Insufficient length of theory portion
Increase length
Add headings
Write complete logic and steps in math portion

CSS 2024

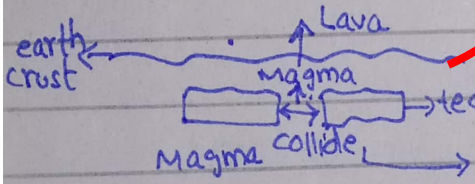
CQ=2=
a) On 18th Dec 2023 volcano erupted in Iceland ..... are erupted?

A= Volcanic Eruption

Volcanic eruption is the process of coming out of magma from inside the earth on earth crust.

As on 18th December 2023, volcano erupted in Iceland after series of earthquakes. It is due to the fact that when tectonic plates collide with each other, then due to friction among tectonic plates, stress is produced that causes instability in magma underground. When stress becomes excessive then it pushes magma to erupt on earth crust. Resultantly, earthquake leads to volcanic eruption.

Moreover, due to earthquake, gases inside earth crust near magma region reacts and create pressure that in turn exerts force on magma to rupture earth crust & come out as lava.



CSS 2024

Q= What is Big bang & Big crunch.....?

A= Big Bang

Big bang is the process that shows how universe was formed. It explains that initially universe was just in form of singularity but with extremely high temperature and heat. Due to this, bubble of universe burst resulting in formation of the universe from a single atom to a giant structure. When universe was three minute old, its temperature fall by billion degree celsius which lead to the stable existence of proton and neutron. With the passage of time, it further cooled down lead to development of electron. Then proton, neutron & electron combined to form stable atomic molecules, which are present in universe. This is how universe came into being.

Big Crunch: is the process of shrinking of universe due to excessive space warfare.

Universe Age

Age of universe can be determined with the help of meteriotes. Astronauts examine old left over of meteorites and make assessment of their age and then help to determine current age of solar system and then of universe.

Furthermore, Astronauts can also calculate universe age by taking lunar sample and conducting carbon dating on it, which helps them to determine lunar and then universe age.

d) 820km of optical fiber ..... works?

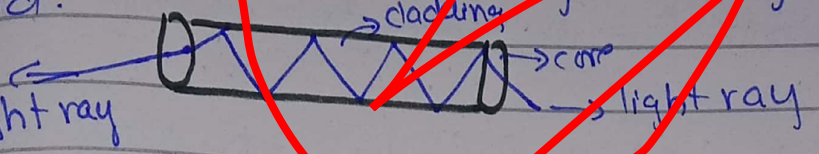
A:- Optical Fiber

Optical fiber is large glass like filament that transfers ete light signals from one end to another end. It is a means of transmitting information using light impulses.

Working

Optical fiber works on the principle of Total internal reflection. As optical fiber is made up of core and cladding. when light rays enter optical fiber

it got refracted inside fiber. But when it touches core-cladding interface, it started reflecting inside totally. Because as diameter of core is small, so angle of incidence of rays become greater than critical angle so it causes total internal reflection of rays. This process continues until light rays reach other end.

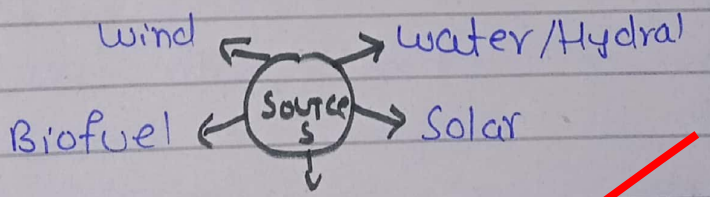


So, 820 km optical fiber that is laid down between Khunjerab Pass and Rawalpindi city under CPEC works on total internal reflection principle.

c) Discuss any five sources of Renewable energy?

A= Renewable Energy Sources

Renewable energy sources are those sources which one used can be used again and again.



1) Water Source

Water/hydral source is an important renewable energy source that cannot be depleted. It is used to generate electrical energy by harnessing its potential energy.

In Pakistan, electricity generation from hydral source is about 30%. Tarbela and Mangla dam are important example of hydral sources electricity generation.

2) Solar Energy

Solar energy is a renewable energy source. It is harnessed to generate electricity. When solar radiations hit the solar panels then solar panels convert solar radiations into electrical energy. It is clean and safe source of energy. Pakistan is also trying to opt solar energy system and government has announced subsidies on provision of solar panels.

