

# Question NO 02:

If you have attempted it in 3 hours then excellen  
Enough length  
Enough headings  
Paper presentation is fine  
Work on math portion

(C)

## Vitamins

Vitamins are the organic substances which are essential for normal functioning and growth of body tissues and parts.

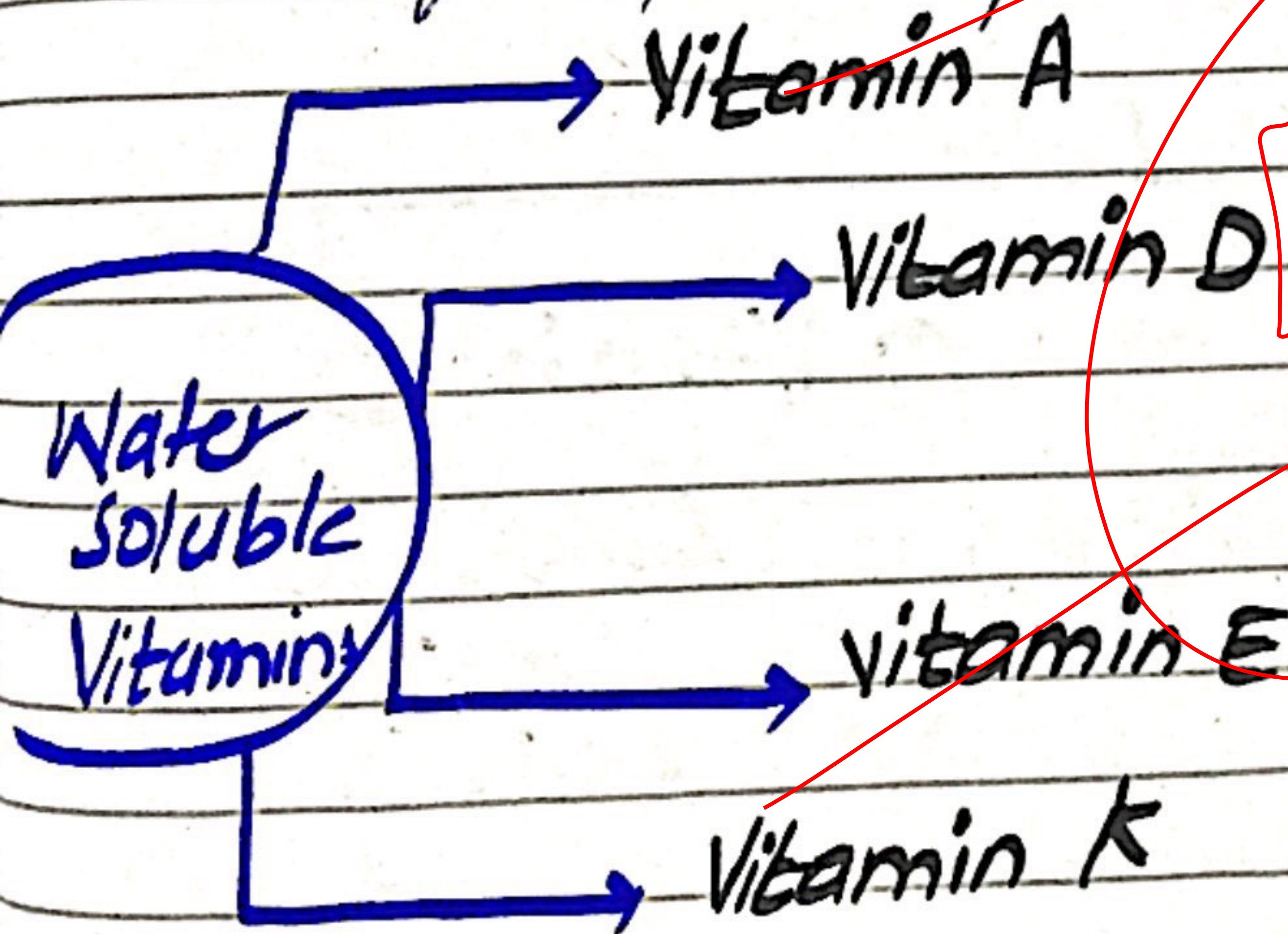
Vitamins can be of two types;

① Water Soluble Vitamins

② Fat Soluble Vitamins

### ① Water Soluble Vitamins

Water Soluble Vitamins are those types of vitamins which are upon taking able to dissolve with liquid portion of the body.



### Brief of Water Soluble Vitamins

Sr.no	Water sol Vitamins	Sources	Deficiencies
1.	Vitamin A ↳ ↳ Growth ↳ Maintenance ↳ Improves Vision	↳ Carrot, Fish, Milk, yellow & orange colored Foods	Night blindness (Nyctalopia)



2.	Vitamin D ↳ Strong bones and teeth	Milk, Dry fruits, Sunshine, Mushrooms	↳ Rickets
3.	Vitamin E ↳ Healthy skin and Hairs	Nuts, leafy Vegetables, seeds, beans.	↳ unhealthy skin and hairs
4.	Vitamin K ↳ Blood clotting, Bone healing and repairing	Milk, Meat, Cabbage, Cauliflower	↳ Take healing process very slow ↳ Delay in blood clotting mechanism

## ② Fat Soluble Vitamins

Fat soluble vitamins are those vitamins which are absorbed along with the fats in the body.

### ① Vitamin B

- ↳ Vit-B-1 (Thiamine)
- ↳ Vit-B-2 (Riboflavin)
- ↳ Vit-B-3 (Niacin)
- ↳ Vit B-5 (Panto-thonic Acid)
- ↳ Vit B-6 (Pyridoxine)
- ↳ Vit B-7 (Biotin)
- ↳ Vit B-9 (Folic acid)
- ↳ Vit B-12 (Cobalamin)

### ② Vitamin C

↳ it is also called Ascorbic Acid.

