

# General Science And Abilities

33

## SEC II

### QNO6

a)

i) 10, 100, 200, 310, —

So

10, 100, 200, 310, 430

Reasoning in words?

$$10 + 90 = 100$$

$$100 + 100 = 200$$

$$200 + 110 = 310$$

$$310 + 120 = 430$$

ii) 3, 7, 23, 95, —

### General Instructions

3, 7, 23, 95, 5279

1. Give numbering to headings
2. Do not write lengthy paragraphs. Write medium sized paragraphs with headings.
3. Do not use table for comparison and contrast questions.

$$3 + 4 = 7$$

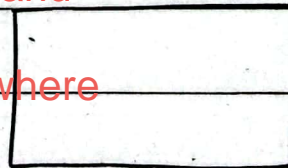
$$7 + 16 = 23$$

$$23 + 72 = 95$$

$$95 + 5184 = 5279$$

$$\begin{array}{r} 72 \\ 72 \\ \hline 144 \\ 504 \times \\ \hline 5184 \\ \hline 95 \\ \hline 5279 \end{array}$$

4. Draw figures/diagram/flowchart where needed.



5. Start new question from fresh page.
6. Write unit of the answer in ability section.
7. Explain mathematical steps and the reasoning for better score.

8. Change colour scheme for references to give them more visibility.

9. Manage time well.

10. Wide page borders are discouraged.

- Should be reasonable.

11. Avoid writing wrong references.

12. Give more weightage to expressedly asked part/s of the question.

$$\text{Perimeter} = 2(l+w)$$

$$114 = 2x + 2x + 3 + 3x \Rightarrow 2x + y$$

$$114 = 8x - 3$$

$$114 + 3 = 8x \Rightarrow \frac{117}{8} = x$$

(c)

let Nisha's Age =  $x$

Romi's Age =  $y$

Nisha is 15 years elder to Romi.

$$x = 15 + y \rightarrow (1)$$

Five years ago.

$$x - 5 = 3(y - 5)$$

$$x - 5 = 3y - 15$$

$$x = 3y - 10 \rightarrow (2)$$

$$3(1) \div 2$$

$$3x = 3y + 45$$

$$\pm x = \pm y + 10$$

$$2x = 55$$

$$\Rightarrow x = \frac{55}{2} = 27.5$$

$$x = 27.5$$

Put in eq. (1)

