

Test #1

Question #1

(A)

Solution.

Step #1: Numbers ending on 1 from 1 to 70
 $= 1, 11, 21, 31, 41, 51, 61 = 7$ numbers

Step #2: Numbers ending on 9 from 1 to 70
 $= 9, 19, 29, 39, 49, 59, 69 = 7$ numbers

Total numbers $= 7 + 7$
 $= 14$ numbers

To find percentage

Formula: Percentage $\times$ Base = Amount

$$x\% \times 70 = 14$$

$$\frac{x}{100} \times 70 = 14$$

Shifting values to R.H.S

$$x = \frac{14}{70} \times 100$$

$$x = 2 \times 10$$

$$x = 20\%$$

So, 20% of numbers from 1-70 have 1 or 9

(C)

Given data:

Proportion of share of A, B, C, D = 5:2:4:3

C gets = Rs. 1000 more than D

To find

Share of B = ?

Solution

Let the share of A, B, C, D = $5x, 2x, 4x, 3x$

$C = 1000 + D$ (putting shares of C and D)

$$4x = 1000 + 3x$$

shifting variables to L.H.S

$$4x - 3x = 1000$$

$$x = 1000$$

Put the value of x in each share

$5x, 2x, 4x, 3x$

$5(1000), 2(1000), 4(1000), 3(1000)$

5000, 2000, 4000, 3000

Share of B = $\boxed{\text{Rs. } 2000}$

Question 2

(A)

↳ Launch of a satellite:

There are various steps involved in the launch of a satellite into a space. These steps include,

i) Preparation

→ In this step, satellites are build according to its purpose

ii) Mounting on launch vehicle

→ In this step, satellite is fixed on top of a launching vehicle that is rocket.

iii) Launch

→ After mounting, the rocket's engines ignite to lift off

iv) Stage separation

→ Rockets have multiple stages. When one stage uses up its fuel, it separates.

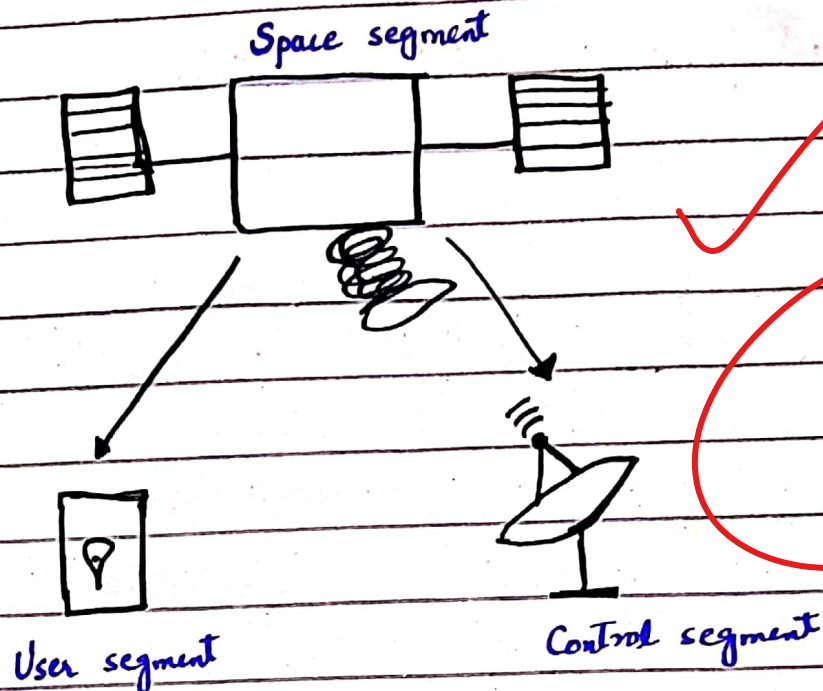
v) Reaching Orbit

→ The upper stage carries the satellite to its target orbit.

vi) Satellite deployment

→ In its orbit, the satellite separates from the rocket, deploys its solar panels and antennas, and starts working.

→ Working principle of GPS



The working of GPS is involved into three segments, each with its specialized system.

i) Space segment: The operational satellite system surrounds the earth and transmit signals to geographical location and time of day.

