

GSA-Test 3

QUESTION 1

13

(a)

Optical Fiber:

Optical fiber is a technology that is used to transmit and receive data at a very fast pace using ~~of~~ optic fiber cables. The optical fiber is readily being used in many different fields and areas of life.

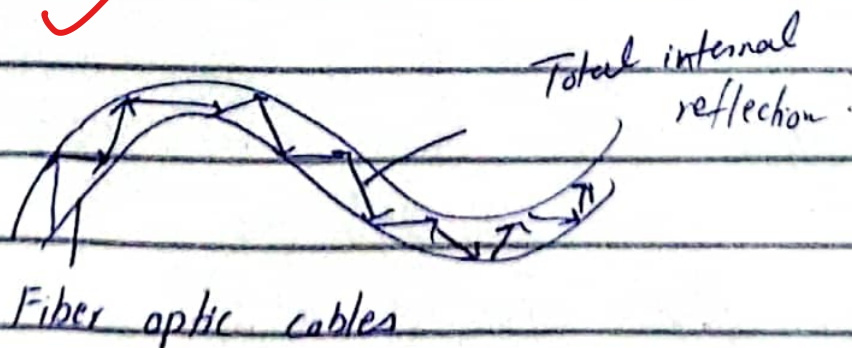
WORKING PRINCIPLE OF OPTICAL FIBER:

The optical fiber are used through optical fibres cables that have bundles of glass threads used to transmit and

receive signal and data in the form of light waves

TOTAL INTERNAL REFLECTION

The phenomenon of total internal reflection takes place in the optical fibres that make the light was refract at a specific angle that does not allow them to leave and are reflected back in the cable. Thus the continuous reflection of light waves allow the signals and data to transmit from one place to another within seconds.



IMPORTANCE OF FIBER OPTICS.

Some of the most useful applications of fiber optics are as follows

* FASTER TRANSMISSIONS:

The fiber optics allow the signals to travel at a much faster rate than the metal wires

* GREATER PROTECTION FROM EXTERNAL EFFECTS

The fiber optics does not let the data to be infiltrated very easily and undergoes smooth transmission

* GREATER AMOUNT OF DATA TRANSMISSIONS TRANSFORMATIONS:

The optical fibers provide a broader bandwidth of transmitting data across a certain area

* INCREASED RELIABILITY:

The optical fibers are more reliable than metal wires in terms of bandwidth and strength.

3

* GREATER UTILITY:

The fiber optics are used and are suited for different areas more as compared to the conventional metal wires.

(C)

SATELLITE :-

Satellites are objects that revolve around earth at a certain orbit in the space. It is used for communication purposes. There are multiple types of satellites such as man-made satellites and artificial ones.

Moon is a natural satellite of Earth that revolves around naturally in an orbit in space.

WORKING:

Satellites send and receive data from Earth and allows to navigate and communicate. The 3rd satellites uses electromagnetic waves to send and receive messages.

[Tri-lateral system]

USES:-

Satellites are used for in weather forecasting, navigation purposes, location management, aircraft signaling etc.