3) Wind Energy

Wind energy is usually harnessed near coastel and high altitude areas where speed of wind is high. Wind is used to run turbines that run generators and produce electricity. In Pakistan, Balochistan and Sindh are suitable areas for wind energy. Pakistan has potential of generating 3lac MW electricity from wind energy.

4) Biofuel

Biofuel is composed of organic matters like plant and animal leftover. These materials are combusted which produces energy that moves turbines and then run generators to produce electricity.

Q=5=

a) Diff methods of food preservation.....?

A= Different methods are employed for the preservation of food which are as follows:

1) Refrigeration

In process of refrigeration, food is placed in refrigerators at low temperature that slow down the growth of micro-organisms and bacteria which prevent food spoliage.

2) Freezing

Freezing is a proces in which food is kept at 0C° or below temperate which complete inhibit growth of micro-organisms That results in saving food from destruction.

3) Drying

In this process water content is removed from food by heating it. So, that micro-organis donot reach with water to spoil food.

4) Canning

In this process, food is stored in air-tight containers and then combusted ato eliminate and restrict microbial growth in food. Mostly food like meat, fish are canned.

5) Salting and Sugaring

In this process, some food undergo proces of salting means rubbing salt while some some other are dipped in sugar syrup to protect them from spoilage.

6) Chemical Method

In this method, chemicals such as Benzoate, Sulphide etc are used for preservation of food.

b- What is Milky way.....?

A: Milky Way

Milky way is form of spiral galaxy. Spiral galaxy is the one that is spiral shape and have central bulge and arms. Milky way contain 100-300 billion stars. Most of the stars which are seen from earth are found in Milkyway. Milky way is 176 billion light years in diameter. The space where milky way is present known as galatic plate. Near galaxy of millky way is Andromeda.

How Dark Matter relates to Galaxy

Galaxy is composed of multiple components and dark matter is one of them so dark matter is called as one of the building block of galaxy.

Parts of Galaxy

Galaxy has multiple parts :

1) Planets: are the celestial body that surrounds sun and strong gravitational influence on neighbourhood.

2) Dwarf Planets: celestial bodies that smaller is size than planets and no clear neighbourhood and weak gravitational pull. e.g Pluto

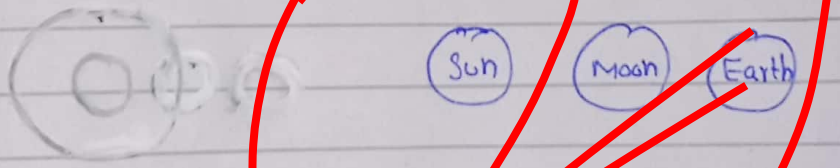
3) Stellar remnants: are the leftover of stars.

4) Satellites: can be natural or man-made. sent to receive and transmit information.
5) Black hole: is the area in galaxy that doesnot let anything to pass from it. It's boundaries are called event horizons and only hawking rays can pass it.
6) Asteorides, Meteorites
7) Black Matter
8) Stars: Stars are luminous hot ball of gases that twinkle in galaxy.

c- Solar Eclipse

Solar eclipse occurs when moon comes in between sun and the earth. Moon castes shadow on earth and hinders the sunlight from reaching earth.

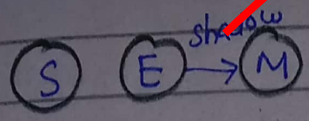
→ Solar Eclipse occurs in every 18 months.
→ It's duration is few minutes
→ It can cause damage to eyes and skin if directly exposed to it.



Lunar Eclipse

→ Lunar Eclipse occurs when earth comes in between sun and moon causing obstactle in the way of reaching to sun rays to moon that moon reflect to earth. So, it caste shadow on moon

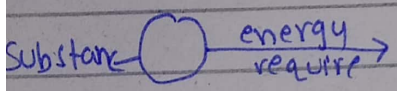
and resultantly lunar eclipse occurs.
→ It's duration is few hours
→ It can occur twice or thrice in a year.
But mostly it is partical eclipse because complete lunar eclipse is rare.



d. What are Nuclear Fission..... Salt.

