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SECTION - II

QUESTION # 6

A)

Ratio of candies = Apple : Berry : cherry : Dalē

= 3 : 6 : 2 : 5

Apple candies = 3x

Berry candies = 6x

Cherry candies = 2x

Dalī candies = 5x

According to the given condition

$$5x - 3x = 35$$

$$2x = 35$$

$$x = \frac{35}{2}$$

$$x = 17.5$$

Total number of berry candies = 6x

Berry candies = 6 x 17.5

Berry candies = 105

Hence,

If Apple candies exceed Dalī candies by 35, Berry candies are 105 in number.

B)

Price of a camera = 200 $

Discount percentage = 25%

Tax percentage = 6%

Discounted price:

$= 25\% \text{ of } 200$

$= \frac{25}{100} \times 200$

$= 50\ \$$

discount of 50 $ was given, so the price of camera after discount will be:

$= 200 - 50$

$= 150\ \$$

Amount of Tax to be paid:

$6\% \text{ of Tax} : \frac{6}{100} \times 200$

Amount of tax = 12

Total price to be paid after deducting tax of 12 $ will be:

$= 150\$ - 12\$$

$= 138\ \$$

c) Distance covered by bicycle = 36 km
Speed of bicycle = 18 km/hr
starting time = 1 pm
What time does it reach = ?

According to formula; of distance is equal to product of velocity and time:

$$S = V \times t$$

where,

S = distance
V = speed or velocity
t = time

Hence,

$$S = V \times t$$
$$36 = 18 \times t$$
$$t = \frac{36}{18}$$
$$t = 2 \text{ hrs}$$

Total time taken by bicycle to cover the distance of 36 km is 2 hours. If bicycle starts at 1 pm. It will reach at 3 pm.

Reaching time = 3 pm

D) Unscramble math terms

i- STSTAICITS = STATISTICS

ii- LGEBMAR = ALGEBRA

QUESTION NO # 7

A) Diameter of sphere = 14 cm

$\pi = 22/7$

volume of sphere = ?

Solution:

$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

$$\text{Volume of sphere} = \frac{4}{3} \times \frac{22}{7} \times (14)^3$$

$$= \frac{4}{3} \times \frac{22}{7} \times 2744$$

$$= \frac{88 \times 392}{3}$$

$$= \frac{34496}{3}$$

$$\text{Volume of sphere} = 11498.6 \text{ cm}^3$$

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B) Total saving of five friends = 25000 Rs
Ratio = 1 : 2 : 3 : 4 : 5
Smallest share = ?

Solution:

Ratio = 1 : 2 : 3 : 4 : 5
Total of ratio = 1+2+3+4+5
= 15

Smallest share is 1 part out of 15 parts of ratio:

$$\text{Smallest share} = \frac{1}{15} \times 25000$$

$$= \frac{25000}{15}$$

$$= \frac{5000}{3}$$

Smallest share = 1666.66

The smallest share in the saving is of 1666.66 Rs.

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C) Spot the error/complete the series

i) 2, 6, 18, 54, 162, 486
which number does not fit

The series follow the rule of multiplication:

$2 \times 3 = 6$
$6 \times 3 = 18$
$18 \times 3 = 54$
$54 \times 3 = 162$
$162 \times 3 = 486$

Therefore,
The given series is correct. All number are fit according to series.

ii) 3, 5, 7, 11, 13, ____

The given series are the prime number. Prime numbers are those numbers which are divided only by 1 and the number itself
Therefore, the next prime number will be 17 and 19
Hence,
the series will be
3, 5, 7, 11, 13, 17, 19 ...