$$27.5 = 15 + y$$

$$y = 27.5 - 15$$

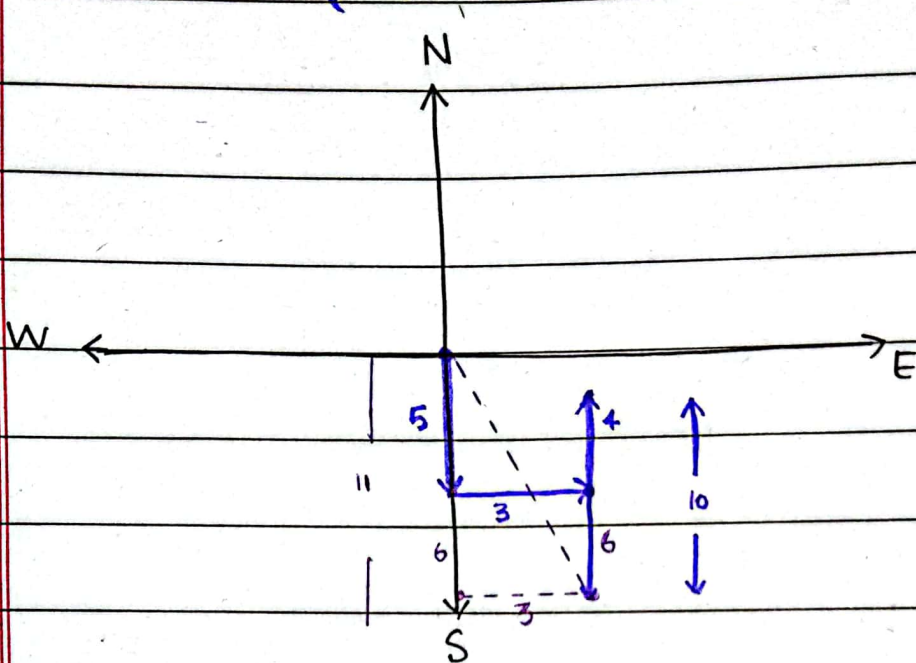
$$y = 12.5$$

So Nisha's present Age = 27.5 years

(d)

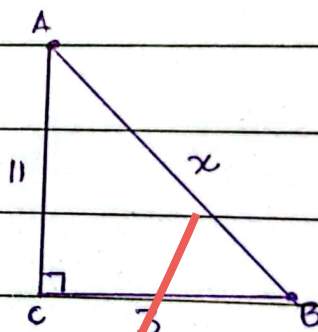
# QNo8

(a)



So we have:

10



Distance from starting point =  $|AB| = ?$

Using Pythagoras Theorem.

$$|AB|^2 = |AC|^2 + |CB|^2$$

$$x^2 = 11^2 + 3^2$$

$$x^2 = 121 + 9$$

$$x^2 = 130$$

$$x = \sqrt{130}$$

$$x = 11.40 \text{ Km}$$

Distance:

Direction:

Man is moving towards South.

$$\begin{array}{r} 11. \\ 22 \overline{) 251} \\ \underline{22} \phantom{0} \\ 31 \\ \underline{22} \\ 90 \end{array}$$

$$\sqrt{x} = \frac{x+y}{2\sqrt{y}}$$

$$\sqrt{130} = \frac{130+121}{2\sqrt{121}}$$

$$= \frac{251}{22} = 11.40$$

(b)

First five Prime Numbers = 2, 3, 5, 7, 11

Cubes of first five prime numbers.

$$2^3, 3^3, 5^3, 7^3, 11^3$$

$$8, 27, 125, 343, 1331$$

$$\text{Airthematic Mean} = \frac{\text{Sum of numbers}}{\text{Total numbers}}$$

$$= \frac{8 + 27 + 125 + 343 + 1331}{5}$$

$$= \frac{1834}{5} = 366.8$$

$$\begin{array}{r} 1331 \\ 343 \\ 125 \\ 27 \\ 8 \\ \hline 1834 \\ 366.8 \\ 5 \overline{)1834} \\ \underline{15} \\ 33 \\ 30 \\ \underline{30} \\ 34 \\ 30 \\ \underline{30} \\ 40 \\ 40 \end{array}$$

(c)

Men : Days

$$\begin{array}{ccc} 50 & & 40 \\ \downarrow & & \uparrow \\ 70 & & x \end{array}$$

$$\frac{50}{70} = \frac{x}{40}$$

$$x = \frac{50}{70} \times 40$$

$$x = \frac{200}{7}$$

$$x = 28.5 \text{ Days.}$$

So, it will take 70 men to complete the task in 28.5 days

$$\begin{array}{r} 28.571 \\ 7 \overline{)200} \\ \underline{14} \\ 60 \\ \underline{56} \\ 40 \\ \underline{35} \\ 50 \\ \underline{49} \\ 10 \end{array}$$



SEC - I

QNO3

(b)

## SHALLOW FOCUS

A type of Earthquake.

Write paragraphs instead of tables.

Another Name : Crustal Earthquake.

Occurance : This earth quake occurs due to the motion of crustal plates in outer crust of earth.

Depth : Depth of shallow focus earthquake is 70 km.

Magnitude : The magnitude of this earthquake is 1-5.

Measurement : This earthquake can be measured by using traditional Richter scale.