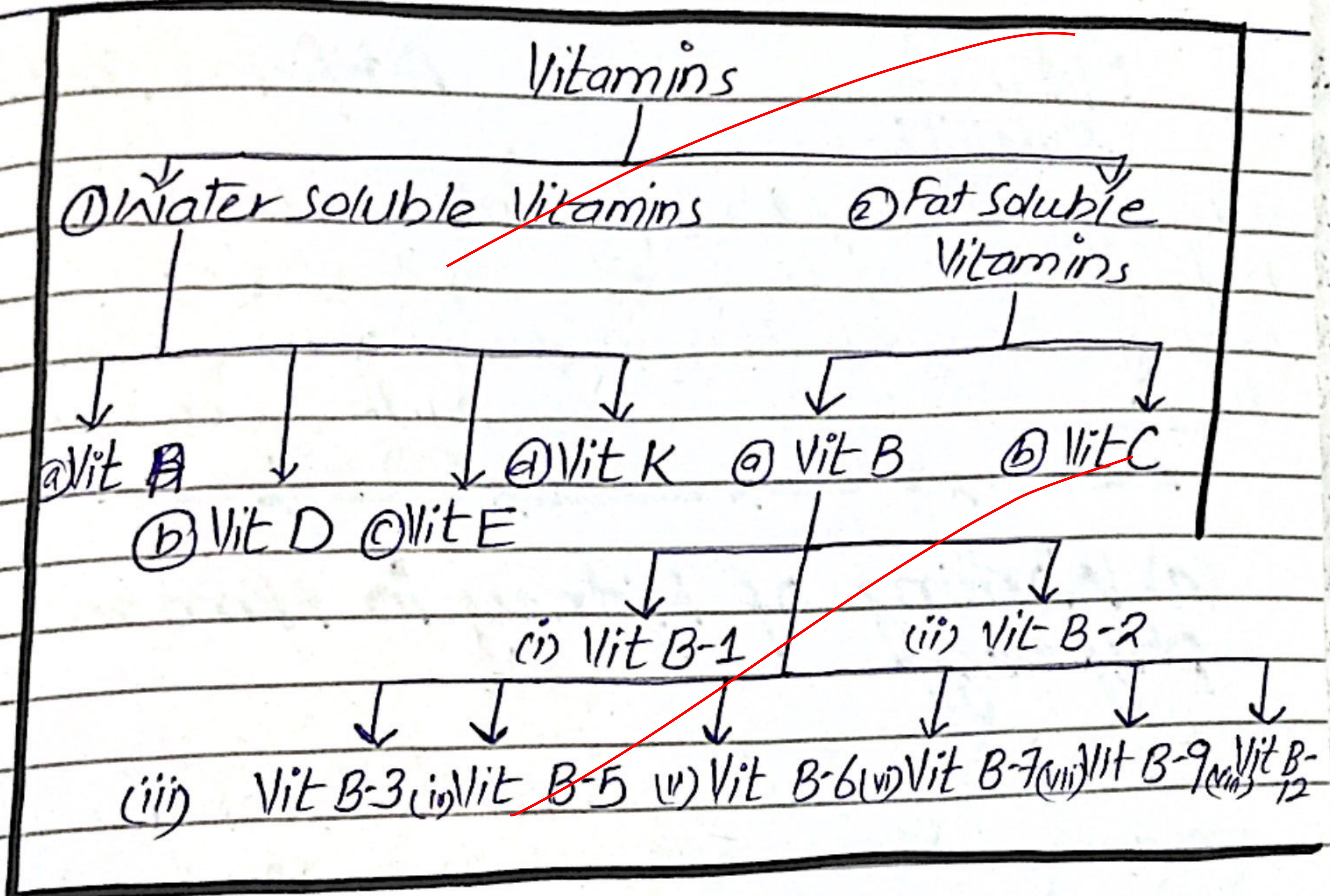
**Deficiency:**

↳ Scurvy (Bleeding gum)

**Sources**

Citrous fruits like orange, strawberry, mango.





**(a) RAM**

- ① Stands for Random Access memory, Volatile memory, temporarily store files

**(ii) Network**

Network is a collection of computer devices & systems that are linked together utilizing LAN, CAN or HAN.

**(iii) GPS**

Global positioning systems / GPS are used to find the exact location of things

**(iv) Byte**

A group of 8 bits together is called a Byte. e.g.  
11011010

**ROM**

stands for Read-only-memory, non-volatile memory, Permanently stores

**Internet**

It is a global system that connects various sorts of electric devices

**GIS**

Geographic Information systems or GIS are used to record information on the maps.

**Nibble**

A group of 4 bits together is called a nibble. e.g.  
1010



## Natural Satellite

They are celestial bodies that orbit a planet or any other (celestial) celestial body.

