

Q. NO 4

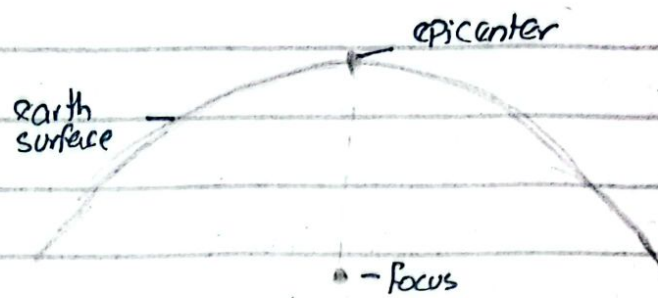
Q. How earthquakes are generated?
Distinguish with Tsunami.

ANSWER:

Earthquakes and Tsunami are natural disasters and both these causes devastating effects to the mother land Earth. These both disasters are generated differently and have different effects to the surroundings.

EARTHQUAKES:

Earthquakes are caused by the movement of tectonic plates under the Earth surface. The movement of plates is explained as the sudden release of energy. This release of energy creates seismic waves that shakes the ground and generates tsunami. Beneath the earth at a point from which the shaking of earth starts is called as Focus. While on the earth center surface that point is known as epicenter.



There are majorly two type of earthquake waves.



Tsunami:

Tsunami is the resultant or effect of the movement of tectonic plates. Its effect is shown underwater. These effects are not only caused by earthquakes but also by volcanic eruptions or landslides. These tsunamis are characterized by their long wavelengths and high energy.

b- What is Coriolis force? How Hurricanes are generated?

ANSWER:

Coriolis force is explained and defined as the force

resulting from the Earth's rotation. These Coriolis forces are the main aspect to cause cyclones. All areas of low pressure when rotating above the hot temperature causes Coriolis force. It is ~~above~~ the oceans. ~~and are~~ The spinning wind pattern created by Coriolis effect helps the hurricane form.

HURRICANES:

Hurricanes are known as tropical cyclones as these are formed above warm waters. These hurricanes form near the equator because they require warm water to form, and here the Coriolis force is at zero. These can bring strong winds, heavy rainfall, and storms. And leads to severe damage when they make landfall. The remedies to these natural disasters are only effective monitoring and early warning systems.

c- Distinguish Solar and Lunar Eclipse.

ANSWER:

The Eclipses are events occur when Sun, moon & earth align in specific ways

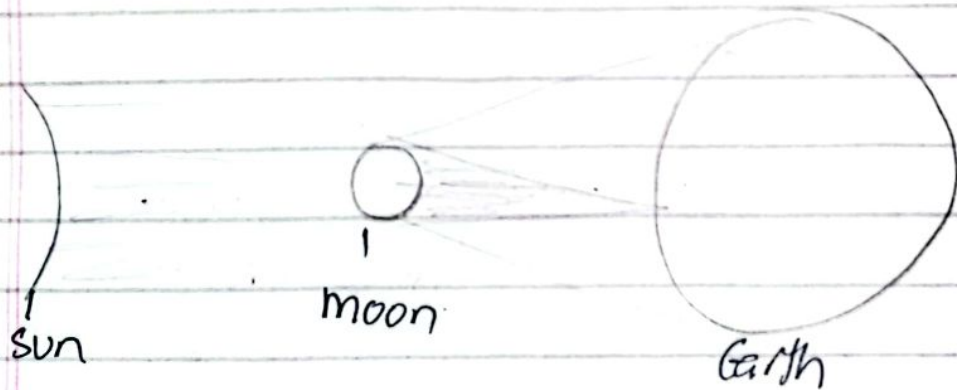
SOLAR ECLIPSE:

Solar eclipse occur when the moon passes between Earth and the sun. The moon's shadow falls on the earth, blocking the sun partially or completely from certain regions.

SOLAR ECLIPSE

Partial
solar eclipse

Annular
Solar eclipse



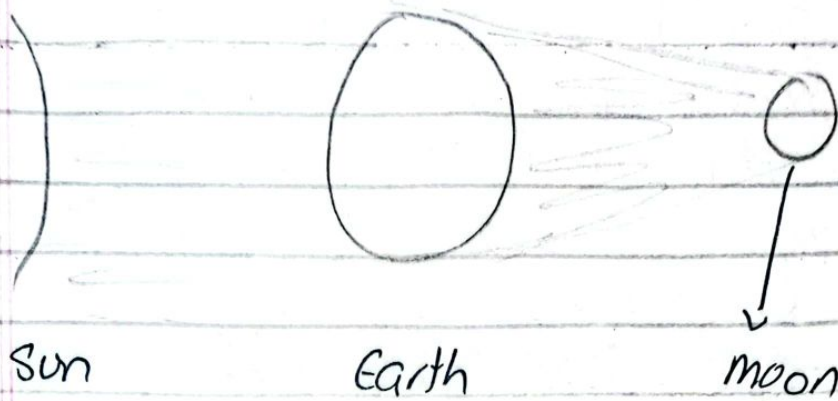
LUNAR ECLIPSE:

Lunar eclipse occur when the earth passes between the sun and the moon, with the earth casting a shadow on the moon. It happen during a full moon.

