

09 / 01 / 2024

(1)

General Science & ability

Enough length
Enough headings
Fine diagrams

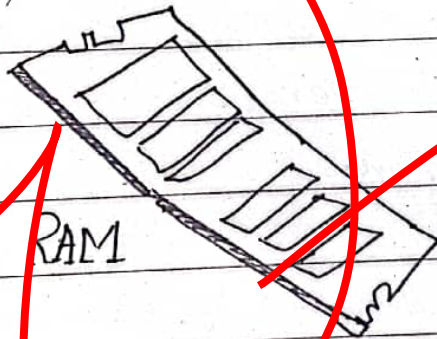
Keep length equal for all answers
Work on math portion

QNO.5 a) Distinguish between RAM and ROM?

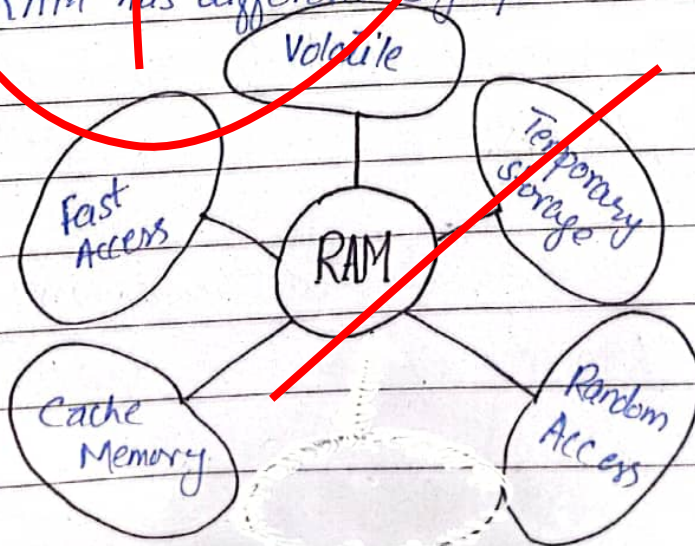
Difference b/w RAM and ROM:-

RAM:-

RAM stands for Random Access Memory, is a type of computer memory. RAM is volatile memory used for temporary data storage during a computer's operation.



RAM has different significant characteristics.



1. Volatile Memory:-

Volatile memory means it losses it data when the power off or system is restarted.

The data is not remain available on restarting the system again.

2. Temporary Storage:-

RAM has Temporary storage, it does not stores data and information for future use. It works only for the programs during the computer performs its operation.

3. Random Access:-

Data in RAM can be accessed, randomly allowing the CPU to quickly retrieve information from any location.

4. Fast Access:-

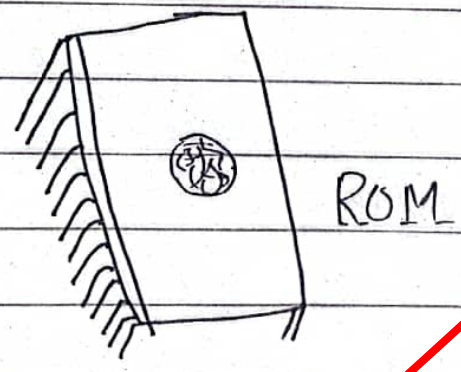
RAM allows quick read and write access, providing faster data retrieval.

5. Cache Memory:-

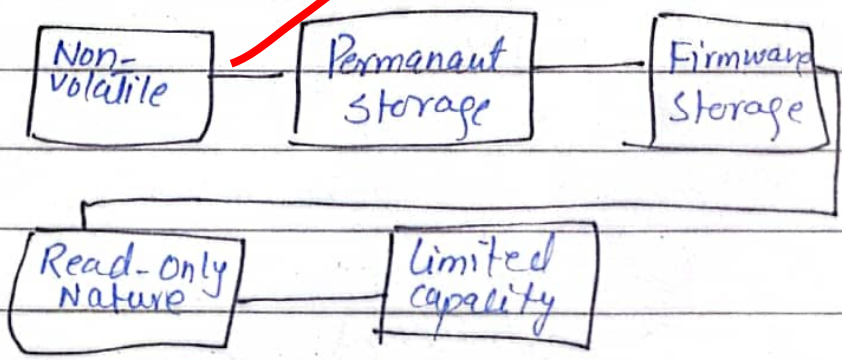
Modern systems often have multiple levels of cache memory, with the fastest and smallest being the CPU cache, followed by the RAM as a larger but slower storage option.