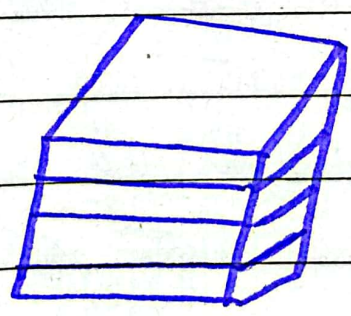
Energy Released : It releases small energy. Almost 75% of earth's energy is released by these earthquakes.

Magnitude : <sup>Deep focus?</sup> On scale 7-9

Measuring Scale : Best measured by Moment magnitude ~~Measur~~ scale.

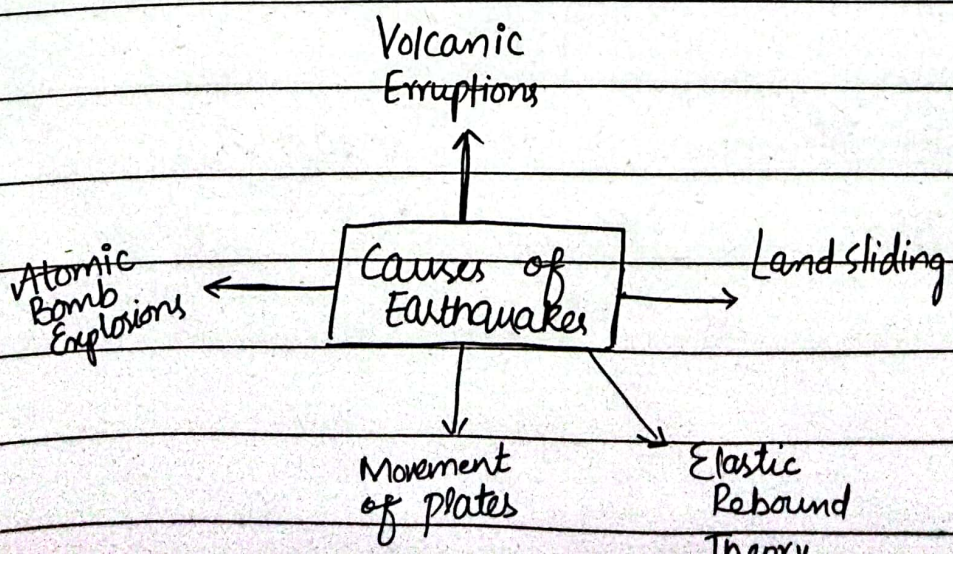
Energy Tremendous amount of energy is released due to deep focus earthquake.

Damage It causes severe damage. It can damage buildings and can cause Tsunami.



Deep Focus Earthquake.

# Causes of Earthquake.





Magnitude of Earthquake in Morocco  
is 6.7

Date: \_\_\_\_\_

Day: \_\_\_\_\_

(C)

## DENGUE FEVER

Definition:

"The fever caused by the biting of dengue mosquitos is called Dengue Fever."

Dengue fever has become a prominent disease to deal with. In Pakistan, dengue fever patients are increasing and this increase puts a great pressure on the health sector.

### Causes of Dengue fever

(i) Stagnant Clean Water:

Stagnant Clean Water in homes and other places is a major cause of dengue fever. The mosquito lays eggs in clean

water which further increase the number of dengue mosquitos.

(ii) Lack of awareness among masses:

The people are not well aware of the causes of spread of dengue. So they do not bother to avoid the stagnant clean water. So it increases mosquitos.

(iii) Weak policies of Government to control Dengue fever:

Government has invested less in health sector so people do not get proper medical care.

Moreover, people do not follow the precautionary measures to save themselves from dengue fever. This is becoming a cause of Dengue fever.