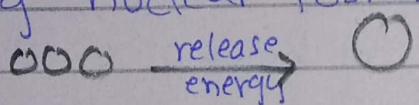
A= Nuclear Fission

Nuclear Fission is the process of breaking large substances or molecules into smaller ones with the help of nuclear radiations. It results in breakdown. It requires energy to carry out process



Nuclear Fusion

Nuclear Fusion is a process in which small molecules or substances are combined to form large molecule or substance. During nuclear fusion, energy is released



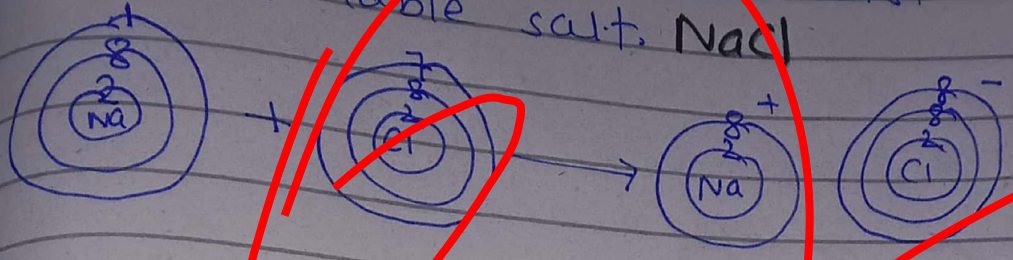
Ionic Bond

Ionic bond is form of chemical bonding in which one atom releases one or more electrons and other atom accepts these

electrons.

In table Salt, ionic bond exist

Formula of Table salt. NaCl



As Na (Sodium) has 11 electrons in valence shell while Chloride has 17 electrons. So Na releases (loses) an electron and chloride accept or gain this electron. Both become stable and develop ionic bond. Nal get positive sign due to loss of electron while chloride get negative sign due to gain of electron. So table salt contain ionic bond.

Q=8= (b) Missing Number

i) 4, 16, 36, 100, 144

In this series, each consective number is obtained by taking square of even numbers.

ii) 30, 29, 27, 24, 20, 15

24 is obtained by subtracting 1, 2, 3, 4, 5 numbers starting from 30 to 15 consectively.

iii) 1, 7, 15, 25, 37, 51

Each next number obtained by two more number in even number. starting from 6 to 14.

iv) 0, 2, 6, 12, 20, 30, 42

Each number is obtained by adding even numbers as 2, 4, 6, 8, 10, 12 to reach 42.

v) 48, 24, 72, 35, 105, 70

c) THRSI = Shirt
GNDREA = Garden
SCHAMOT = Stomach
ONLNDO = London
HTO DAY = Holiday

d) Given data
Sara mother is 6 times older than sara
Sara brother is twice of sara age
Average of sara, her brother and mother ages in next three year = 72
So current age of sara = 23
Brother = 46 and mother age = 138 years

a) sum of 3 consecutive odd = 273
The odd number whose sum is 273 are 89, 91 and 93.
89 + 91 + 93 = 273

c) IQ = $\frac{\text{Mental Age}}{\text{Physical Age}}$

IQ = $\frac{11}{9}$ = 1.2

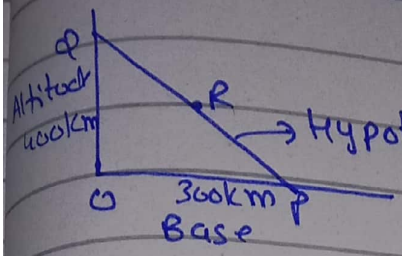
So IQ is 1.2 of person.

a) Given data

P is 300 km eastward of O

Q is 400 km North of O

Distance between Q and R = ?



$\text{Hypotenuse}^2 = (\text{Base})^2 + (\text{Altitude})^2$

$x^2 = (300)^2 + (400)^2$

$x^2 = 90000 + 160000$

$x^2 = 250000$

$\sqrt{x^2} = \sqrt{250000}$

$x = 500$

So distance between Q and R is 500km.

b) Find angles of perimeter of regular pentagon with each side 5cm.

Solve = As perimeter of pentagon is

$P = 5a$

$P = 5(5) = 25cm$

As Total angle of Perimeter of pentagon is 540° so each angle will be of 108°.

d) Average of 3 boys .....?

Solve = Let age = x

As Average = $\frac{\text{sum of all values/observations}}{\text{Total number of values}}$

Average = 15 , sum of all observation = ?

Total number of observations = 3

$15 = \frac{3x + 5x + 7x}{3}$

$15 \times 3 = 3x + 5x + 7x$

$45 = 3x + 5x + 7x$

$45 = 15x \Rightarrow x = 45/15 = 3$

$\boxed{x = 3}$

So $3x = 3(3) = 9$ years

$5x = 5(3) = 15$ years

$7x = 7(3) = 21$ years

So age of yangest boy is 9 years.