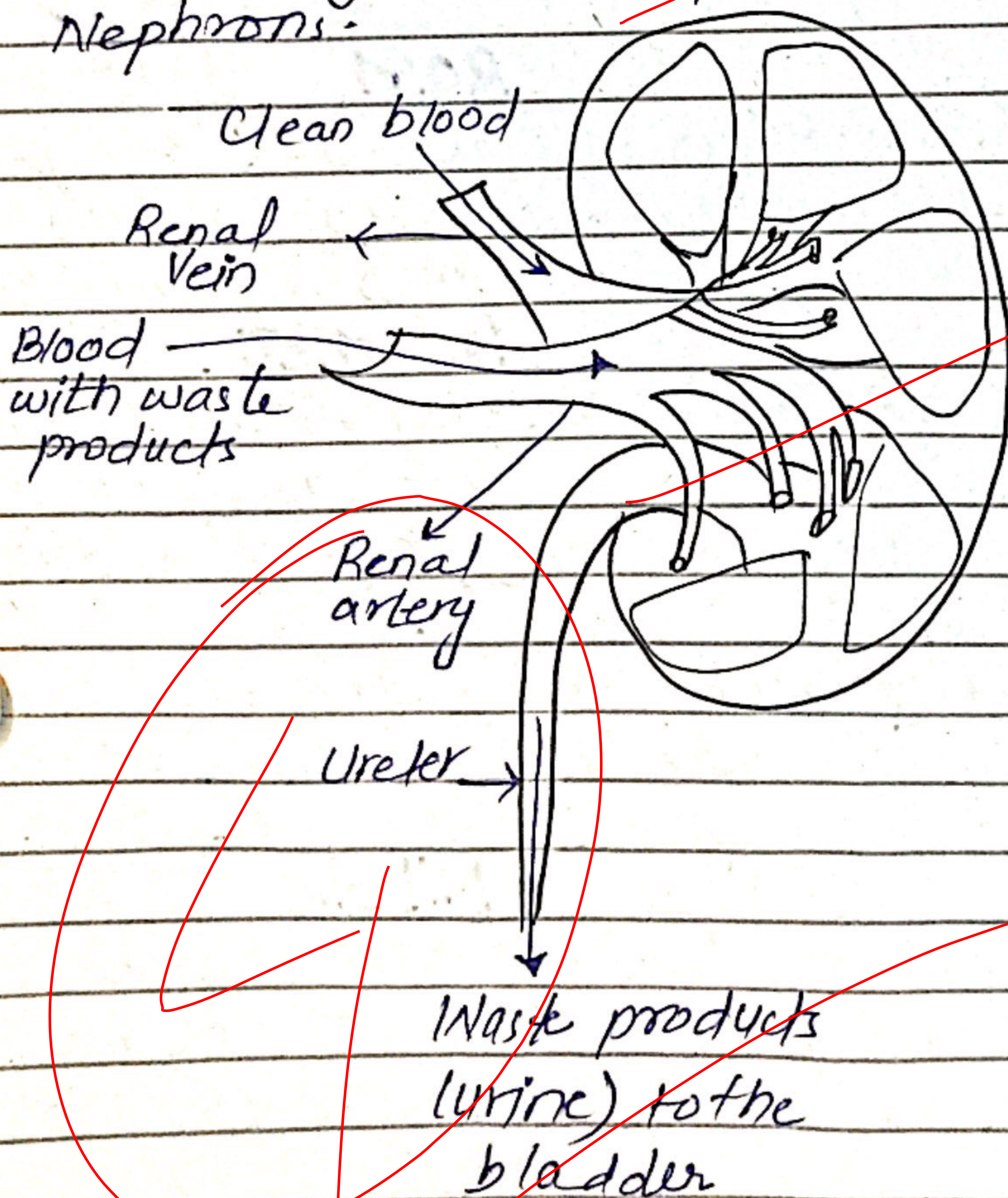


## Artificial Satellite

The artificial satellite is a device placed in orbit around the earth, moon or another planet.

## (a) Working of Kidney in Human Physiology

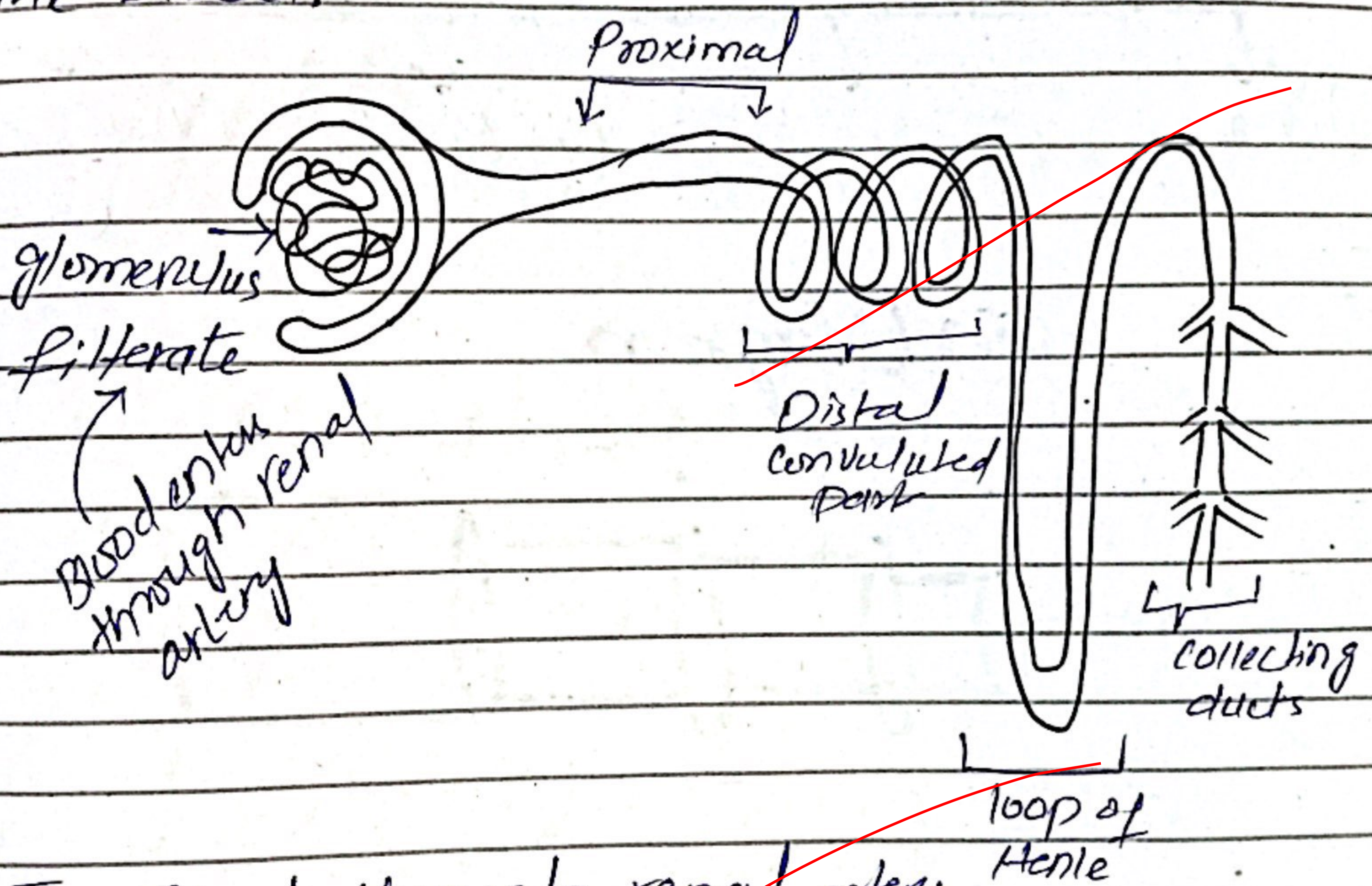
The kidneys are dark-red in color. Each weighing about 170g. It is bean-shaped. The kidneys consists of smaller units called Nephrons.