Lunar, Eclipse

total
lunar
Eclipse

Partial
lunar
eclipse



d. What is doping in Semi-Conductors.
Discuss different types of Ceramics.

ANSWER:

SEMICONDUCTORS:

Semiconductors ~~are~~ have the capability to being an insulator and as well as ~~an~~ conductor.

Doping in Semiconductors, involve the procedure of introducing impurities in the properties of a semiconductor to modify its electrical properties. Common semi conductors are known as Silicon and Germanium.

These impurities are added to different types. ~~are~~

Semiconductors

N-type
Semiconductors

P-type
Semi-conductors

N-type Semi-conductors:

Doping is done with the elements of the fifth group of Periodic table. These elements include Phosphorus or Arsenic, having (-ive) charges.

P-type Semi-conductors:

Doping is done with the elements of the third group of Periodic table. These elements include Boron or Aluminum. These include positive charges.

CERAMICS:

Ceramics are defined as non-metallic, inorganic materials typically made from clay. These ceramics are fired at high temperatures. There are various types of ceramics with diverse properties and applications.

a. Traditional ceramics:

It includes clay based products. Such as pottery, and bricks.

b. Structural ceramics:

Posses high strength and are used in applications of required structural integrity. Examples are in aerospace components.

c- Bioceramics

Bioceramics are used in medical applications. These include dental implants and bone substitutes.

QUESTION - 5.

- a. Distinguish between RAM and ROM. Also define Nibble and USB.

ANSWER:

RAM:

RAM stands for Random Access Memory. It is a volatile memory. RAM is used for temporary storage in the computer systems. RAM is actively used by the computer for running programs and processing data.

ROM:

ROM is the abbreviation of Read Only Memory. ROM is defined as a non-volatile memory. It is the permanent storage in the system. It has the capacity to store and provide instructions to the computer for the working of system.

Nibble:

A combination of 4 bits, or half of an 8-bit byte is defined as nibble. Nibble is a unit of digital information. It is commonly used in computing and digital communication. The process of nibble calculation is done at the back side of the computer screen.

USB:

USB is standardized as Universal Storage Bus. It is the technology which used to connect to the computers. It provides the facility of transferring of data or power supply between different devices.

b- How AI has revolutionized the world? ~~Access~~ Justify.

ANSWER:

AI known as Artificial Intelligence refers to the development of computer systems that can perform tasks that typically requires human

Intelligence. These tasks include learning, reasoning, problem-solving, and speech recognition.

AI has revolutionized the world across various domains:

1- Automation efficiency: 1

AI enables automation of tasks enhancing efficiency and productivity.

Especially in industries like manufacturing.

2- Financial Sector Improvements:

It has enhanced the security in finance sector. Minimizing the risk of frauds, maintaining customer services. It enhances accuracy and reduce risk.

3- Facilitated Educational Sector: AI has revolutionized the educational sector through advanced training programs, personalized learning experiences and effective educational tools.

4- Automobiles advancement: AI has initiated the advancement of vehicles as well, through self-driven cars. It has made easier the lives of individuals and made less dependence on the humans. AI has made the vehicles user friendly and environmental friendly as well.

c- How does an optic fibre work? Write some of its advantages

ANSWER:

Optic fibers transmit data using light signals, relying on the principle of total internal reflection.

Optical fibre uses are rising in ~~both~~ telecommunication sectors to provide fast communications easily.

ADVANTAGES OF OPTIC FIBRE:

- 1- Optical fibres are used for higher bandwidth for communication over large distances
- 2- An effective way for ~~easy~~ easy transfer of data is dependent on these thin layers of optic fibres.
- 3- Optical fibres provide secure connection for transmission of data
- 4- These fibres are thin which provides an advantage of space sufficiency.
- 5- Signals can be transferred to a long distance area without any loss ~~of~~ or distraction in the connectivity system.

d.

SECTION - II

Question 8

q- A cow travels south ?

SOLUTION:

A cow travels south = 5 km

Then it travels west = 3 km

then it travels north = 4 km.

