

DAY: _____

DATE: _____

GENERAL ABILITY

Q6:

(a)

$$\text{Dates} = n$$

$$\text{Apples} = n + 35$$

$$\frac{3}{16}(n + 35) = \frac{5}{16}n$$

$$\frac{2}{16}n = \frac{105}{16}$$

$$n = 52.5 \sim 52$$

$$\text{Dates} = 52$$

$$\text{Apples} = 87$$

AY: _____

DATE: _____

(b) Price of camera after tax $= 1.06 \times 200$
 $= \$212$

After discount of 25% $= 75\% \times 212$
 $= 0.75 \times 212$

Final price $= \$159$

Total amount paid is \$159

(c)

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$18 \text{ km/h} = \frac{36 \text{ km}}{t}$$

$$t = 2 \text{ h}$$

The bicycle will reach at 3 pm.

(d) (i)

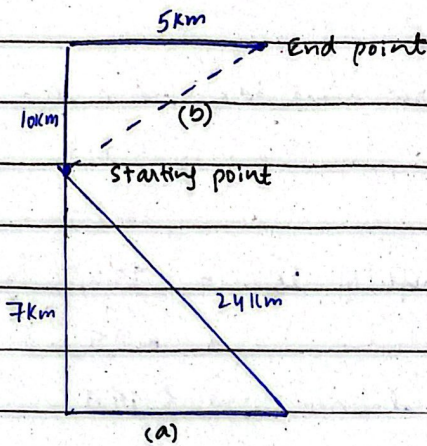
Unscrambled: STATISTICS

(ii)

Unscrambled:

Q8.

(a)



Finding (a):

$$H^2 = P^2 + B^2$$

$$(24)^2 = (7)^2 + B^2$$

$$B^2 = 576 - 49$$

$$\sqrt{B^2} = \sqrt{527}$$

$$B = \approx 22 \text{ km}$$

Finding (b)

$$H^2 = P^2 + B^2$$

$$H^2 = 5^2 + 10^2$$

$$H^2 = 25 + 100$$

$$H = \sqrt{125} = \approx 11 \text{ km}$$

$$\begin{aligned} \text{Total distance covered} &= 24 + 22 + 7 + 10 + 5 \\ &= 68 \text{ km} \end{aligned}$$

$$\text{Distance from start} = 11 \text{ km}$$

AY: _____

DATE: _____

(b) Share of each sibling:

$$A = \frac{1}{2} B$$

$$(2) B = 2A$$

~~$$B = 4A$$~~

$$B = 3C$$

$$2A = 3C$$

$$(3) C = \frac{2}{3} A$$

$$C = 4D$$

$$\frac{2}{3} A = 4D$$

$$(4) D = \frac{1}{6} A$$

$$D = 2E$$

$$\frac{1}{6} A = 2E$$

$$(5) E = \frac{1}{12} A$$

$$(6) F = \frac{1}{12} A$$

Total Share = Rs. 9000

$$A + B + C + D + E + F = 9000$$

$$A + 2A + \frac{2}{3} A + \frac{1}{6} A + \frac{1}{12} A + \frac{1}{12} A = 9000$$

$$\frac{47}{12} A = 9000 \quad 4A = 9000$$

$$A = \boxed{2250}$$

$$E = \boxed{187.5}$$

$$B = \boxed{4500}$$

$$F = \boxed{187.5}$$

$$C = \boxed{1500}$$

$$D = \boxed{375}$$

DAY: _____

DATE: _____

(c)

$$\text{Volume} = l \times b \times h$$

$$= 8 \times 6 \times 4$$

$$= \boxed{192}$$

$$\text{Total surface area} = 2(lw + lh + wh)$$

$$= 2(48 + 32 + 24)$$

$$= 2(104)$$

$$= \boxed{208}$$

(d)

$$\text{Food consumed by men} = 72 \times 4$$

$$= 288 \text{ kg}$$

$$\text{Food consumed by women} = 50 \times 4$$

$$= 200 \text{ kg}$$

$$\text{Food consumed by Amira} = 200 + 288$$

$$\text{b/r} = \frac{200 + 288 + 128}{3}$$

$$\text{r/c} = 118 \frac{2}{3}$$

$$67 = 288 \div 72 + \left[\frac{200 + 128}{5} \right]$$

2

$$\boxed{112 \text{ kg}}$$

GENERAL SCIENCE

Q2:

(a)

Yes, I agree that data is the new oil. It has become a commodity that is so more important than oil.

