

Q 1) Define GIS. Also describe its components.

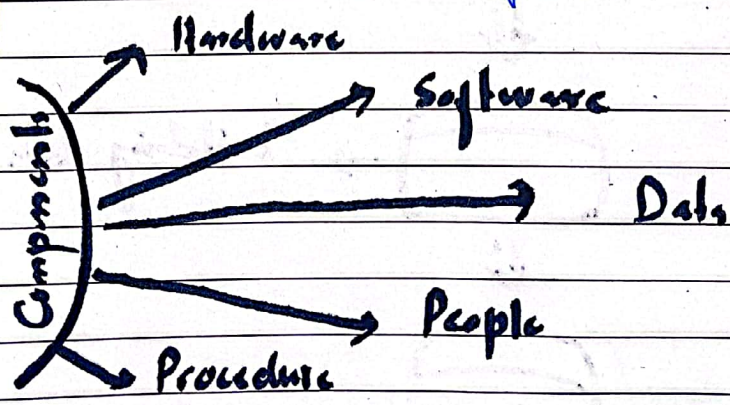
Answer: Geographic Information System (GIS)

"GIS - a mapping and analysing tool of geography."

GIS is a computer based tool. In fact, it is used for mapping and analysing any information of things happening on the earth. Therefore, GIS is an information tool.

Components of GIS

Following are components,



i) Hardware:

GIS in function is initiated in hardware.

ii) Software

Further, information is collected in software.

iii) Data

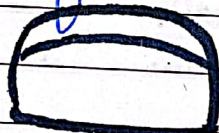
GIS information is organized in data.

iv) People

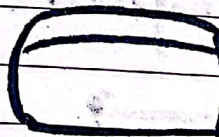
People has significant in GIS. Without people, there is no information.

v) Procedure

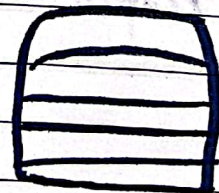
Finally, GIS is well-organized in final stage.



→ street data



→ building data



→ forestation data

•(GIS)

Q b) Describe galaxy. How it is formed?  
 Earth moves around which galaxy?

Answer

## Galaxy

"Galaxy is a collection of immense stars."

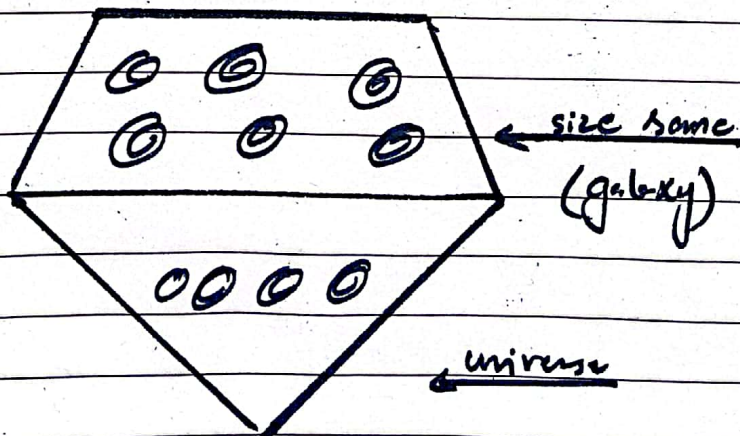
Galaxy is the sum of stars. In fact hundreds of thousands of stars combine to form galaxy.



Galaxy

## Formation of galaxy

The universe is about 13.8 billion years old. In fact, formation of universe led to form the first substance (Quartz). Hydrogen, Quartz combine to form galaxy. But, as universe expands, the size of galaxies remains the same.

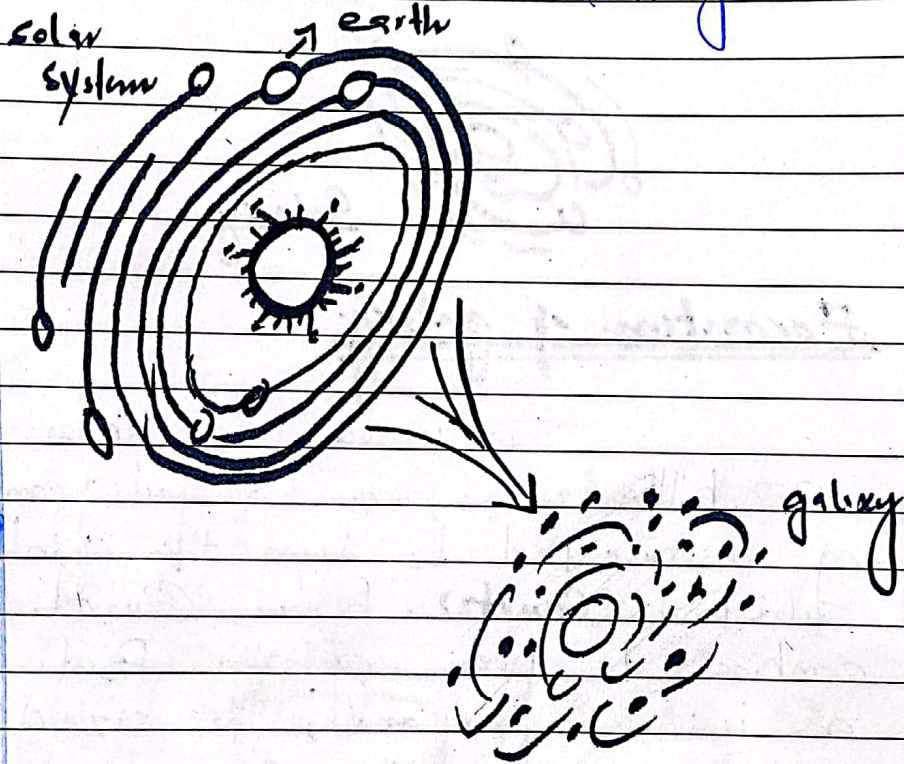


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# Movement of the Earth around the galaxy

"Earth moves around the Milkyway galaxy."

