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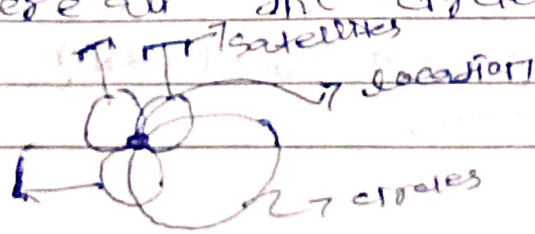
② NO 2

## A) Launch of a Satellite

A rocket lifts up vertically to pass through the thickest part of the atmosphere. After reaching upper, thin atmosphere the rocket tilts horizontally. It accelerates the satellite to a precise orbital velocity. At this high speed, the satellite's forward inertia balances the Earth's gravitational pull, causing it to fall down to planet's <sup>surface</sup> orbit instead of earth/ground.

## Working Principle of the GPS

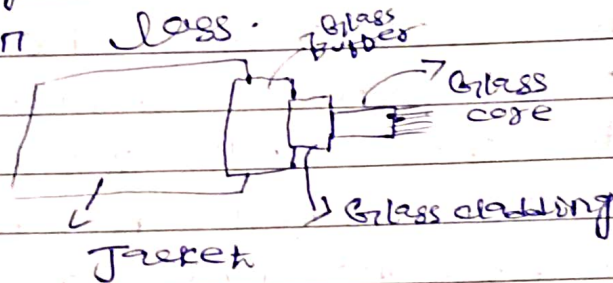
The working principle of GPS trilateration is defined as the method of finding the object's exact location by measuring its distance from three or more known reference points. By knowing your distance from one point places you on a circle and by adding distance measurements from other known points, you find the single location where all the circles intersect.



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## B. Fiber Optic

The Optical fiber is a very thin, flexible strands of high-purity glass or plastic diameter of a human hair. It is used to transmit signals from one place to other over large distances, without transmission loss.



(Optical fiber components)

### Working principal of Optical Fiber

Its working principal is total internal reflection which has two conditions-

(i) Denser to Rarer Medium: Light travels from denser medium (core) to rarer medium (cladding).

(ii) Angle of incidence > critical angle:

The light hits at the boundary between core and cladding in such a way that its angle of incidence is greater than critical angle.

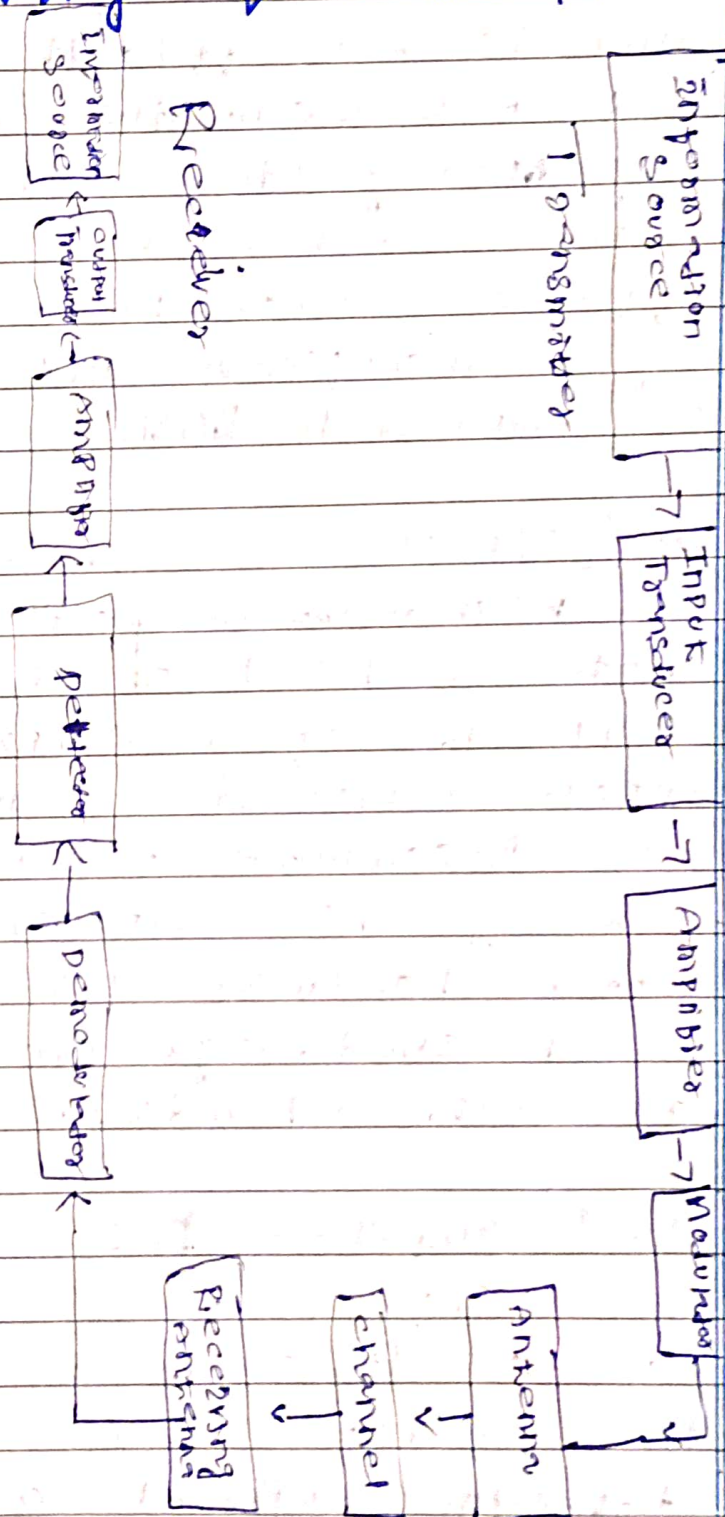
When these two conditions meet, the light does not go out of cladding and reflects back 100%.

