

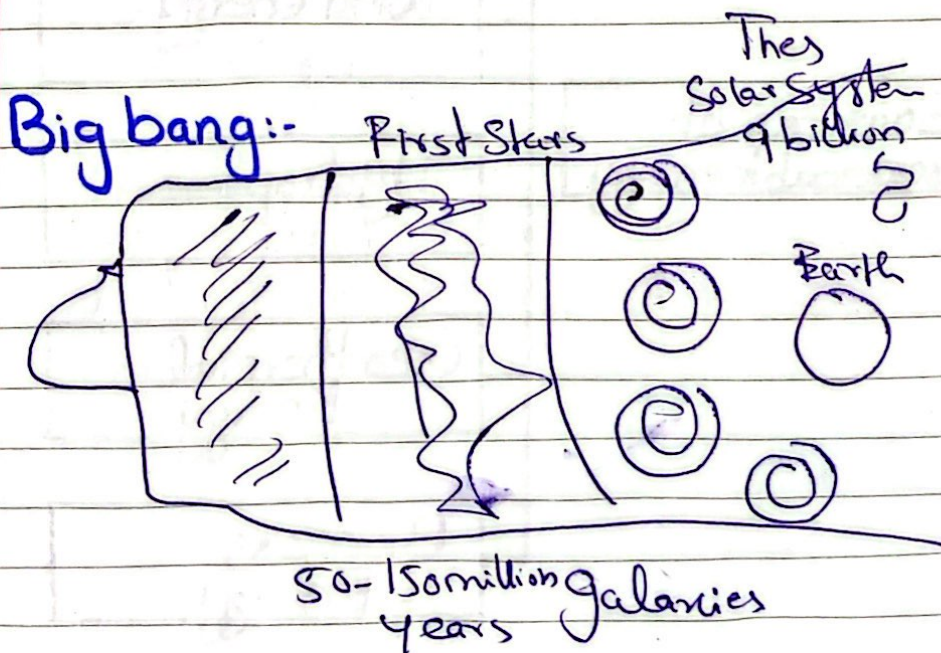
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Section-1

a)

Ans) Volcanoes are formed when magma rise to the surface. This can happen due to a variety of reason including movement of tectonic plates, buildup of pressure within the Earth, or the melting of rock due to high temperatures. When magma reaches the surface, it can erupt as lava, ash and other material.

B)



Big bang is the cosmological model explaining the universe's origin and

and evolution.