1) Inside each nephron, a special blood vessel called a glomerulus works like a strainer - which keep the blood cells and needed substances while letting extra fluid and wastes out

2) Each kidney contains about one million nephrons - tiny filtering centers that clean the blood.



3) The Blood through renal artery enters into glomerulus where it filters and passes through all the parts.

4) As a result, urine is produce drop by drop which enters into the ureter and excretes out from the body.

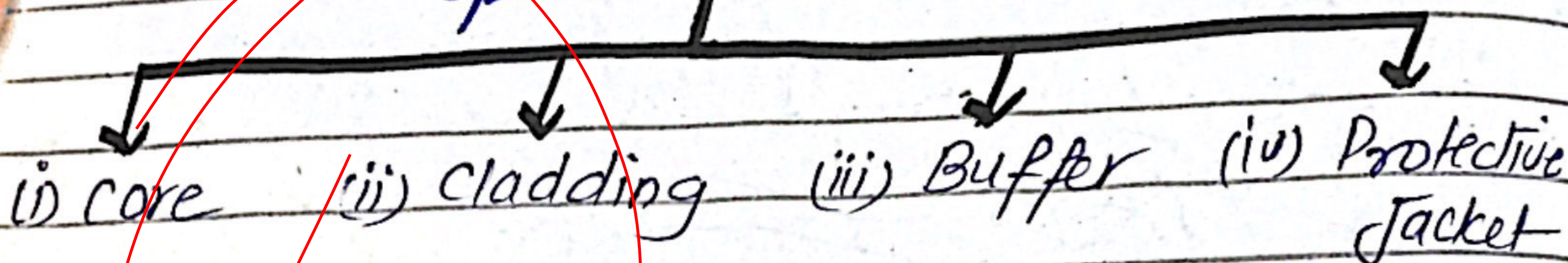


(b)

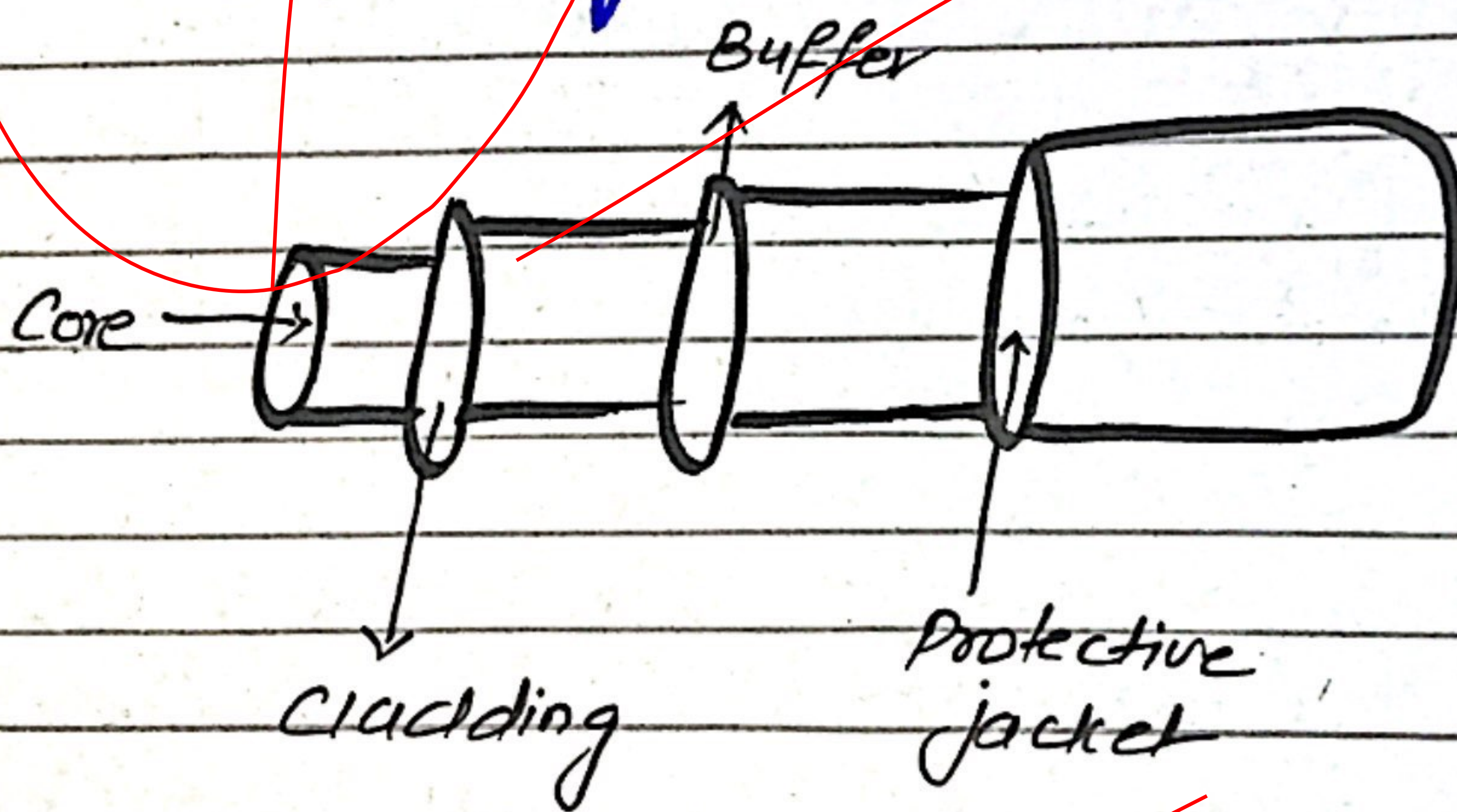
## (i) Optic Fibers

An optic fiber is a flexible transparent fibre made up of glass (silica) or plastic to slightly thicker than that of a human hair.