# Preventive Measures

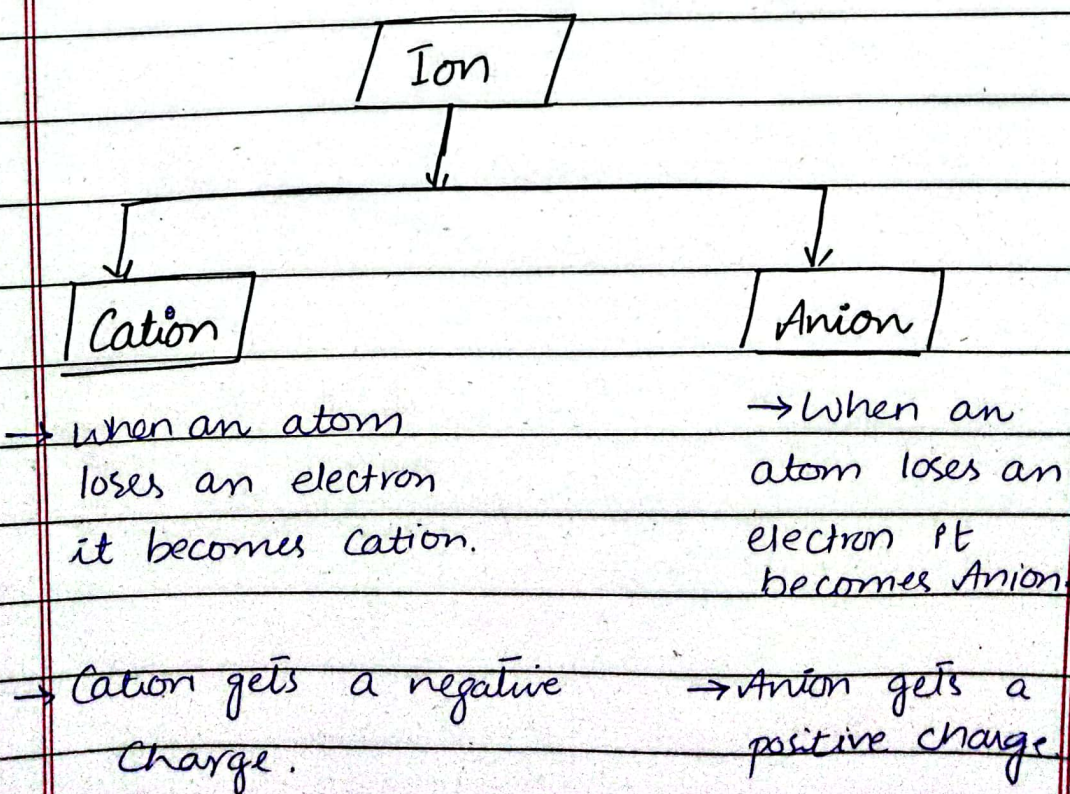
- 1- Government should spread awareness among people to not to let the water stagnant at any place in homes or outside of the homes.
- 2- People should wear clothes with full sleeves and clothes which cover full legs.
- 3- People should use anti mosquito sprays and lotions to kill the mosquitoes.
- 4- People should avoid to go to the lawns and parks (or any other grassy place) in early morning and in evening.
- 5- People should eat healthy diet which can strengthen their immune system.

(d)

## Ionic Bond

"The bond which is formed by complete transfer of electrons from one <sup>atom</sup> element to another atom is called Ionic Bond."

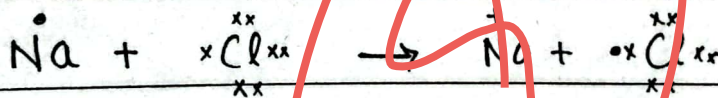
- Ionic bond is a very strong bond.
- When an atom loses or gains an electron it becomes ion.



## Example

For example in case of  
i) Sodium Chloride NaCl, Sodium  
Na has 11 electrons while Cl has  
17 electrons.

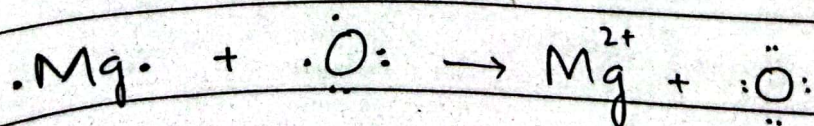
So to make bond  
Na will share its one electron  
to chlorine. Chlorine will accept  
this  $e^-$  and will complete its  
valence shell.