Companies around the globe gather and use data to make informed decisions and predict future trends. It plays a vital part in the success of organizations and governments across the globe.

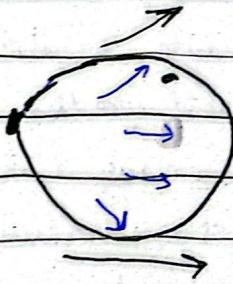
Some noteworthy examples are:

1. Use of consumer data by clothing brands to target customers
2. Stock market data assessed to buy and sell shares of stocks
3. Data used in sports like basketball and football to increase winning percentage.

(b)

The process of expansion of the universe resembles the balloon blowing. Just like the balloon swells and gets filled up, in the

same way the Universe is expanding its horizons. The expansion process refers to extension or the elaboration of its boundaries. Therefore, as the ^{air in} balloon takes up more space and fills up, the Universe is also spreading out.



The air moves across the surface of balloon, expanding the area occupied as its boundaries stretch. However, unlike the balloon, the Universe is not finite and can stretch beyond.

(C) A balanced diet refers to a diet that is comprised of all the nutrients needed by the body. This includes both major and minor nutrients.

Major Nutrients:

Proteins, Carbohydrates, Fats
(Lipids)

Minor Nutrients:

Vitamins (A, B, C, D)

Minerals (Iron, calcium etc).

The body requires both nutrients in order to function effectively and carry out its activities.

The deficiency of any nutrient can lead to devastating effects on the functioning and state of a human body.

1) Deficiency of Vitamin A:

Vitamin A is essential in the body for boosting the immune system. It helps growth of cells and also produces a pigment.

In the eyes. Its deficiency leads to Night blindness and Stunted growth.

2) Vitamin D

Vitamin D is essential in the body for growth of bones. It helps in development of stronger bones in the body.

Deficiency:

Its deficiency leads to Rickets, a scenario in which bones are deformed.

3) Vitamin E

Vitamin E is important in the body as it plays a role in formation of red blood cells.

Deficiency:

Its deficiency leads to ~~Ana~~ Anemia in the body, leading to a lack of red blood cells.

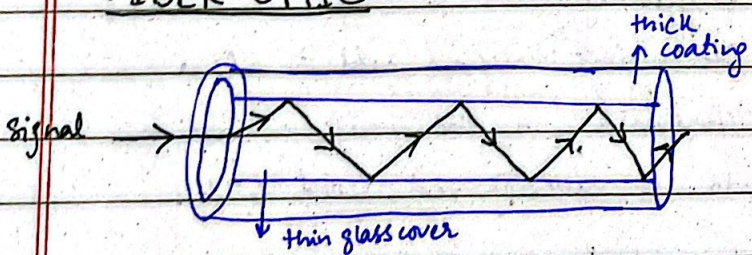
(d)

GPS refers to the "Global Positioning system". It is a software developed by the United States military. It uses a satellite in a middle earth orbit.

Working:

- ① Signal sent by a device to the satellite
- ② Satellite receives signal, analyses information and sends signals back.
- ③ Information received through the device with information regarding location.

FIBER OPTIC



A fiber optic is a type of wire that helps to ~~extra~~ send information and signals for communication. The wire consists of several layers of protection and the

innermost layer is a thin covering of glass. The principle it uses for transfer of data is Total internal Reflection. Signals entering the fiber are reflected internally as they move from one end to the other.