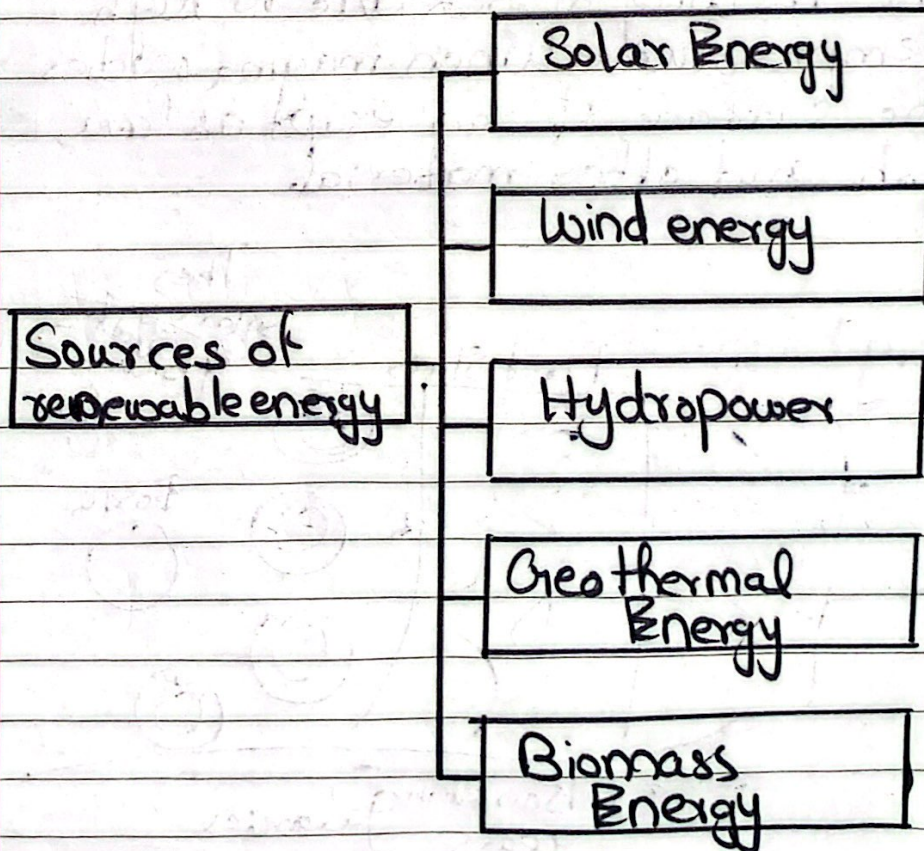
Big Crunch:-

It is a hypothetical scenario for the ultimate fate of the universe.

Age of the Universe:-

The age of universe determined by analyzing ancient objects like globular clusters etc. The current estimate age of universe is 13.8 billion years.

c)



i) Solar Energy:-

The most abundant

and widely used renewable energy. Sunlight is captured through solar panels and converted into electricity.

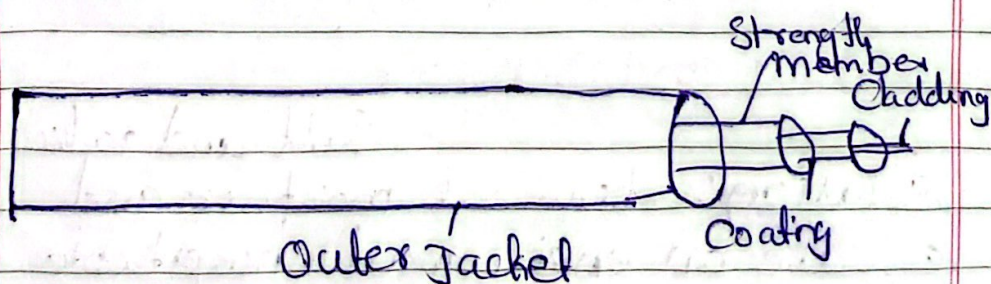
ii) Wind energy:- Harnesses of wind's kinetic energy through turbines that generate electricity.

iii) Hydropower:- Captures the energy of moving water through dams and turbines.

iv) Geothermal Energy:- Utilizes the Earth's internal heat from deep underground reservoirs.

v) Biomass Energy:- Energy derived from organic materials like wood, crops and waste. Used for electricity generations, transportation fuels and heating.

d)



Optical fibre works by transmitting information in the form of light pulses. These pulses travel along the fiber which is made of glass or plastic. The light bounces off the walls of the fibre that allowing it to travel long distance without losing much strength. This enables the transmission of data at high speeds and over long distances.

Question 5

a)

Methods of Food Preservation :-

i) Freezing :-

It stops microbial growth entirely by turning water in the food into ice.

ii) Drying :-

It removes moisture and making it difficult for microbes to grow.

iii) Salting and pickling :-

Salt and acidic solutions draw out moisture and create an environment inhospitable to microbes.

iv) Fermentation :-

Good bacteria produce acids and other compound that inhibit harmful bacteria. This method creates food like yogurt.

b)

Milky way :-

It is our galaxy. A spiral galaxy containing an estimated 100-400 billion star objects. It resides within the virgo supercluster of galaxies.

Dark Matter is related to Galaxies.

Dark matter is related to galaxies because it is the gravitational glue that holds galaxies together.

Different Part of Galaxies :-

i) Halo :-

A spherical region surrounding the galaxy that contains old stars, and globular clusters

ii) Disk :-

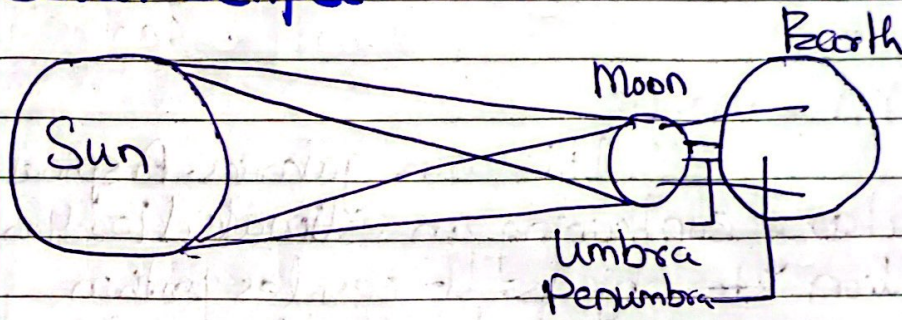
A flattened region that contain most of galaxies gas, dust and young stars.

iii) Bar :-

A structured that runs through the center of some galaxies including the Milky way.