Here  $\text{Na}^+ \rightarrow$  Cation

$\text{Cl}^- \rightarrow$  Anion.

ii) In case of Oxygen and Magnesium.



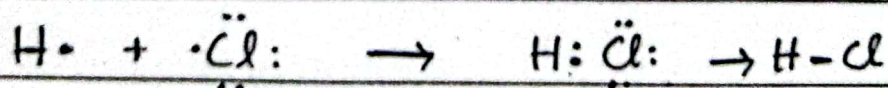
# Covalent Bond

" The bond which is formed by the mutual sharing of electrons between atoms is called Covalent Bond. "

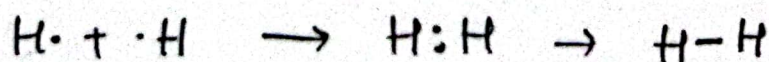
In covalent bond atoms do not completely transfer electrons but both share it mutually.

## Example

In case of HCl, Hydrogen has one outermost electron and Chlorine also has one. So both will share it mutually and will make bond.



Also

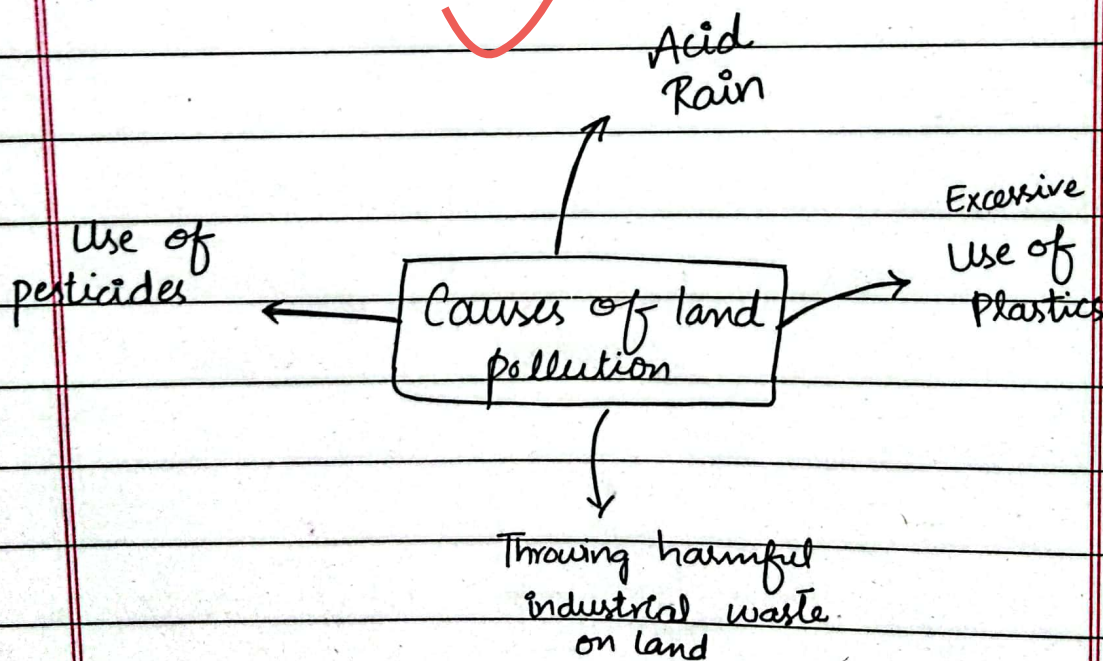


QNO4

## Causes of Land Pollution

"When lands become contaminated because of various harmful pollutants then it is called Land Pollution."