## (ii) Components of Optic Fibre



## (iii) Diagram



## (iv) Types of Fibers

① Single mode Fiber

② Multimode Fiber

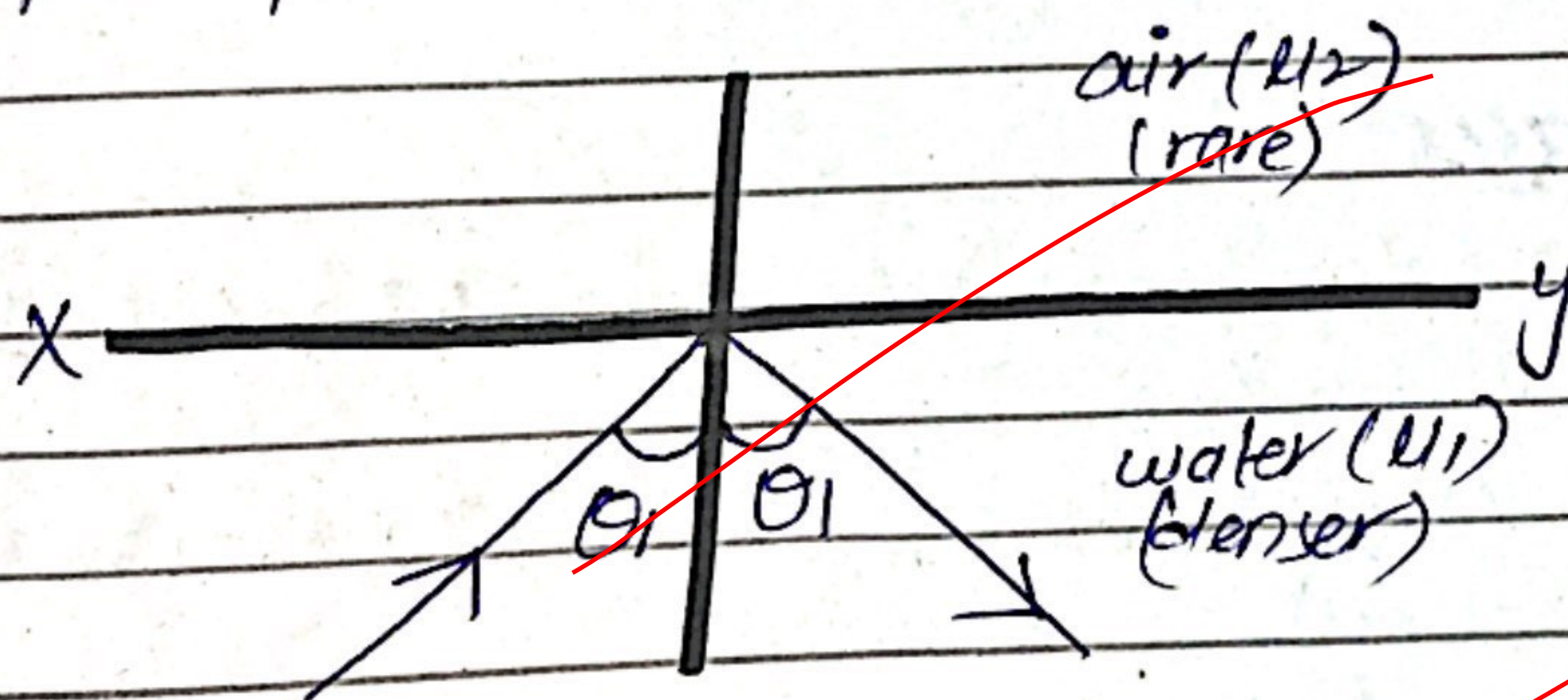
→ Single mode Fibre only carries a single signal at a time



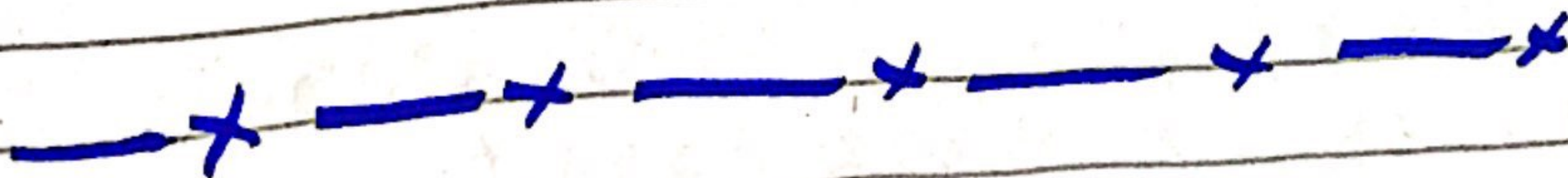
↳ Multimode fibre carrier more than one signal at a time

## (v) Principal of Optic Fibre

Optic Fibre principal based on the total incident reflection. Total incident reflection is when the ray of incident angle is having greater refractive index than that of critical angle. As a result, the working of optic fibre takes place.



When the total reflection is observed, the incident ray reflect in the same medium without going into the rare medium. Resulted in transfer of communication through these fibers.