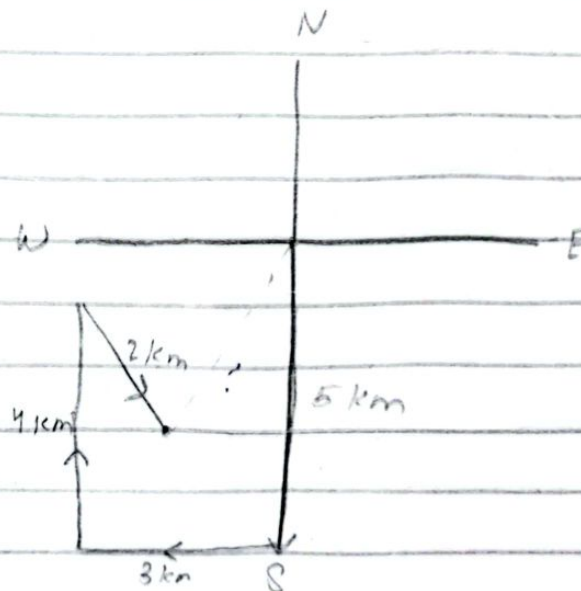
finally it travels south-east = 2 km.

To find;

How far is the cow from

initial point = ?

Solving:



It means that the cow is
3 km away from the
initial point

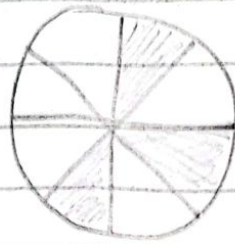
A pizza is divided into 8 slices ...

Solution:

A pizza is divided into = 8 slices
raisin containing slices = 3 slices
Shira picks up a slice.

Probability that she picks a
slice with raisin = ?

A pizza slice
containing = $\frac{1}{8}$



Favorable outcomes = 3
Total possible chances = 8

So $P = \frac{\text{Favorable outcomes}}{\text{total possible chances}}$

$$P = \frac{3}{8}$$

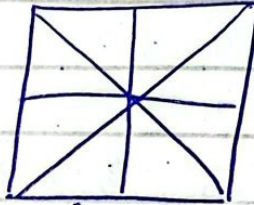
The possible chance that
shira can have a slice
of ~~10~~ with raisin is

$$\frac{3}{8}$$

c. Find the number of Triangles in figure.

SOLUTION:

The number of Triangles in this given figure are 116



d. Discuss the factors which affect IQ.

ANSWER:

IQ is defined as Intelligence Quotient. IQ is mostly influenced by the combination of genetics and environments of an individual. There are many factors which affects the IQ.

FACTORS AFFECTING IQ:

- 1- Genetics plays an important role in the development and building of IQ. Studies proved that intelligence run through families.
- 2- Stress and trauma can be the cause to experience the negative consequences to the health of an individual.

- 3- Socioeconomic and cultural factors can impact individuals opportunities. It impacts educational trainings, way of dealing to a situation with respect to society.
4. Environment is a major player in the development of IQ. It defines how a person is raised and what effects one's health.
- 5- Health as physical health as parental healthy mechanism which directly influence cognitive development towards an environment.

Question 7.

a- A woman sold two scooties ?

SOLUTION:

woman sold two scooties.

One scooty cost = 96000
cost of

two scooties sold at = 192000

In first sale 20% profit

In second sale 20% loss

$$\begin{aligned} \text{For first scooty} &= 20\% \text{ Profit} \\ &= \frac{20}{100} \times 96000 \\ &= 19200 \end{aligned}$$

$$\begin{aligned} \text{For second scooty} &= 20\% \text{ loss} \\ &= \frac{20}{100} \times 96000 \\ &= 19200 \end{aligned}$$

let $\boxed{\pi = 20\%}$

$$\text{so, } \frac{\pi^2}{100}$$

$$= \frac{20 \times 20}{100}$$

$$= \boxed{4\%}$$

the loss percent is $\boxed{4\%}$

b. 195 men working 10 hours
a day. . . . ?

SOLUTION:

Days	men	hours
20	195	10
15	x	13

$$\frac{x}{195} = \frac{10^2}{13} \times \frac{20}{15^3}$$

$$\frac{x}{195} = \frac{40}{39}$$

$$x = \frac{40}{39} \times 195$$

$$x = \frac{7800}{39}$$

$$\boxed{x = 200}$$

So, 200 men are required.

If $A = \{a, e, i, o, u\}$
 $U = \{a, b, c, \dots, z\}$ find A' .

SOLUTION:

$$A = \{a, e, i, o, u\}$$

$$U = \{a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z\}$$

To find A' .

$$A' = U - A$$

$$= \{a, b, c, d, \dots\} - \{a, e, i, o, u\}$$

$$A' = \{b, c, d, f, g, h, j, k, l, \\ m, n, p, q, r, s, t, \\ v, w, x, y, z\}$$

d- A square pyramid ?

SOLUTION:

$$\text{Volume of square pyramid} \\ = V = \frac{1}{3} L^2 h.$$

here,

$$V = 372 \times 3$$

$$h = 300,000 \text{ cm.}$$

$$\Rightarrow 372 = \frac{1}{3}$$