ROM:-

On the other hand, ROM is non-volatile memory that retains data even when the power is off.



ROM (Random Access Memory) has different characteristics.



1. Non-volatile Memory:-

ROM is non-volatile memory, meaning it retains its stored data even when the power is turned off.

2. Permanent Storage:-

Unlike RAM, ROM is used for permanent storage of data, and its content is typically set during manufacturing.

3. Firmware Storage:-

ROM is commonly used to store firmware, which includes essential instructions for the system's startup and basic functions.

4. Read-Only Nature:-

The data stored in ROM is read-only, means that it cannot be easily modified or written during regular operation.

5. Limited Capacity:-

ROM capacity is typically smaller as compared to the RAM and its purpose is focused on storing instructions.

Conclusion:-

Random Access memory is a volatile memory which cannot store data and information for future use which Random Read Only memory (ROM) is non-volatile memory which has capacity to store data to further use. Both of the computer memories have different roles but they are performing the functions of storing information like human brain.



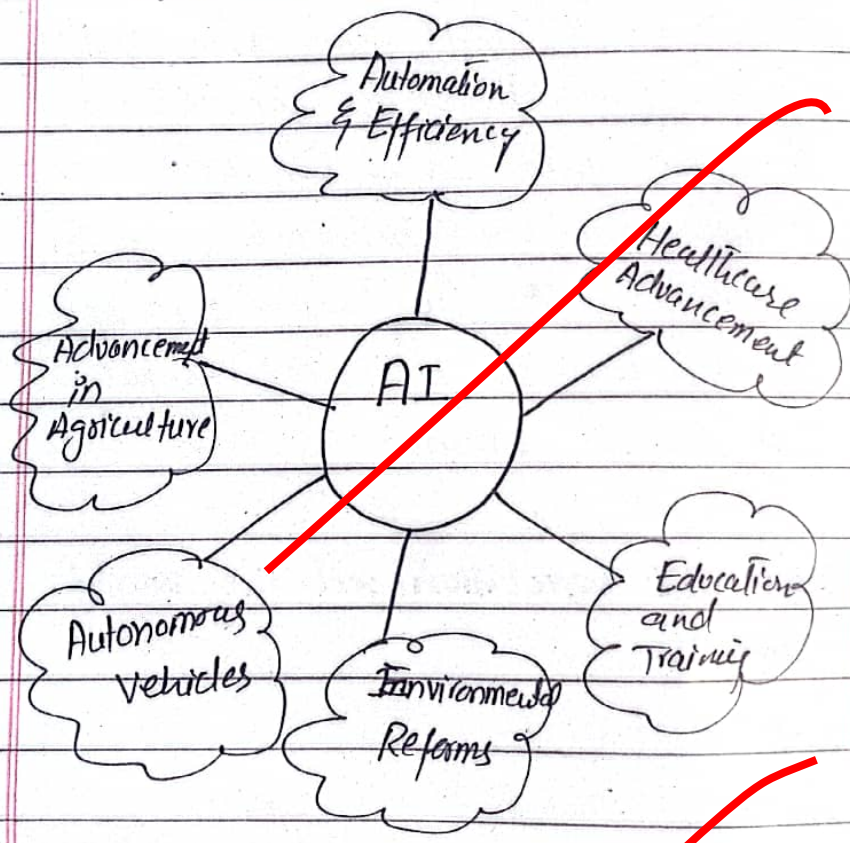
b) How AI revolutionized the world.
Justify.

Introduction:-

Artificial intelligence refers to the development of computer systems that can perform tasks that typically require human intelligence. AI has revolutionized world through advancement in various sectors of life like education, health, agriculture and many more.