## Question #05

(a) **Uses of Electromagnetic Radiations**  
The following are the uses of electromagnetic radiations.

### 1) Gamma Rays

- (i) Gamma rays are used to remove kidney stone, tumors without need of surgery.
- (ii) It is used in the identification of cracks in the buildings, bridges, aeroplane etc.

### 2) X-Rays

- (i) It is used to visualize the internal structure of the body.
- (ii) Atoms arrangement can also be studied under X-ray.

### 3) Infrared Radiations

- (i) Infrared radiations are used in the TV remotes. Through IR radiation, changing of channels is possible.

### 4) Radio Waves

- (i) Radio waves are used in RADAR, which helps in the detection and ranging of radio waves.
- (ii) It can be used in satellites, mobile phones.



## 5) Ultraviolet Radiations

- (i) UV radiations can be used to kill bacteria at industrial level.
- (ii) It can also be used in phototherapy.

(d)

## Polio

Polio (polymyelitis) is a highly infectious viral disease. It invades the nervous system, and can cause total paralysis in a matter of hours. It mainly affects the young children.

## Symptoms

The following are the symptoms of polio;

- ↳ Irreversible Paralysis
- ↳ Breathing muscles become immobilized
- ↳ Stiffness in the neck and pain in the limbs.

## Prevention

There is no cure but it can only be prevented through immunization called polio vaccine.

Polio vaccine can be of two types;

- (1) Inactivated Polio Vaccine (IPV)
- (2) Oral Polio Vaccine (OPV)

## Vaccinated Time Period



Children should be vaccinated with four doses of inactivated polio vaccine (IPV) at the following ages:

- ↳ A dose at 2 months
- ↳ A dose at 4 months
- ↳ A booster dose at 6-18 months
- ↳ last dose at 4-6 years



(c)

## 1) Ceramics

A ceramic is an inorganic non-metallic solid made up of clay that have been shaped and then hardened by heating to high temperatures.

## Properties

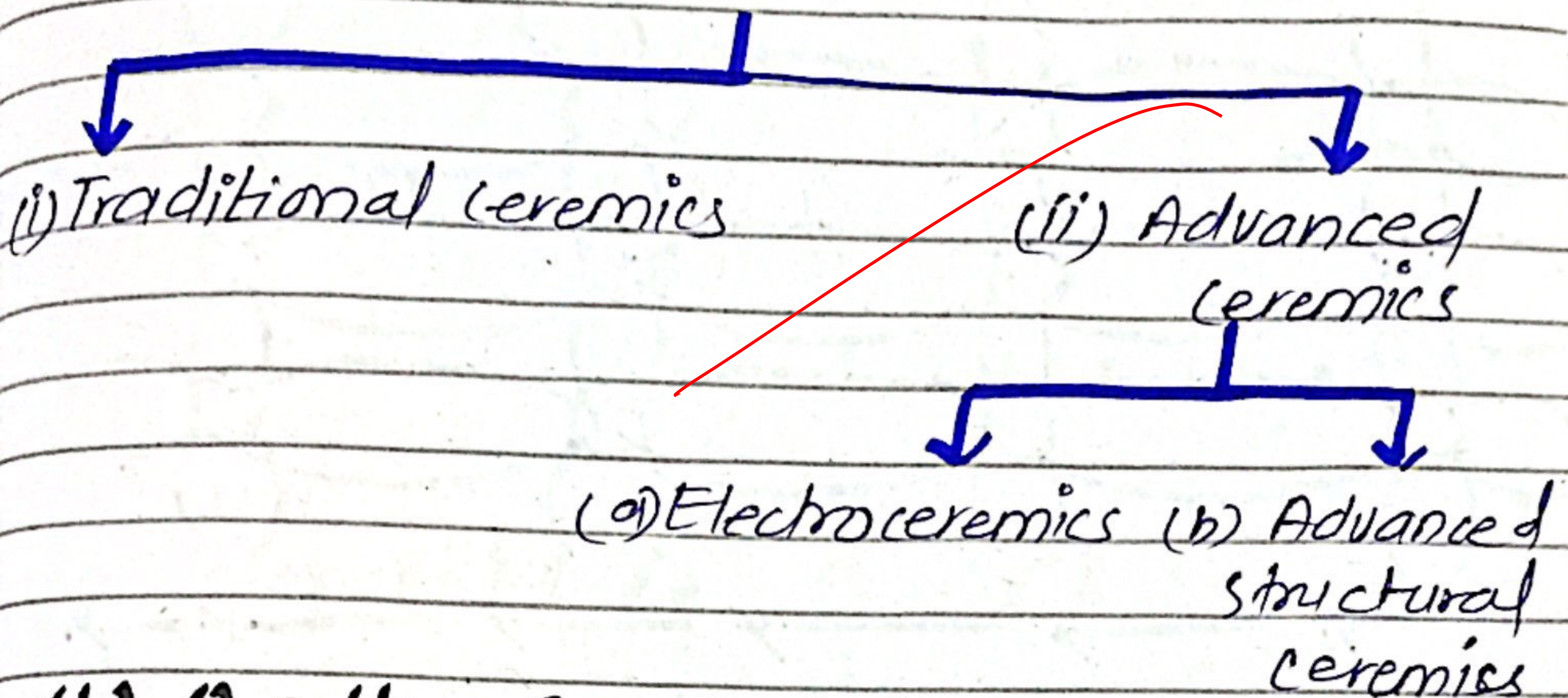
The general properties of ceramics include;

- \* They are Hard
- \* Extremely strong
- \* Durable
- \* Inert to chemical
- \* Thermal insulators
- \* Oxidation-resistant
- \* Brittle, little elasticity.