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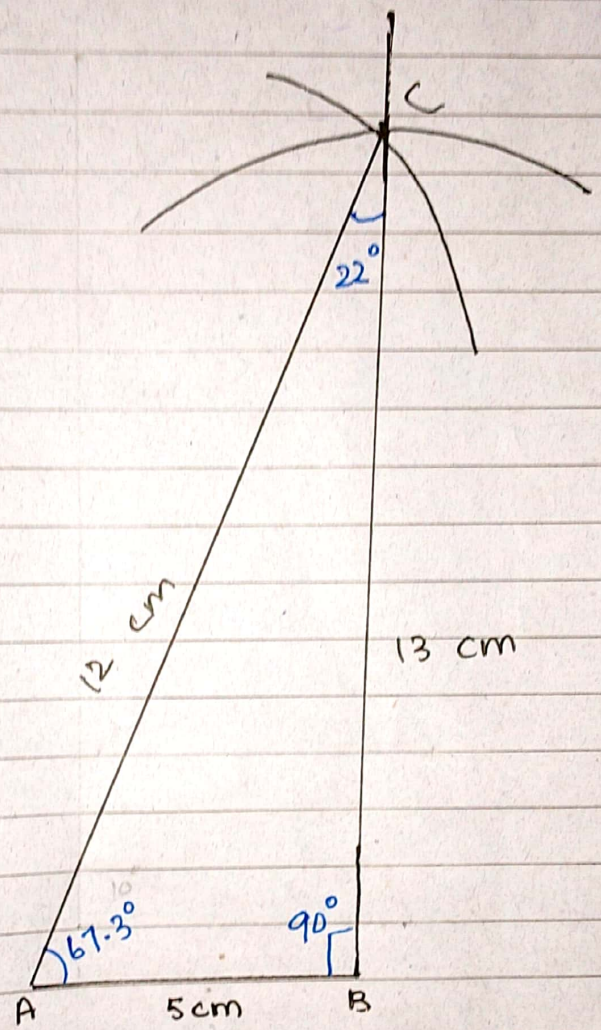
D)

Sides of triangle = 5 cm, 12 cm, 13 cm

Angles = ?



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SECTION-I

QUESTION # 5

B) What is remote sensing? Discuss role of GIS in environmental science

Remote Sensing

Science of collecting information about earth without being in direct contact with it. Remote Sensing can be defined as:

"Use of scientific tool such as satellites and aircrafts to collect geographical information about earth surface is called remote sensing."

Example. Pictures taken by NASA's satellite system of earth surface & forecasting pictures of forest and oceans.

Uses:

Remote sensing has multiple uses including:

→ weather forecasting
→ forest cover mapping

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→ Coastal zone monitoring.
→ Glacier and snow mapping
→ climate activity
→ Land use and planning changes

• GIS (Geographic information system)

GIS stands for Geographic information system. which can be defined as;

"Computer-based tools that are use to collect, store, analyze and display geographical data provided by remote sensing."

It helps in mapping and interpreting information gather by remote sensing. It has also multiple uses but most commonly used in Environmental Science.

Role of GIS in Environmental Science

1- Environmental studies:

It has important role is studying, monitoring and managing environmental science.

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2- Ecosystem monitoring:

It detect changes in forests, wetlands, agricultural Lands.

3- Climate change studies:

GIS is used in tracking melting of glaciers, rising sea level and temperature pattern.

4- Disaster management:

Assess floods, droughts, cyclones and earthquakes. Their intensity and potential to damage

5- Pollution tracking.

Identify source and spread of air and water pollution.

B) "The atmosphere is the blanket of earth" Justify with your opinion

Atmosphere:

Atmosphere can be defined as layer of air that is surrounding earth's surface which protects earth and act as a blanket layer around earth surface.

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How atmosphere is the blanket of Earth

Atmospheric layer is considered as a blanket of earth due to following reasons;

i- protection from haumful radiations of Sun:

The Sun is continuously producing hazardous radiations including Ultraviolet rays which travel through the space but unable to colloid with earth due to atmospheric protection

ii- Protection from celestial bodies such as Meteoroids and Asteroids:

Millions of Asteroids enter earth atmosphere per day but only few of them cross the atmosphere which is very rare. Asteroids are burned and destroyed in atmosphere.

iii- Protecting lives and maintaing temperature of earth:

Without atmosphere, there would be no life on earth. It also maintains temperature of earth.