AI revolutionized The world:-

AI has revolutionized the world with its distinct features shown in figure.



1. Automation and Efficiency:-

AI has revolutionized world by transforming traditional methods into automation. Taking an example of industries where AI-powered systems are used to improve the efficiency.

2. Health care Advancement :-

AI has revolutionized the world by providing healthcare advancement.

For instance, in medical field X-rays and MRI are used for ^{detection} ~~detection~~ of different diseases using the AI.

3. Agricultural Advancements :-

AI has also revolutionized the world by advancing agricultural sector. For example, drone irrigation system used in agriculture for drone showers.

4. Autonomous Vehicles :-

Autonomous vehicles are also used to make the life of human easy which are used to enhancing safety, navigation and efficiency.

5. Education and Trainings

AI technologies are employed in adaptive learning platforms and educational analytics, Intelligent tutoring system and distance learning.

6. Environment Impacts:-

AI has also played significant role in environment.

Taking an example of early warning system which is used for the early warning before the happening of natural disasters.

7. Safety and security:-

AI has revolutionized the world by providing safety and security feature. For example, Biometric machines and facial recognition systems at airports.

8. Natural Language Processing:-

NLP is another great advantage of AI which is most popular in today's technological era. For instance, chatbots help user to quick response.

Conclusion:-

AI has revolutionized world through its potential benefits. One can see the use of AI as cashier in malls and restaurants and flying drone at the sky. Hence, AI has made human life easy if its development & deployment is responsibly used.

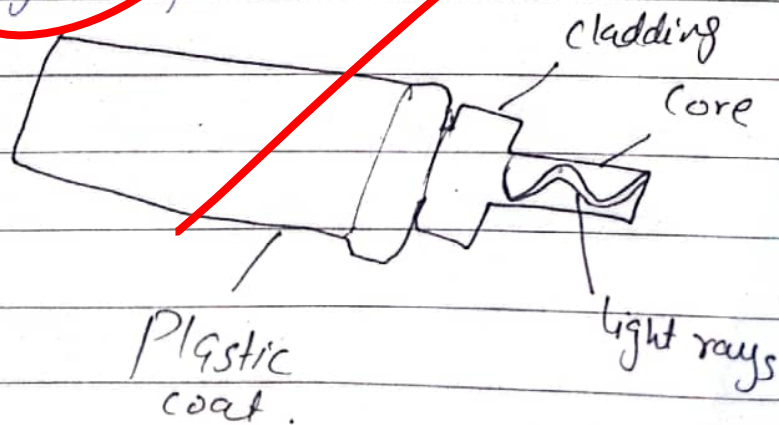
c) How does an optical fibre work?

Introduction:-

Optical Fibre use total internal reflection to transmit light signals.
~~An~~ An optical fibre is very helpful to transmit data from one place to another.

Working of Optical fibre:-

Optical fibre use total internal reflection to transmit signals. A core made of glass or plastic carries light signals and a cladding with a lower refractive index surrounds the core, ensuring that the light stays within the core and travels along the fibre with minimal loss.



Core :-

The core is central part of optical fibre where the light signals travel. It is made up of glass or plastic.

Cladding :-

Surrounding the core, made up of lower refractive index. It helps to guide light to perform total internal reflection.

Light ray

Light ray is the light signals which passes from the core.

Plastic coating :-

The outermost layer, typically made of a tough material like PVC, serves as protection against environment.

Conclusion :-

Optical fibre is most important and expensive cable which is used to transmit signals in the form of internal reflection.

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d. What is critical speed of a satellite?
Differentiate Geo-stationary and polar satellites.

Introduction:-

The critical speed of satellite refers to minimum velocity required to maintain a stable orbit around celestial body.

§ Critical speed of satellite:-

The critical speed of satellite, also known as orbital velocity, is the minimum velocity required to maintain a stable orbit around celestial body. For an orbit object in low Earth orbit, its velocity is approximately 28,000 km/h.