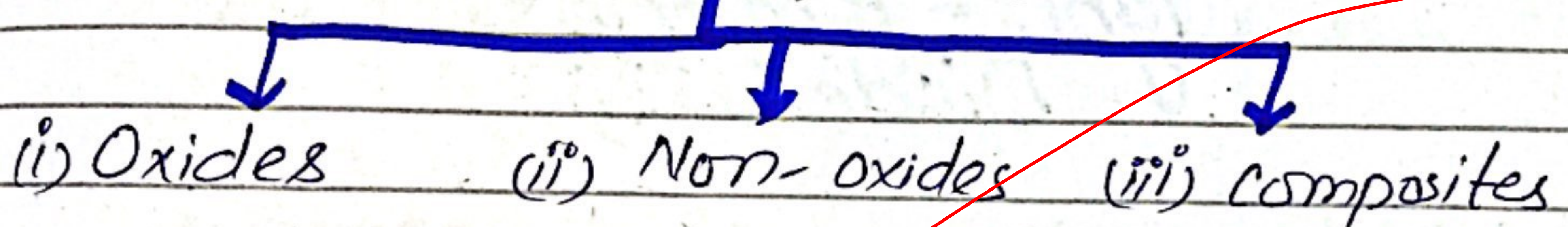


# Classification of Ceramics

## (a) On the Basis of Materials



## (b) On the Basis of Composition



## 3) Semiconductors

Semiconductors are used extensively in electronic circuits. It is a material that conducts current, somewhere between that of an insulator.

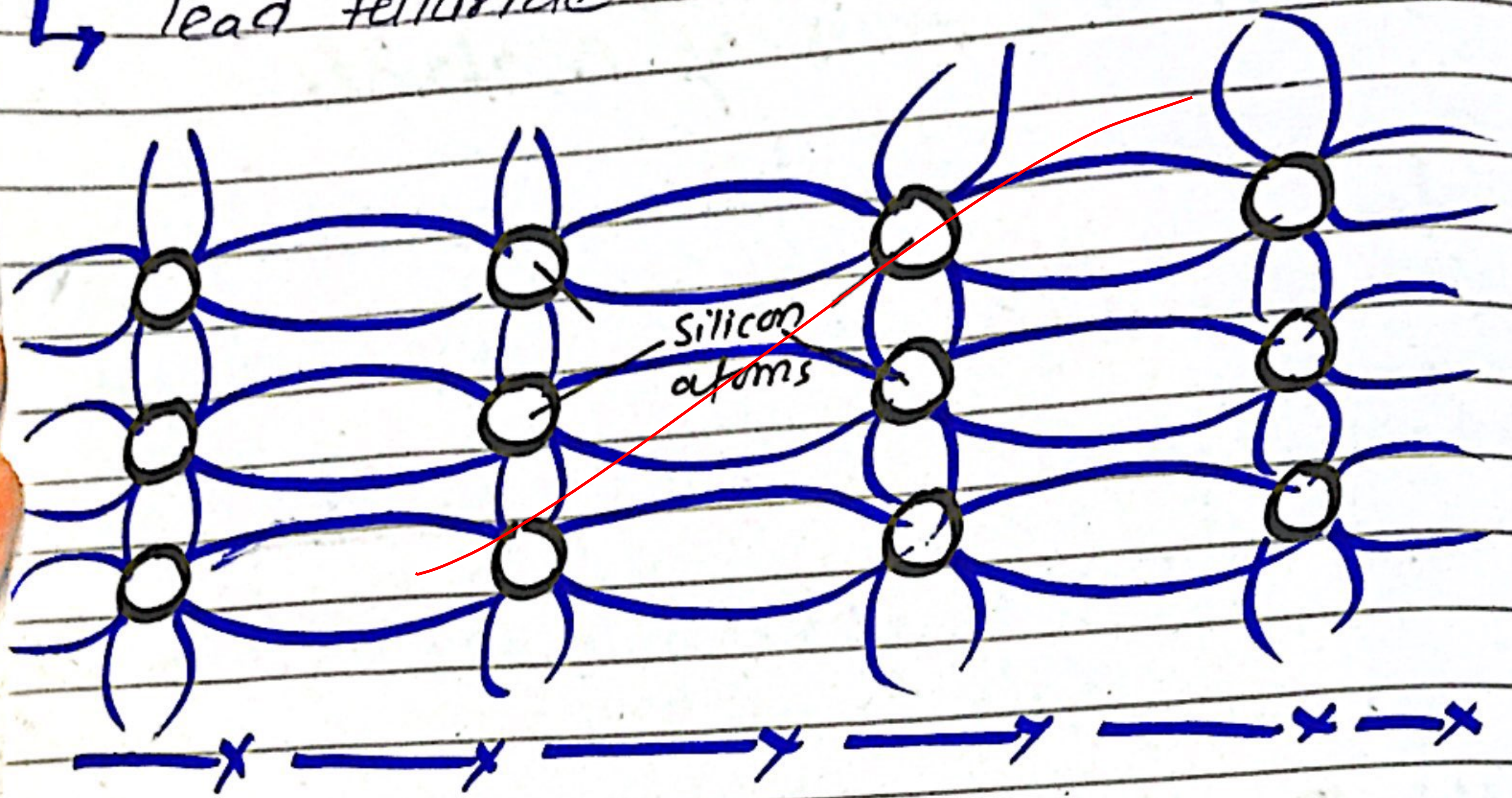
## Common Semiconductors

Common semiconductors includes;

