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Question # 02

A-

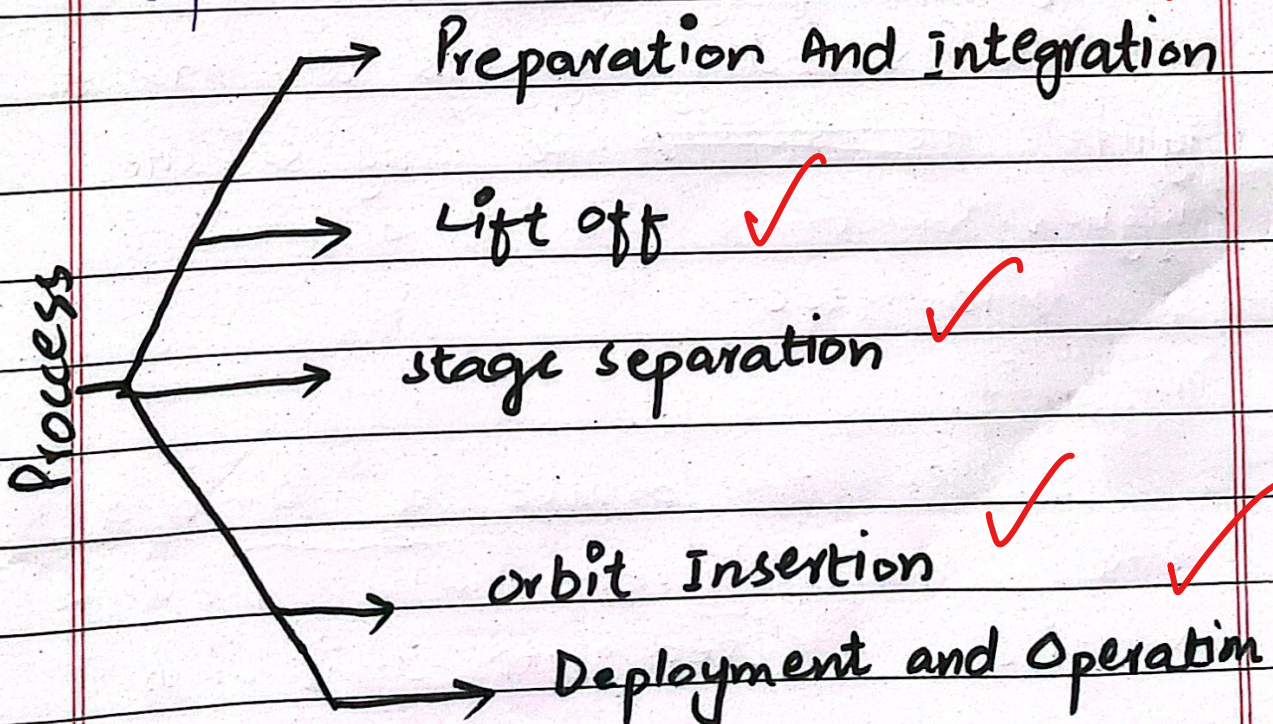
How a satellite is launched? Define the working principle of GPS?

Answer:

A satellite launch is involved sending a satellite from the earth into orbit with the help of launch vehical which is known as rocket (multi-stage)

Process of launching satellite:

This process happens in several steps-



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1- Preparation And Integration :

A satellite is attached to the top of the rocket. And rocket is filled with fuel and prepared for launched.

2 - Lift off :

The rocket engines fire, and produces enormous thrust that overcomes the gravity of the earth.

3 - stage separation :

Rockets usually have multiple stages - such as;

(i) The first stage provides the initial thrust and then detached when its fuel is fully consumed.

(ii) The second stage is when rocket ignites the satellite to carry satellite higher. Sometimes this is also known as third stage.

4- Orbit Insertion :

Velocity When the desired altitude and velocity has achieved then the satellite released into orbit around earth.