Geo-stationary Satellites:-

Geo-stationary satellites, orbit the earth at the same rotational speed as the planet, staying fixed relative to a specific point on the earth's surface.

Polar Satellites :-

Polar satellites, orbit the earth from pole to pole, passing over different latitudes in each orbit. They provide global coverage but have lower revisit times for specific areas compared to geo-stationary satellites.

Conclusion:-

In conclusion, critical speed is crucial for satellite to maintain its orbit and the choice between geo-stationary and polar orbits depends on the specific requirements of the satellite mission, such as coverage and revisit times ..



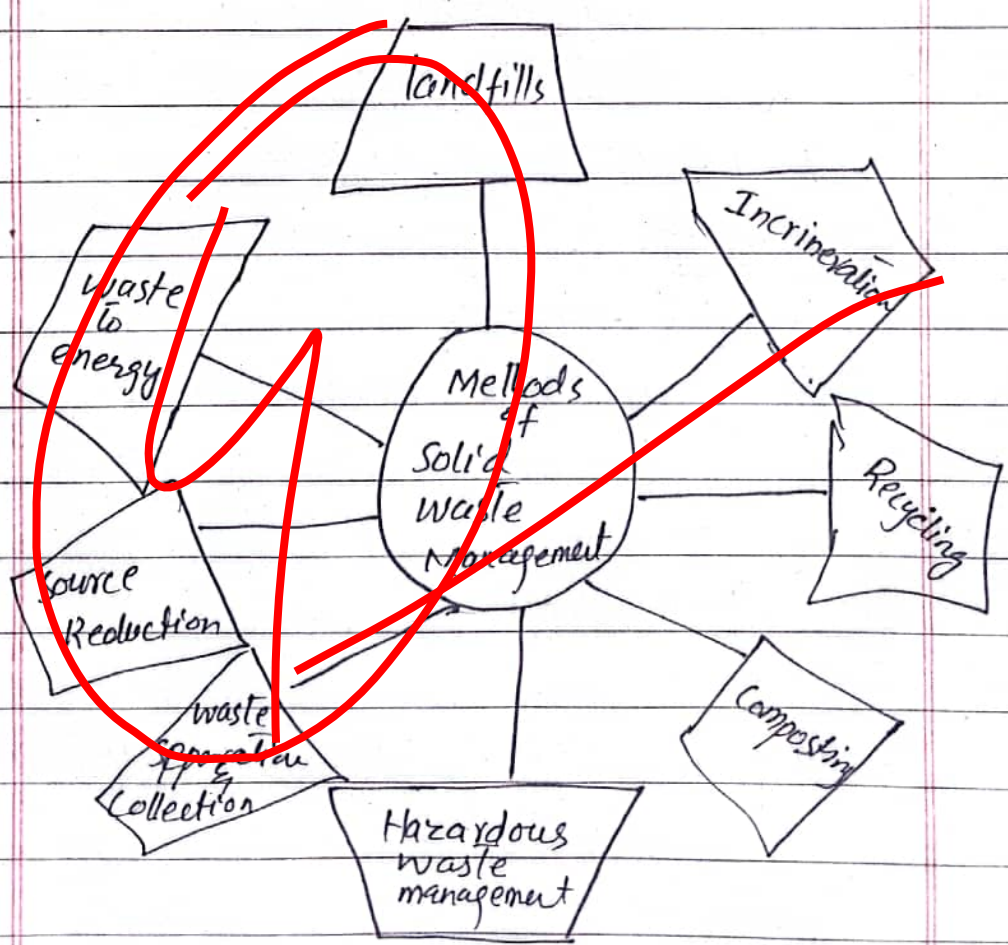
Q No. 2 b. Solid waste Management:-

Introduction:-

Solid waste management involves the collection, transportation, processing, recycling and disposal of solid waste to minimize its environmental impact.

Methods:-

Various methods are employed to handle solid waste:



1. Landfills:-

The traditional method involves burying waste in designated area.

2. Incineration:-

The method involves burning waste at high temperature, reducing volume and generating energy.