Earth moves around the Milkyway galaxy. In fact, all solar system moves around it. It takes about 230million years.



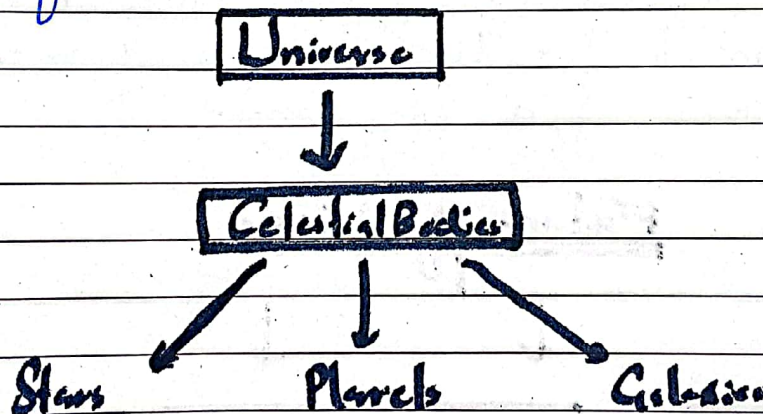
سولر سسٹم زمین کے ساتھ ساتھ دیگر سیارے بھی زمین کے گرد گھومتے ہیں اور یہ سب زمین کے گرد گھومتے ہیں۔

Qc Describe Future of the universe. Also describe its age.

## Universe

"Universe is made up of stars, galaxies, planets etc."

Universe is a collection of several stars, planets, and galaxies. In fact, is the foundation of the world. Hence, universe is made up of celestial bodies.



## Feature of Universe

Future of universe is described in four phases.

a) Open Universe

Open universe leads to less gravity and universe expands

outward.

b) Flat Universe

In flat universe, universe moves downward and extends continually.

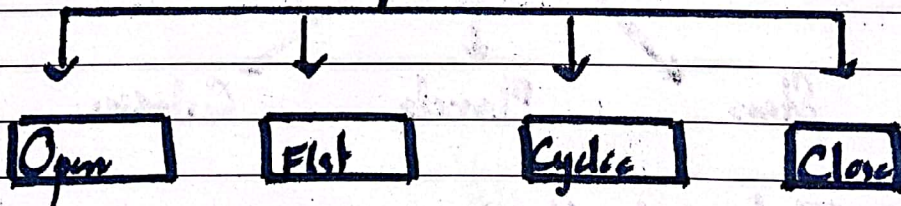
c) Cyclic Universe

In cyclic universe, universe never stops and expands to become cool.

d) Close Universe

In close universe, universe gravity becomes half. The substance formed, called 'a big crunch.'

Future of Universe



Age of Universe

"Universe is about 13.8 billion years old."

Age of universe is described

by Hubble in 1929.

According to him,

"Universe is flat and  
it is composed of matter."

Hence, universe =  $\frac{2}{3H}$

Further, he explained as:

"The gravity of universe is  
low."

Hence, universe =  $\frac{1}{H}$

Therefore, age of universe, according  
to Hubble can be as

$$\frac{2}{3H} + \frac{1}{H} = \text{Universe.}$$

Hence, age of universe is determined  
mathematically.

Qd) Describe difference between dark energy and dark matter.

Answer

### Dark Energy

"Dark energy is a repulsive force to galaxies."

Dark energy is repulsive to the galaxies. In fact, dark energy gets galaxies away from the universe.

### Dark Matter

"Dark matter is an attractive force to galaxies."

Dark matter is an attractive force to the galaxies. In fact, dark matter brings galaxies close to the universe.

### Comparison between Dark Energy and Dark Matter

| <u>Comparison</u> | <u>Dark Energy</u>                | <u>Dark Matter</u>                  |
|-------------------|-----------------------------------|-------------------------------------|
| <u>Meaning</u>    | Dark energy is a repulsive force. | Dark matter is an attractive force. |



|                          |   |   |
|--------------------------|---|---|
| Nature                   | Dark energy is particulate.                                     | Dark matter is non-particulate.                                 |
| Composition              | Dark energy is composed of 68% of constituents of the universe. | Dark matter is composed of 28% of constituents of the universe. |
| Force                    | It is "Repulsive Force."  | It is an "Attractive Force."                                    |
| Relation to the universe | It tears the universe.  | It binds the universe.  |
| Wave                     | It has red shift with longer wavelength.                        | It has blue shift with shorter wavelength.                      |