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5- Deployment And Operation:

The satellite: deploys its solar pannels and antennas, establishes communication with ground control and begins its mission.

Example: for example communication and weather monitoring.

B- Working Principle of GPS:

a: The GPS is a satellite based navigation system that allows its users to determine their exact location anywhere on earth.

• Principle:

GPS works on the principle of trilateration, which uses the distance between user or receiver and multiple satellites to find a precise position.

B. Optical Fiber:

An Optical Fiber is a thin, flexible strand of glass or plastic that transmits data in the form of light signals over long distance.

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• USES OF OPTICAL FIBER

↓
TELE COMMUNICATION ✓

↓
INTERNET NETWORKING ✓

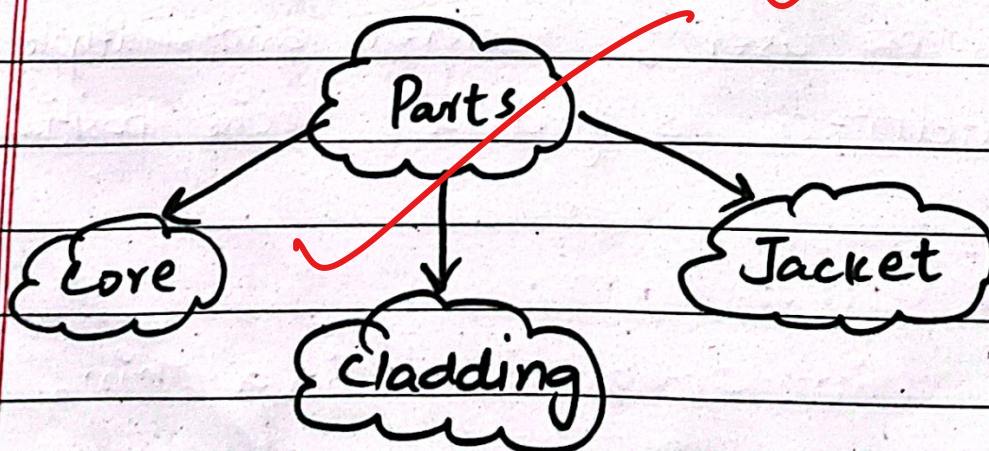
↓
MEDICAL INSTRUMENTS ✓

↓
SENSORS ✓

Because it allows very high speed data transmission in every low signals.

• STRUCTURE OF OPTICAL FIBER:

structure of optical fiber mainly contain three parts. ✓



i- Core:

central part where light

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• WORKING PRINCIPLE OF OPTICAL FIBER:

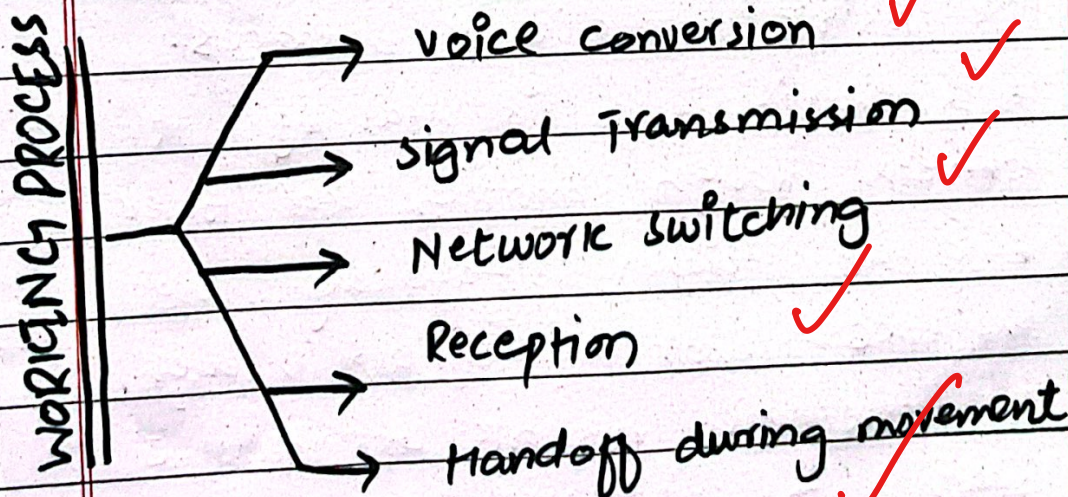
The working principle of optical fiber based on "Total internal Reflection."