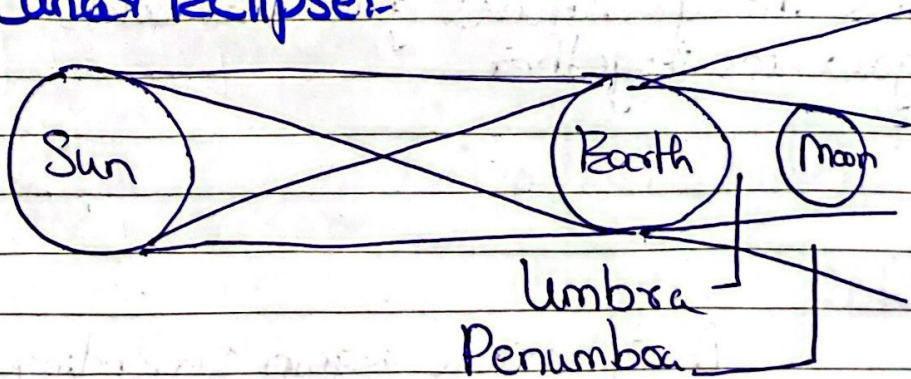
c)

Solar Eclipse



The Moon passes between the Earth and Sun, casting a shadow on part of Earth.

Lunar Eclipse:-



The Earth passes between the Sun and the Moon, casting a shadow on the Moon.

d)

Nuclear Fission:-

A heavy nucleus split into two or more smaller

nuclei that releasing a large amount of energy is called Nuclear Fission.

Nuclear Fusion:-

When two light nuclei combine to form a heavier nucleus which releasing a large amount of energy is called Nuclear Fusion.

Ionic bond in Salt:-

It composed with sodium (Na) and Chlorine (Cl) atoms held together by an ionic bond in salt.

Section II

Question 6

a)

Sol

Number of votes received by the winning candidate = 15000

Total number of votes = 15000 + 1000 + 8000
= 33000

Percentage of total voters = $\frac{\text{No of votes received by winning candidate}}{\text{Total No of votes}}$

$$\frac{15000}{33000} \times 100$$

$$= \frac{1500}{33} = 45.45\%$$

Therefore, the winning candidate received approximately 45.45% of the total votes.

b)

The sum of ~~all~~ angles in a triangle is always 180

$$\text{Total ratio} = 3 + 4 + 5 = 12$$

1 unit of ratio represent $\frac{180}{12} = 15$ degree

Now we can multiply each ratio by 15 degree to find individual angle

$$\text{Angle 1 (3 unit)} = 3 \times 15 \text{ degree} = 45 \text{ degree}$$

$$\text{Angle 2 (4 unit)} = 4 \times 15 \text{ degree} = 60 \text{ degree}$$

$$\text{Angle 3 (5 unit)} = 5 \times 15 \text{ degree} = 75 \text{ degree}$$

Therefore, the three angle of the triangle are 45 degree, 60 degree, and 75 degree

c)

Sol

i) Calculate the Number of groups possible
Divide total No of girls by No of girls per group

$$= \frac{102 \text{ girls}}{6 \text{ girls group}} = 17 \text{ groups}$$

ii) Determine the No of boys required per group

each group consists of 4 boys

iii) Calculate total No of boys required
Multiply No of groups by No of boys per group

$$= 17 \text{ groups} \times 4 \text{ boys per group} = 68 \text{ boys}$$

Therefore, 68 boys are required if 102 girls are available.

d)

Sol

Let denote present ages of A & B with x

$$A : B = 6x : 7x = 6 : 7$$

Future ratio after 5 years

$$(6x + 5) : (7x + 5) = 7 : 8$$

$$\frac{6x + 5}{7x + 5} = \frac{7}{8}$$

$$48x + 40 = 49x + 35$$

Question 8

b)

i) 4, 16, 36, 64, ?, 144

~~Miss~~

Ans) 4, 16, 36, 64, 100, 144

The series is formed by squaring
~~the~~ consecutive even numbers starting
from 2.

ii) 1, 7, 15, 25, ?, 51

Ans)

1, 7, 15, 25, 38, 51

c)

i) First

ii) Garden

iii) Stomach

iv) London

v) Holiday