3. Recycling:-

This process involves the collecting and processing materials like paper, glass, plastic etc.

4. Composting:-

Organic waste, such as food scraps and yard waste, can be converted into nutrient rich compost.

5. Waste-to-energy:-

The process converts solid waste into energy through various processes like incineration & gasification.

6. Source Reduction:-

The method focuses on minimizing waste generation at the source e.g less packaging, reusable products.

7. waste separation and collection:-

Separating different types of waste at the source, making recycling and disposal more manageable.

8. Hazardous Waste management:-

Specialized methods are used for handling hazardous waste, including secure storage, treatment and disposal to prevent harm to environment.

Conclusion:-

An effective solid waste management system often incorporates a combination of these methods, tailored to the specific needs and circumstances of particular region or community.



c. Balanced diet:-

A balanced diet is crucial for maintaining overall health and well-being. It involves consuming a variety of foods in appropriate proportions to provide the body with essential nutrients such as carbohydrates, proteins, fats, vitamins and minerals. This helps support proper growth, development and functions of organ and tissue. A well-balanced diet also plays a key role in preventing nutritional deficiencies and reducing the chronic diseases. In a nutshell, this careful combination of nutrients is vital for maintaining optimal health, supporting growth, and preventing various nutritional deficiencies and health issues.

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d) Discuss any Three renewable energy resources under CPEC

Introduction:-

China Pakistan Economic Corridor (CPEC) is a project that aims to connect Gwadar port in South eastern region of Xinjiang China. While the specifics of renewable energy projects under CPEC have solar energy, wind energy and hydropower energy projects.

1. Solar Energy:-

Solar power is abundant in the region making it a prime candidate from renewable energy projects, China has started the solar energy projects in Pakistan.

2. Wind Energy:-

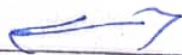
China has started wind energy in Pakistan in its -southern and coastal regions, experiencing the harnessing of wind.

Hydro power Energy:-

CPEC has started hydro power projects in Pakistan like Basha dam, Kohala project in azad Kashmir and Indus river dam and many more dams for the generation of electricity.

Conclusion:-

China has supported Pakistan in its various fields including energy projects through CPEC. China has been build many dams in Pakistan for energy and some projects for wind and solar energy generation are under process.



Section-II

Q No. a) Data:-

5 year ago age of father =

Thrice the age of son

Son age = 30 years

Current age of father = ?

Solution:-

According to the given information

$$[F - 5 = 3 \text{ times } (S - 5)] \quad \text{--- (1)}$$

Now, substitute the current age

of the son ($S = 30$) in equation (1)

$$[F - 5 = 3 \text{ times } (30 - 5)]$$

$$[F - 5 = 3 \text{ times } (25)]$$

$$F - 5 = 3 \times 25$$

$$F - 5 = 75$$

$$F = 75 + 5$$

$$F = 80$$

Therefore, current age of father is 80 years.

b) Mean of 10, 30, y, 50 is 50. What is value of y.

$$\underline{\text{Sol}}:- \frac{10 + 30 + y + 50}{4} = 50$$

$$\frac{90 + y}{4} = 50$$

$$90 + y = 200$$

$$y = 200 - 90 \Rightarrow 110$$

c) Find The missing terms.

(i) 2, 6, 18, 54,

The series is 2, 6, 18, 54,

Rule = (1st number $\times 3$ = 2nd No.)

(2nd number $\times 3$ = 3rd number.)

2, 6, 18, 54,

~~2 \times 3 = 6~~

~~2, 2 \times 3, 6 \times 3, 18 \times 3, 54 \times 3~~

2, 6, 18, 54, 162

(ii) In the given series:

3 125, 256, ..., 4

$5^5, 4^4, 3^3, 2^2, 1^1$

3125, 256, 27, 4, 1

a

d) sol:-

lets two number as x & y

Their Ratio

1:5

let $x = k$

$y = 5k$ where k is constant

Product = 320

Taking squares

$x = 4$

$4k^2 = (5k)^2$

$k^2 = 25k^2$