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C. Explain the working of a cell phone

Ans.

Block Diagram of a Working of a Cell Phone



D.

## a. RAM and ROM

RAM is a Random Access Memory. It is volatile memory (data lost when power is off). It is editable and fast. Meanwhile, ROM is Read only Memory. It is non-volatile memory, data is not lost when power is off. It cannot be edited except by its manufacturer and it is slow as compared to RAM.

## b. Software and Hardware

Hardware is parts of a computer that can be touched, physical components of a computer, e.g. inputs, output devices, monitor, printer etc. Meanwhile, Software is a set of instruction and data on which hardware operates, it cannot be touched, e.g. Windows OS. Both are interdependent.

## c. Computer Bus

Computer buses consists of parallel lines. These are used to transfer data to other different components of computer. The capacity of data transferred

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between components by computer bus depends on number of lines on it. One line computer bus can transfer one bit of data.

(Q No 1)

A)

Given Data

percentage of no. from 1 to 70 have 1 or 9 in the units digit?

1, 9,

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B)

Given Data:

$$5\% \times A + 4\% \times B = \frac{2}{3} (6\% \times A + 8\% \times B)$$

To Find:

A : B = ?

Solution:

$$\frac{5}{100} A + \frac{4}{100} B = \frac{2}{3} \left( \frac{6}{100} A + \frac{8}{100} B \right)$$

Multiply by '100' on both sides,  
we get;

$$5A + 4B = \frac{2}{3} (6A + 8B)$$

$$3(5A + 4B) = 2(6A + 8B)$$

$$15A + 12B = 12A + 16B$$

$$15A - 12A = 16B - 12B$$

$$3A = 4B$$

$$A : B = 3 : 4 \quad \underline{\text{Ans}}$$

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C)

Given Data:

$$\rightarrow A : B : C : D \\ 5 : 2 : 4 : 3$$

$$\rightarrow C = 1000 + D$$

To Find:

B's Share?

Solution:

$$A + B + C + D$$

Multiply by 'x'

$$Ax + Bx + Cx + Dx$$

$$5x + 2x + 4x + 3x$$

$$C = 1000 + D \rightarrow \text{Given}$$

$$C - D = 1000$$

$$4x - 3x = 1000$$

$$x(4 - 3) = 1000$$

$$x = 1000$$

$$B's \text{ Share} = 2x$$

$$= 2(1000)$$

$$B's \text{ Share} = 2000$$

Ans \*

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## D. Given Data

If

$$40\% \times x_1 = \frac{2}{3} x_2$$

To Find: Ratio of 2nd no ( $x_2$ )  
to Ratio of first no. ( $x_1$ )

Solution:

$$\frac{40}{100} x_1 = \frac{2}{3} x_2$$

$$\frac{2}{5} x_1 = \frac{2}{3} x_2$$

$$\frac{10^2}{255} x_1 = \frac{2}{3} x_2$$

$$\frac{2}{5} x_1 = \frac{2}{3} x_2$$

cross multiply

$$6 x_1 = 10 x_2$$

$$\text{Ratio} = x_2 : x_1$$

$$= 105 : 6$$

$$= \frac{10^5}{63}$$

$$x_2 : x_1 = 5 : 3$$

ANS →