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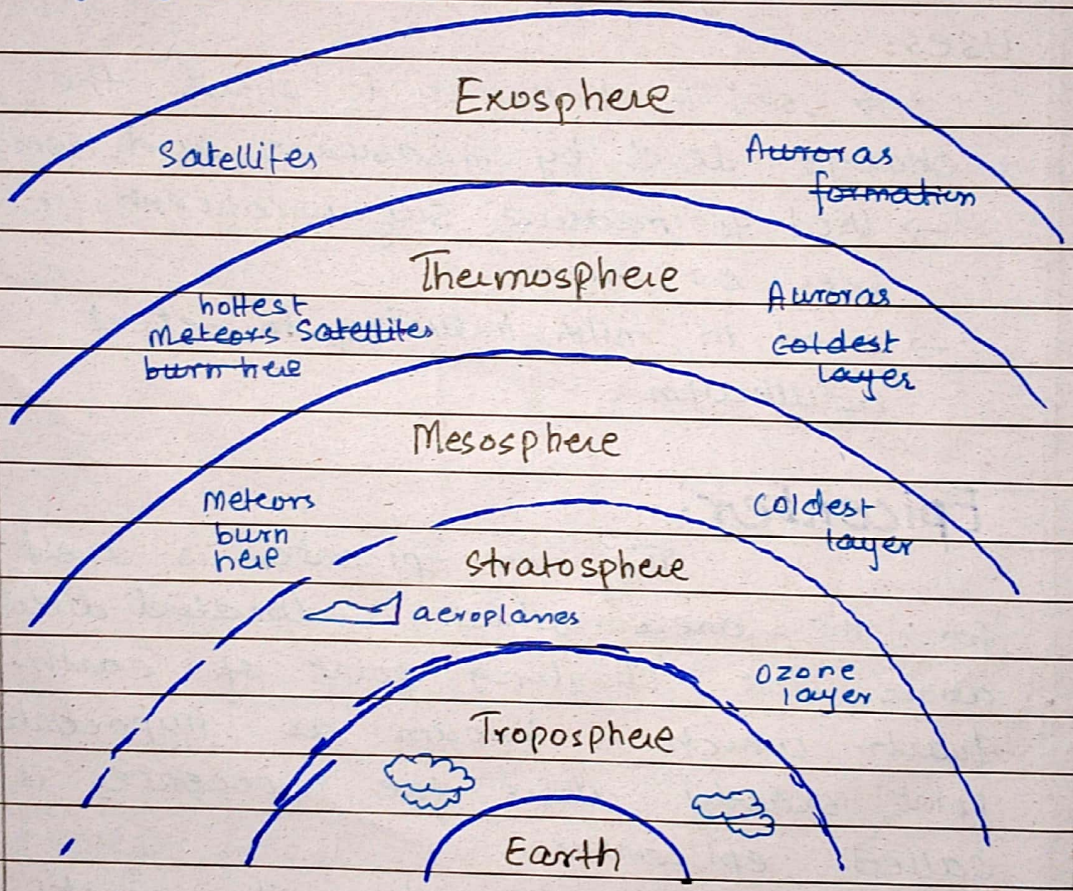
iv- Ozone layer of atmosphere : a protective blanket of earth:

Ozone layer of atmosphere protect earth by absorbing harmful rays from sun.



D) Define the following

Hydrometer:

Hydrometer is an instrument used to measure the density or specific gravity of liquids

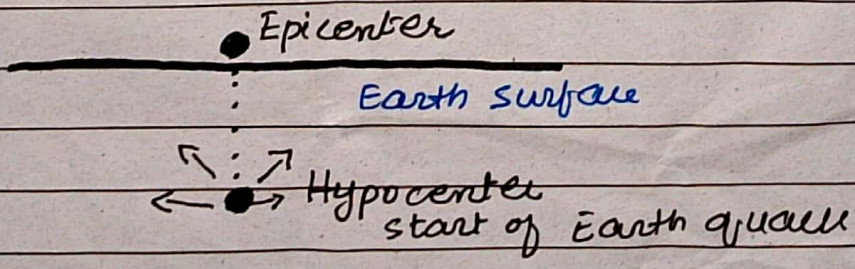
Uses:

→ Used in batteries to check the charge level by measuring acid density
→ Used to measure sugar content in beer or wine.
→ used in milk industry to detect adulteration

Epicenter:

The term epicenter is used for the area which is located directly above the starting point of earthquake which is known as hypocenter. point exactly above the hypocenter is called epicenter.