Advantages:

- ① Quick communication
- ② Secure
- ③ Less expensive

LOCATION MEASURING BY SATELLITES

The measurement of different objects by a satellite differs according to the type of satellite. Satellites in low earth orbit are able to better capture

3D objects and images while those in high earth orbit receive better signals from 2D sources. The receiver for an object is therefore different. The satellite is able to recognize the signals sent from a receiver accordingly.

For 2D: It usually works through a system of transmitter, which sends information to the satellite. The

satellite processes that and sends a signal back to receiver on Earth.

3D: This usually works through a software that capture information sent from the source. The satellite is able to detect radiation or electromagnetic waves emitted from 3D objects.

Q.05:

(a)

The population of Pakistan presently stands at about 240 million. The country has been suffering from an explosion in population growth.

CAUSES:

- ① Lack of family planning information
- ② Reduced use of contraceptives
- ③ Religious influence which promotes more children
- ④ Child and early marriages leading to greater child bearing years
- ⑤ More children means greater support for low income families.

CONTROL MEASURES

- ① Introduction of family planning facilities, especially in rural areas
- ② Access to low cost and quality contraceptives
- ③ Bringing scholars and local leaders on board to reduce or clarify religious sentiments
- ④ Banning of child marriages concept
- ⑤ welfare support programs for low income families.

(b)

1. REMOTE SENSING

Remote sensing refers to a process of collecting information about the Earth using a satellite in space. It helps gain data using a sensor based technology.

WORKING:

The process works by capturing the Electromagnetic waves captured by the sensors aboard the aircraft or satellite. The waves are naturally emitted

from the Earth or reflected from the surface by the sun.

The sensors translate that information into imagery which is then communicated to the receiver.

Remote sensing helps to observe and monitor the Earth's surface.

e.g. an area affected by deforestation can be observed through images captured.

2. GIS

GIS refers to the Geographic Information system. It is a tool that captures and analyzes data.

Importance:

- ① Forms a collection of all data sources in one place, including from remote sensing.
- ② Helps to analyze data and display information.
- ③ Used for modelling and monitoring purposes.
- ④ Helps to create maps of different regions and topographies.
- ⑤ The analysis helps to make decisions related to urban development, vegetation initiatives

and forest modelling.

(C)

The statement conveys that the atmosphere covers the entire Earth. The atmosphere is comprised of different layers like Troposphere, Stratosphere, and Mesosphere. Each layer has different qualities and composition. The reference of the blanket means that the atmosphere helps keep the Earth warm. This is true in a sense because of several reasons:

- ① The atmosphere helps trap radiation from the sun. One of the processes is the greenhouse effect. It helps raise the temperature on Earth.
- ② The oceans also act as a carbon sink. It helps trap radiation and absorbs carbon from the atmosphere. This leads to a rise in ocean temperatures.

- ③ The natural gases in atmosphere combine with other gases and radiation to form greenhouse gases like Ozone.

The mechanisms in the atmosphere helps it play the part of a blanket for the Earth.

(d)

(i) Hydrometer:

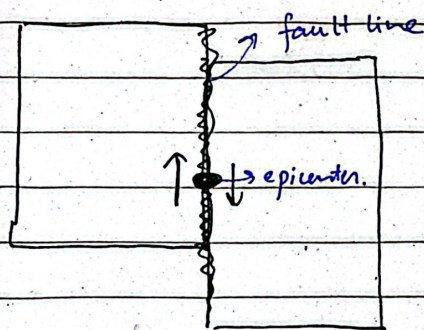
It is a tool used to measure the pressure of the water.

It can help assess the impact and speed with which water flows, thus aiding in making inferences and analysis.

(ii) Epicenter

The epicenter is the region or point from which an earthquake originates. The movement of the tectonic plates create an earthquake. The center of the fault line on which the plates lie and from the point where ~~the~~ sliding occurs is the

epicenter. It helps gauge the intensity of earthquakes. An epicenter closer to Earth will create more damage.



(v) Light year

Light year is a measure of distance in space. It refers to the metric used to quantify the distance travelled in space.