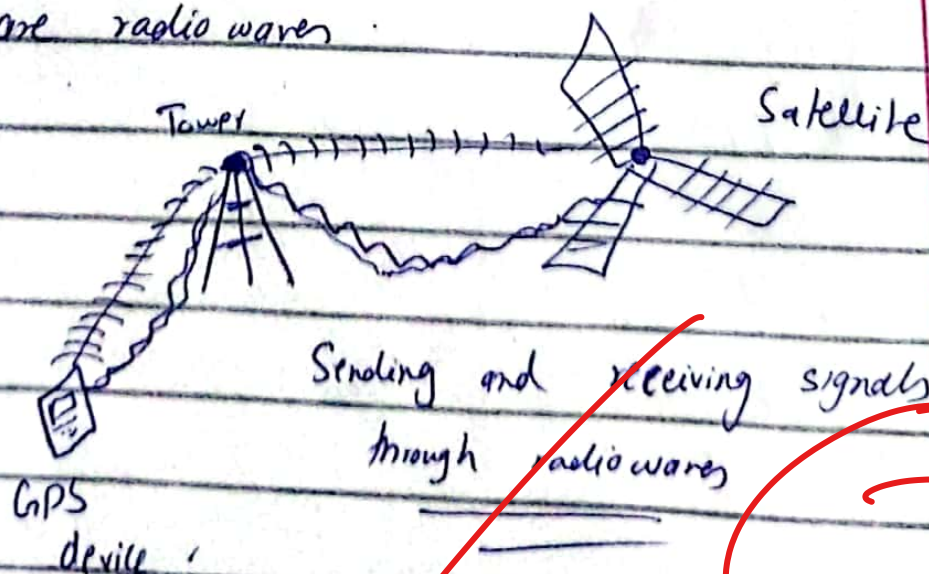
GLOBAL POSITIONING SYSTEM:-

The GPS (Global positioning system) can is a phenomenon that is used to track location.

time and for navigation purpose 24 hours a day. It uses radio-waves and satellites to function. The GPS help to track the exact location of the device being used through satellites.

WORKING OF GPS:

The GPS uses satellites to perform its basic functions. The GPS tracker from the device sends a signal to the satellite. It is received and transmitted back to the device in milliseconds. The signals used are radio waves.



(d)

RAM

ROM

- | | |
|---|---|
| * It stands for Read Only Memory | * It stands for Random access memory. |
| * It is the permanent storage in a computing system | * It is a temporary storage in a computing system |
| * It can be accessed later on in time | * It cannot be accessed once the function is performed |
| * It is able to store huge amount of data based on its storage capacity | * It is not able to store huge amounts of data and discards ^{immediately} it |
| * It is the core storage base of a CPU | * It is storage space for random operations. |

QUESTION 2

(a)

GIVEN:

Two numbers in ratio 3:5

9 is subtracted from each number.

New number are in ratio 12:23

To do:

The smaller no is = ?

SOLUTION :-

- ① Let us suppose x and y are the two given numbers

$$x:y = 3:5$$

$$\frac{x}{y} = \frac{3}{5}$$

- ② By subtracting 9 from each number, we get new ratio as

$$\frac{x-9}{y-9} = \frac{12}{23}$$

$$\frac{x-9}{y-9} = \frac{12}{23}$$

(3) By cross-multiplying we get

$$x - 9 = 23$$

$$y - 9 = 12$$

$$x = 23 + 9$$

$$y = 12 + 9$$

$$x = 32$$

$$y = 21$$

So, the two numbers are 32 and 21

ANSWER:

The smaller number is

21

(b)

GIVEN:

Average weight of A, B, C = 45 kg

Average weight of A and B = 40 kg

Average weight of B and C = 43 kg

To do:

Weight of B = ?

SOLUTION.

$$\frac{A+B+C}{3} = 45 \rightarrow \textcircled{1}$$

$$A+B+C = 135 \quad \textcircled{1}$$

$$\frac{A+B}{2} = 40$$

$$A+B = 80 \rightarrow \textcircled{2} \quad \checkmark$$

$$\frac{B+C}{2} = 43$$

$$B+C = 86 \rightarrow \textcircled{3} \quad \checkmark$$

Putting eq (2) in eq (1)

$$\frac{A+B+C}{3} = 45$$

$$\frac{80+C}{3} = 45$$

$$C = 55$$

Putting value of C in eq (3)

$$B+C = 86$$

$$B+55 = 86$$

$$B = 86 - 55$$

$$\boxed{B = 31}$$

ANSWER:

The weight of B is 31

(d)

Solve

(d)

GIVEN:

Positive number increased by 17
is equal to 60 times the

reciprocal of the number.

To do:

Find the number.

Solution:

Suppose x is the number

The given data tells us

$$x + 17 = 60\left(\frac{1}{x}\right)$$

$$x + 17 = \frac{60}{x}$$

$$x - \frac{60}{x} = -17$$

$$\frac{x^2 - 60}{x} = -17$$

$$x^2 - 60 = -17x$$

$$x^2 + 17x - 60 = 0$$

$$x^2 + (12 + 5)x - 60 = 0$$

$$x^2 + 12x + 5x - 60 = 0$$

$$x(x + 12) + 5(x - 12) = 0$$

$$\boxed{x = 12}$$

$$\begin{aligned} &\Rightarrow x^2 + 17x - 60 = 0 \\ &x^2 + 20x - 3x - 60 = 0 \end{aligned}$$