C- WORKING OF CELL PHONE

• CELL PHONE:

The cell phone is a wireless communication device which allows the people to make calls, send messages and access the internet using radio signals instead of wires.

• STEPS OF WORKING PROCESS OF CELL PHONE:



P- VOICE CONVERSION

When one speaks into a cell

phone, the microphone converts the voice or sound signals of user into electrical signals, and then into a digital signals or data.

ii- SIGNAL TRANSMISSION.

This digital data is sent as radio waves from the antenna of phone to the nearest cell tower.

- Each cell tower covers a small area called a cell-

- The towers are connected to a "mobile switching center", which manages communication between users.

iii- NETWORKING SWITCHING

The mobile switching center routes the user's calls and messages.

- If the receiver is near by, it connects through another local tower.

- If the receiver is far away, the MSC sends the signals through the telephone network or internet reaches the destination tower.

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travels - It is made up of highly pure glass or plastic.

ii - cladding

The layer surrounding the core, It has a lower refractive index than the core, which helps the light keep inside the core.

iii - Jacket (A Protective coating)

Jacket is outer cover of optical fiber - that protects the fiber from damage, moisture due different environmental factors.

iv- RECEPTION:

The receiver's cell phone antenna picks up the radio signals from the nearest tower. The phone's circuitry converts these signals back into digital form, and then into sound through the speaker.

v- HANDOFF DURING MOVEMENT:

When user moves from one cell area to another cell area such as during driving, the system automatically switches ^{user's} ~~your~~ connection from one tower to the other. This process is called handoff.

D- RAM AND ROM:

Both RAM and ROM are types of memory used in computers and mobile devices. But they both serve different purposes.

• RAM (RANDOM ACCESS MEMORY)

RAM is temporary memory that stores data and instructions currently being used by the CPU. It allows the computer or phone

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to read and write data quickly while performing task.

- Example:

while editing documents and playing games data is stored in RAM. Once user close or shutdown, the unsaved data is erased.

- ROM (Read Only Memory)

ROM is a permanent memory that stores important programs and instructions needed to start the computer - this contains data that can not be easily modified and erased.

- Example:

The instructions that tell one's computer how to boot. The operating system stored in one's phone ROM.

(b) HARDWARE AND SOFTWARE:

Hardware is a physical part of a computer, the components one can see and touch.

- Example:

It includes input and output devices both such as keyboard.

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mouse, scanner, and microphone. Moreover, in output devices monitor, printer and speaker.

• SOFTWARE:

Software is a set of instructions or programs that tell the hardware what to do and how to do it. It is intangible but very essential for the system to operate.

Example:

For example system software and application software such as macos, android, msword and photoshop.

C- COMPUTER BUS:

A computer bus is a communication system that transfers the data between different parts of the computer - such as CPU, memory and input, or output devices.

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Question #01

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A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3. If C gets Rs 1000 more than D, what is B's share?

Given data

Ratio of A : B : C : D
5 : 2 : 4 : 3

Suppose each part x

So,

$$A = 5x$$

$$B = 2x$$

$$C = 4x$$

$$D = 3x$$

As C gets Rs. 1000 more than D.

$$C - D = 1000$$

by putting the values.

$$4x - 3x = 1000$$

$$x = 1000$$

Find B's share

$$B = 2x = 2 \times 1000$$

$$= 2000$$

Answer.