

29/10/25

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TEST SERIES  
BATCH - ONLINE - 1  
GSA - TEST 1

ABILITY SECTION

Q1

(A)

→ Numbers having either 1 or 9 in unit's digits

1, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 31, 41, 51, 61  
9, 19, 29, 39, 49, 59, 69 (16)

→ Repeated numbers: 9, 19,

→ Total numbers = 22 numbers

→ Percentage calculation:  $\frac{22}{70} \times 100$

= 31.43%

(B)

→ Equation Formulation:

$$A:B \rightarrow 5\%A + 4\%B = \frac{2}{3} [6\%A + 8\%B]$$

$$\rightarrow \frac{5}{100}A + \frac{4}{100}B = \frac{2}{3} \left[ \frac{6}{100}A + \frac{8}{100}B \right]$$

$$0.005A + 0.004B = \frac{2}{3} [0.006A + 0.008B]$$

$$3(0.005A + 0.004B) = 2(0.006A + 0.008B)$$

$$0.015A + 0.012B = 0.012A + 0.016B$$

$$0.015A - 0.012A = 0.016B - 0.012B$$

$$0.003A = 0.004B$$

$$\frac{A}{B} = \frac{0.04}{0.03} = \frac{4}{3}$$

$$A:B$$

$$4:3 \rightarrow \text{Answers}$$

(c)

$$A:B:C:D$$

$$5:2:4:3$$

C get 1000 + D

→ Let  $x$  be the unknown number:

$$A = 5x, B = 2x, 4x, 3x$$

$$C: 4x = 1000 + 3x$$

$$4x - 3x = 1000$$

$$x = 1000$$

$$\rightarrow B's \text{ share: } B = 2x$$

$$= 2(1000)$$

$$= 2000 \rightarrow \text{Answers}$$

(D)

$$\rightarrow \text{equation: } 40\% x = \frac{2}{3} y$$

$$\frac{40x}{100} = \frac{2y}{3}$$

$$40x \times 3 = 2y \times 100$$

$$120x = 200y$$

A number:  $x$

Another number =  $y$

$$x = 80y$$

$$\frac{x}{y} = 80$$

$$x = \frac{105}{120} y$$

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

$$x:y \rightarrow \boxed{5:3}$$

Answers

## SCIENCE SECTION

### (A) SATELLITE

#### (i) Launch of a satellite:

##### a. Launch Vehicle:

A rocket is used to launch and thrust the satellite into orbit. It provides the energy to overcome the gravitational pull of the Earth.

##### b. Stages of Launch:

###### 1. Liftoff:

The rocket burns fuel to propel itself upwards.

###### 2. Atmospheric Ascent:

The rocket passes through the atmosphere.

###### 3. Orbital Insertion:

The satellite is put into orbit.

###### 4. Separation

The satellite separates from the launch vehicle and begins its independent operation.

### (A)(2) GPS

GPS refers to global positioning system. It is a satellite-based navigation system that provides location, time, and velocity anywhere on Earth.

### (II) Components:

- ✓ (i) Satellites: At least 24 satellites orbiting Earth
- ✓ (ii) Ground Stations: Monitor and control satellite operations
- ✓ (iii) Receivers: Devices (like smartphones) that detect satellite signals

How does GPS Work:

(i) Satellite Triangulation:

At least 4 satellites broadcast time and location signals

✓ (ii) Receiver Calculation:

GPS receiver calculates its distance from each satellite

✓ (iii) Position Fix:

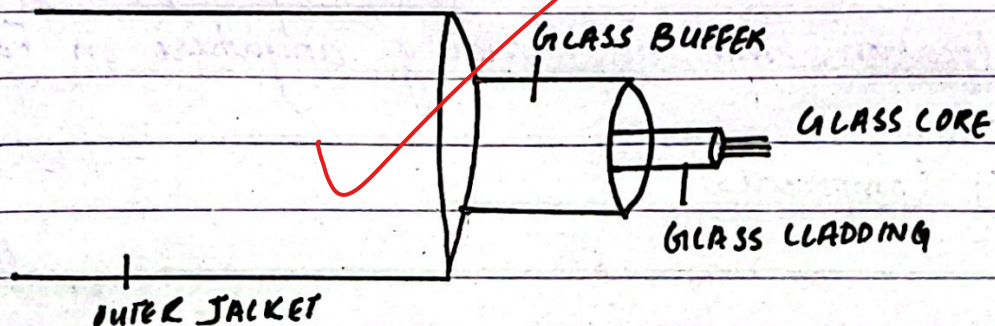
Insertion of distance gives exact location