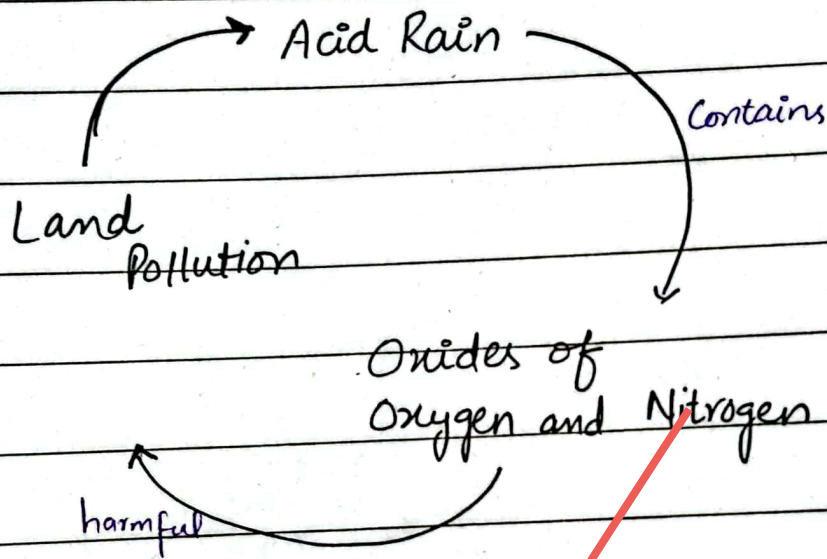
There are many causes of land pollution.



### i) Acid Rain

Acid Rains which is a harmful mixture of oxides

of Sulphur and Nitrogen is a main cause of land pollution. This acid rain affects the productivity of land and makes it polluted.



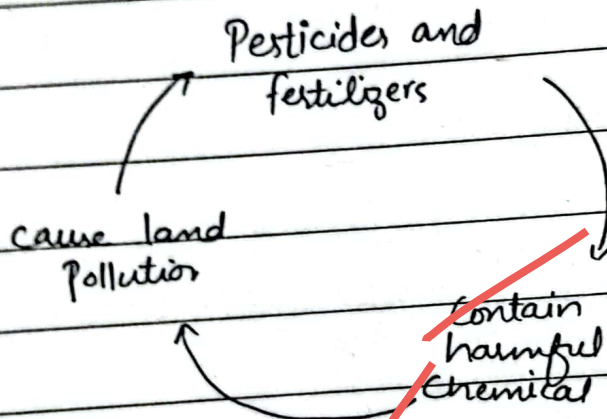
### (ii) Excessive use of plastics

Plastic is a main cause of land pollution. Plastic is very difficult to decompose. So many people burn the plastics. This burning of plastics and its residue is a cause of land pollution.



### (ii) Use of pesticides

Farmers use pesticides and fertilizers for their crops. But these pesticides also contain harmful chemicals which cause land pollution.



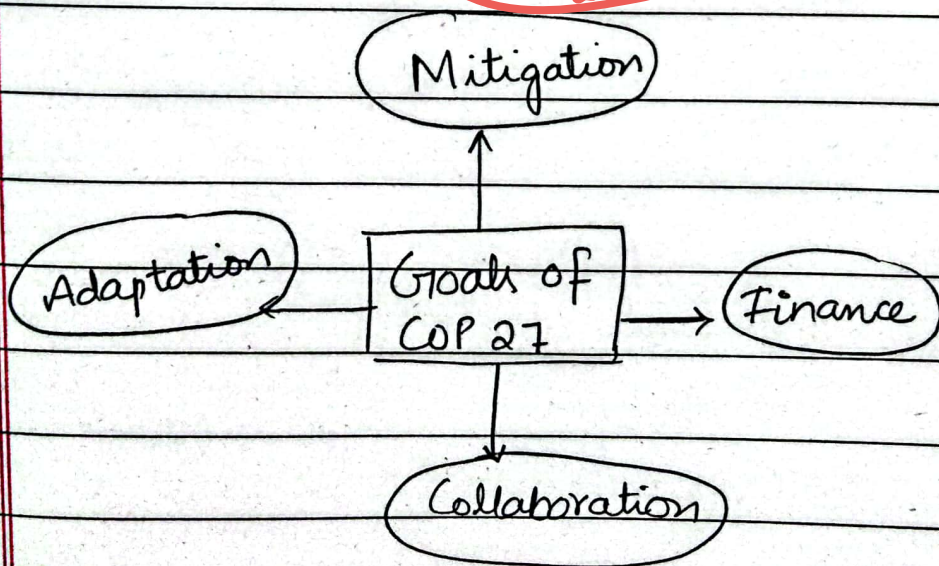
### (iii) Dumping harmful industrial waste on land:

Many industries throw their harmful waste which contain harmful chemicals on land and are becoming cause of land pollution.

# (b) Goals of COP-27

Conference of Parties (COP) conducted its 27<sup>th</sup> meeting in Egypt in Nov 2022. This platform is used by the world community to take decisions about the condition of Climate Change across the globe.

The main goals of COP 27 are:



## i) Mitigation

This goal is to focused to limit global warming well

below  $2^{\circ}\text{C}$  and all countries should work hard to keep this level to  $1.5^{\circ}\text{C}$ .

### ii) Adaptation

This goal is focused to strengthen the ability to adapt to climate change and to build resilience strategies.

### iii) Finance

This goal is focused to align the finance flow to control the emission of Green House Gases. Also to finance the poor countries which are vulnerable to the climate change.

### iv) Collaboration

This goal of COP 27 is focused to enhance the collaboration among countries to overcome the consequences of climate change.

(d)

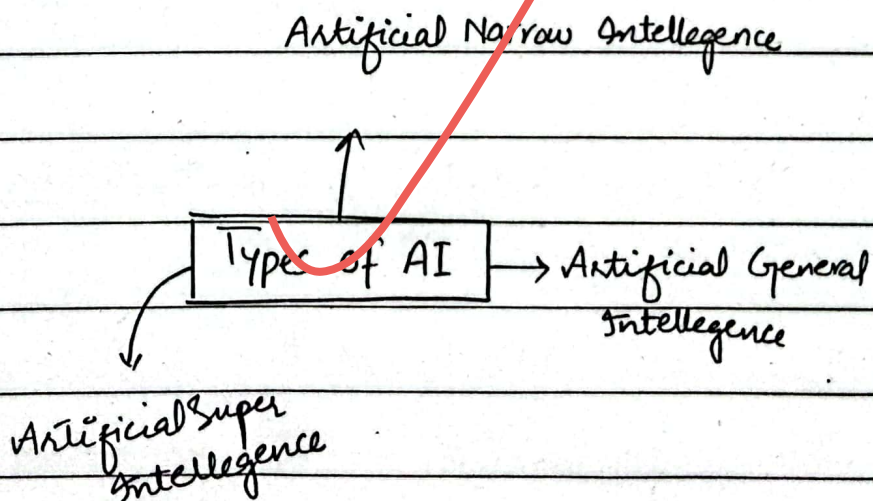
# Fundamentals of AI

"Artificial Intelligence is a technique of getting machines to work and behave like humans."

Machines having artificial intelligence can mimic their actions.

## Types

There are three types of artificial intelligence.



### i) Artificial Narrow Intelligence:

- It is a weak AI.
- Most commonly used type of Artificial Intelligence.

It only performs specific well defined functions.

For example:

- Alexa
- Face verification
- Auto pilot feature
- Google Maps.

(ii) Irrelevant answer.

### Artificial General Intelligence:

It is a strong type of AI.

It has ability to perform any task that a human being can.

### (iii) Super Artificial Intelligence:

This AI refers to the time when the capabilities of computers will surpass the capabilities of human beings.

"Super AI will take over the world by 2040." (Elon Musk).

# Applications

