

All the energy power produced in core that energy emit from sun in core. it has extremely hot. its temperature is 15.6 million kelvin. Pressure is 250 atmospheres. Density is 150 above water.

## (2) Radiative Zone

It is above core. it is covers half of the sun volume. it is also extreme condition. Energy produced in nuclear fusion and move in ionic form in electromagnetic spectrum. The protons are scattered in gas and refused one million times to through out. Its temperature is 50 million kelvin.

## Structure of 13) Convective Zone

It is above radiative zone it is  $\frac{2}{3}$  volume of sun. its temperature increase when it is rise up sink it pressure and down again its temperature is 13.7 and density is 1 billion less than water.

Tachaline zone is a connection between convective and radiative zone

## 5 Structure of Sun