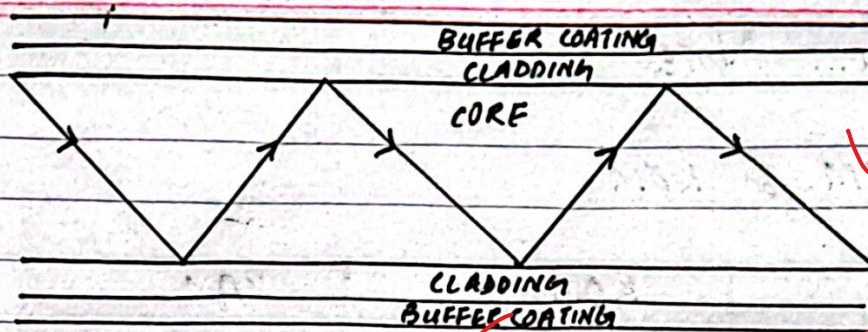
## (B) OPTICAL FIBER

An optical fiber is a non flexible transparent strand used to transmit data as light signal over long distances with minimal loss

Working of an optical fiber

An optical fiber utilises the principle of total internal reflection.



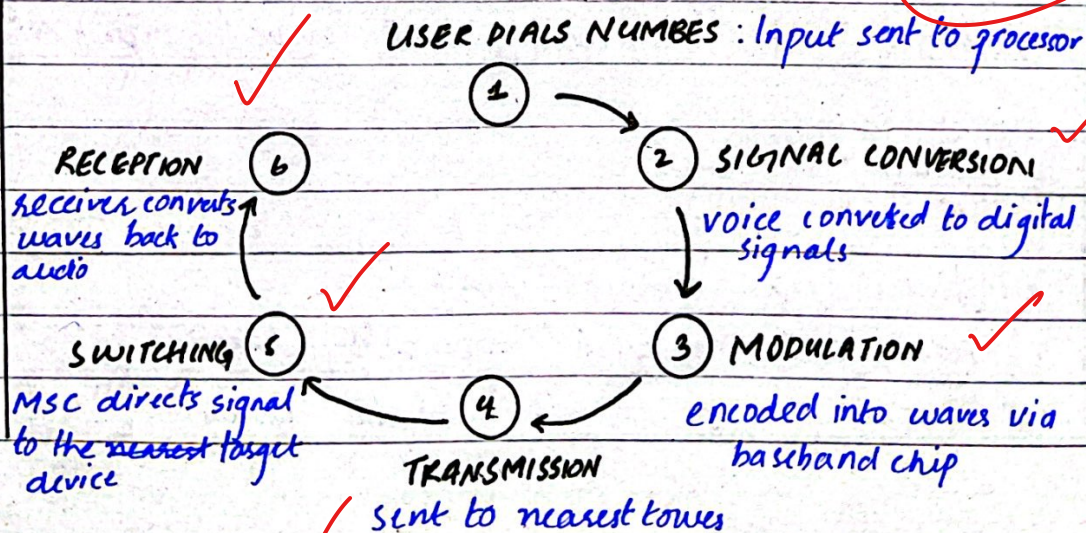


1. **Light Entry:**  
Light enters at a suitable angle
2. **Total Internal Reflection:**  
Light beams bounce back and forth, travelling along
3. **Signal Transmission:**  
Sig Light travels through with minimal losses
4. **Reception:**  
Light signal is received and converted to electrical or data form

### (C) CELL PHONE

Mobile wireless communication refers to data transmission between portable devices via electromagnetic waves, without physical cables

Working Process:



## (D) SHORT NOTES

### 1. RAM & ROM

|            | ROM              | RAM                |
|------------|------------------|--------------------|
| ACRONYM    | Read only memory | Read access memory |
| VOLATILITY | Non-volatile     | volatile           |
| SPEED      | slower           | slower faster      |
| USE        | System startup   | Runs application   |

### 2. SOFTWARE & HARDWARE

| ASPECT     | SOFTWARE                    | HARDWARE                          |
|------------|-----------------------------|-----------------------------------|
| DEFINITION | Set of digital instructions | Physical components               |
| NATURE     | Non-tangible                | Tangible                          |
| FUNCTION   | Tells hardware what to do   | Carry's out software instructions |
| CHANGE     | Easily changeable           | Needs physical replacement        |
| DEPENDENCY | Need hardware to run        | Needs software to operate         |

### 3. COMPUTER BUS

A computer bus is a communication pathway that transfers data, instructions, and signals between the different components of a computer - such as CPU, memory, and input/output devices.

Three types of Buses:

1. Data Bus - carries data
2. Address Bus - carries memory addresses
3. Control Bus - carries control signals