It is the area where the most prominent effects of earth quake can be witnessed. Maximum destruction due to earth quake can be seen in epicenter



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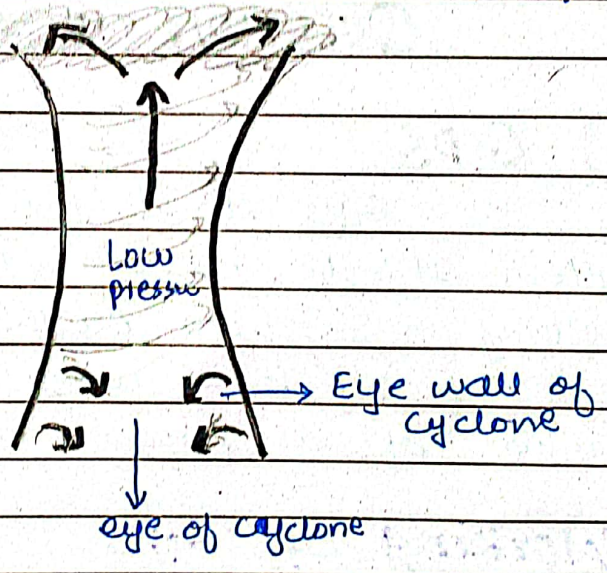
Eye wall of Cyclone:

Central area of cyclone is called the eye of cyclone while the wall which is surrounding the eye of cyclone in the form of intense air movement. Eye of cyclone is the calmest area which is clear and no destruction occur here. However Eye wall is the most destructive part of cyclone.



Deep focus

Deep focus in terms of earthquake is define as the earthquake which originates very deep below the earth's surface, usually between 300 km and 700 km beneath the crust, in the upper mantle.

Types of Deep focus Earthquake

- shallow-focus 0–70 km
- Intermediate-focus 70–300 km
- Deep focus 300–700 km

Light year:

Light year is an astronomical unit. It can be defined as the distance traveled by light in one year. In Space terminology light year is used to measure distance because those huge distances cannot be measured via ordinary distance units.

QUESTION NO # 2

D) GPS

GPS stands for Global positioning System. It is the network of 24 satellites revolving in medium earth orbit sent by US airforce. It is used to locate the position of a person on earth.

Working of GPS

GPS works on the principle of trilateration. To locate the position, one must be locked on to with minimum three satellites. These satellites finds the location of a person by measuring distances from satellite to earth. It measures the time taken by signal to reach the device through which distance is measured.

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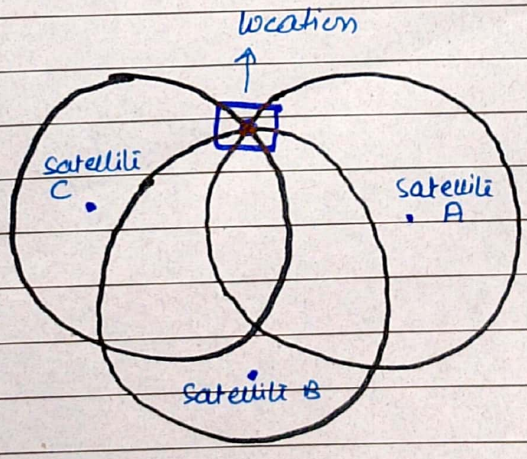
2D and 3D locations:

Satellites measure the 2D and 3D location by using the principle of trilateration. When a person is connected to three satellites, 2D location can be found in which latitude and longitude information is assessible.

When a person is connected to more than three satellites, 4D location can be find which includes latitude, longitude and altitude.

2D location can assess only pictures while 3D location can assess location, speed and all other information.



Optic fiber:

Optic fibers are strands of optically pure glass, as thin as human hair, which carries digital information

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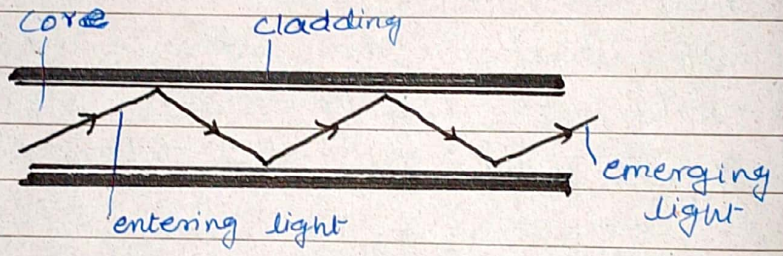
in the form of light signals over long distances.

Optic fibers work on the principle of Total internal reflection. Fibers are so small when the light is introduced into the fiber it will continue to reflect almost endlessly of the walls of fibers. Due to difference of refractive index of core and cladding light keeps within fibers and travelling in a zig-zag manner with out escaping.



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