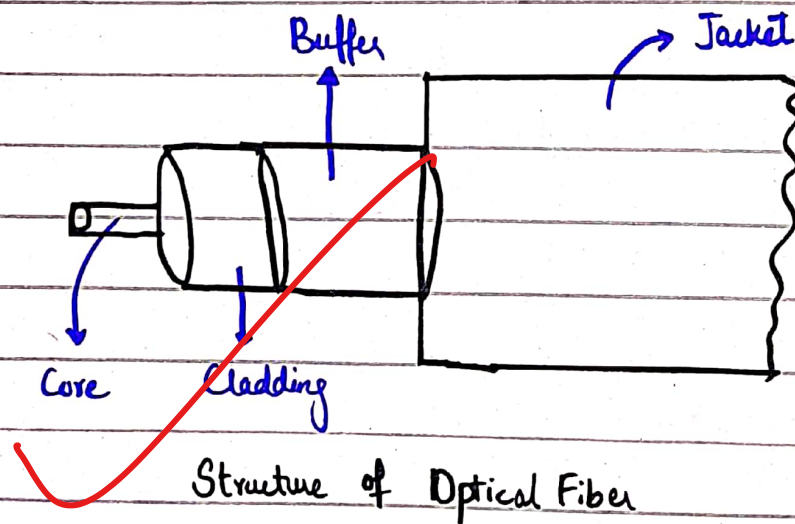
ii) Control segment: It is a earth-based monitoring system, which consist of master control in the US Air Force Base Station and ground antennas, helping in tracking and operating the satellite.

iii) User segment: It consist of multiple of GPS receivers and transmitters for picking up and decoding satellite signals.

(B)

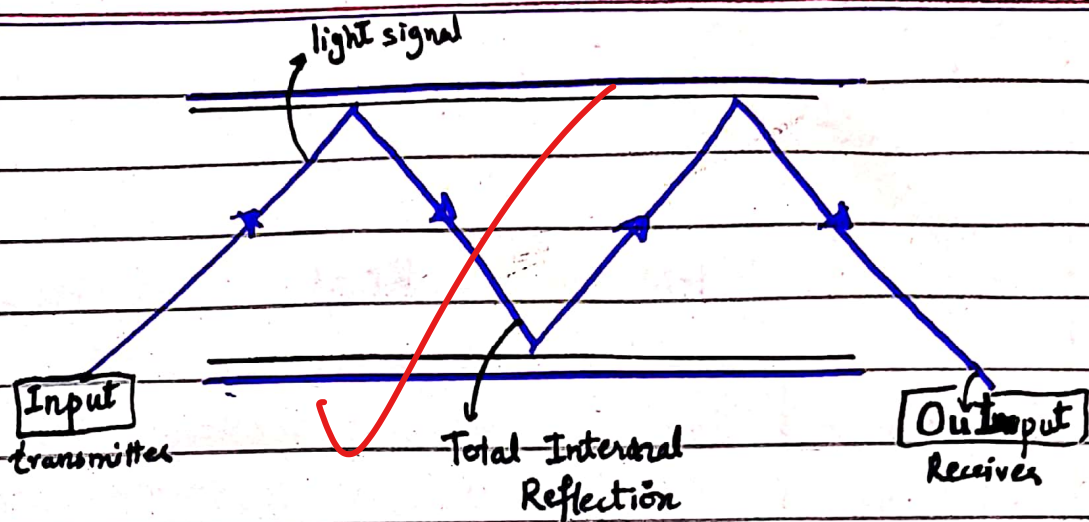
I: Definition of Optical Fiber

Optical fiber is the technology that is used in the transmission of information on light pulses over a long distance along a glass tube or plastic wire or fiber. It consists of core, cladding, buffer, and jacket.



II: Working principle of Optical Fiber

✓ Total internal Reflection



i) The optical fiber starts working by changing electrical signal into light through transmitter. ✓

ii) The light flows through the core through a phenomena of either total internal reflection or continuous refraction. ✗

iii) At the end of fibers, a machine called receiver accepts the light and turns it into sounds, picture or computer codes. ✓

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(D)

Short notes

a) RAM and ROM

Differences	RAM ✓	ROM ✓
1- Full form	Random Access Memory	Read only memory
2- Data retention	The memory in RAM is volatile. It disappears when power is turned off.	The data retention in ROM is non-volatile and stays permanently.
3- Working Type	The stored data can be altered.	The stored data can only be read
4- Size and capacity	It is large in size with high capacity.	It is small in size with less capacity.
5- Cost	It is costly.	It is cheaper.

b) Software and Hardware

Software

Software is a collection of data or computer instructions that tells the computer how to work.

For example: Application software and system software.

Hardware

Hardware are the physical components that a computer requires to function.

For example: Output devices, input device, processing unit, and storage devices.

c) Computer Bus

A computer bus is a communication pathway for transferring data, addresses and controlling signals between components of computers. The three basic buses are address bus, data bus, and control bus.