- ↳ Silicon
- ↳ Germanium
- ↳ Selenium
- ↳ Gallium arsenide



- ↳ Zinc selenide
- ↳ lead telluride



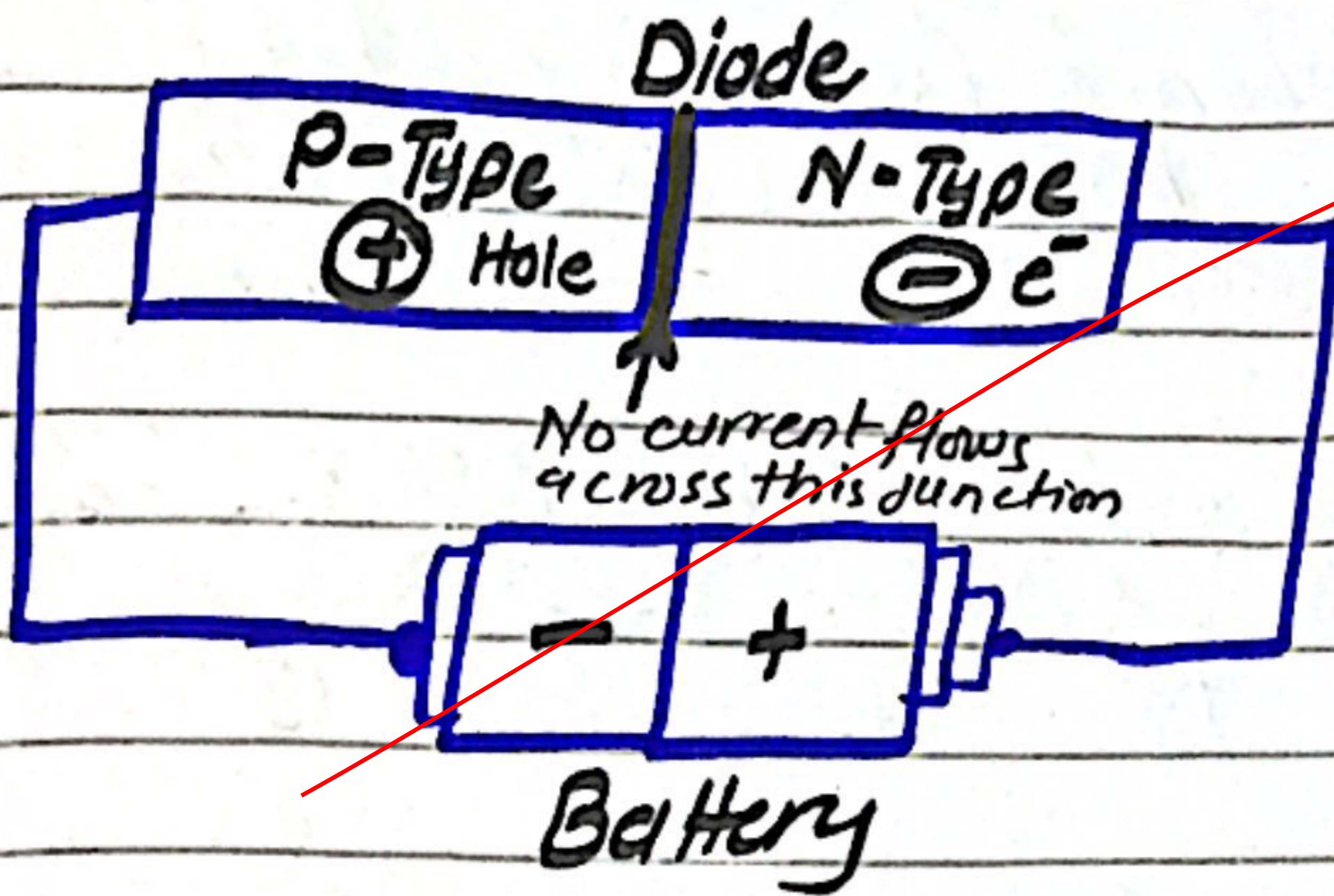
## (b) Light - Emitting Diode (LED)

Light-emitting diode is an energy-efficient and rapidly developing lighting diode. A Light-emitting diode consists of

- P-type Junction
- N-type Junction

A chip of semiconducting material doped with impurities to create a p-n junction. Current flows easily from p-junction to n-junction. As a result, after their meeting energy releases.





\* \* \* \* \*

### Question #07

(a) The average of 7-~~80~~ consecutive numbers is 20.

Finding largest number = ? ~~expanding~~

Hence 7 consecutive numbers respectively;

17, 18, 19, 20, 21, 22, 23

↓  
median number

largest number = 23.

**Ans**

(c) 7, 12, 19, 28, 39, —

7, 12, 19, 28, 39, ?

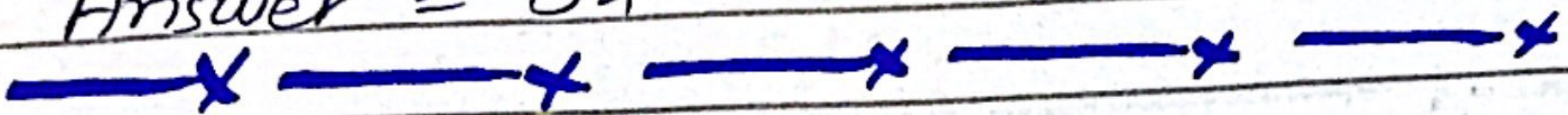
5
7
9
11
?



The difference from ... numbers showing odd numbers with 1 digit. so,

7, 12, 19, 28, 39, 52  
5      7      9      11      13

Answer = 52



(b)

- (i) C is the A father's nephew.
- (ii) D is cousin of A
- (iii) D is not brother of C
- (iv) Relationship between D & C = ?

According to the statement, C and D both are cousins of A. But it is not brother of C, because she is sister of D. Therefore, D and C are brother-sister.

(d) Total number of shares  
 $5 + 2 + 4 + 3 = 14$

Let's;  
A's share =  $\frac{5}{14}$   
A share's =  $5(x)$   
B share's =  $2(x)$   
C share's =  $4(x)$   
D share's =  $3(x)$



if C gets 1000 more than D

C's share =  $4x + 1000$

$$C = D + 1000$$

$$C + 1000 = 3(x)$$

$$4x + 1000 = 3x$$

$$4x - 3x = 1000$$

$$x = 1000$$

Therefore;

$$\begin{aligned} \text{B share's} &= 2(1000) \\ &= 2000 \end{aligned}$$

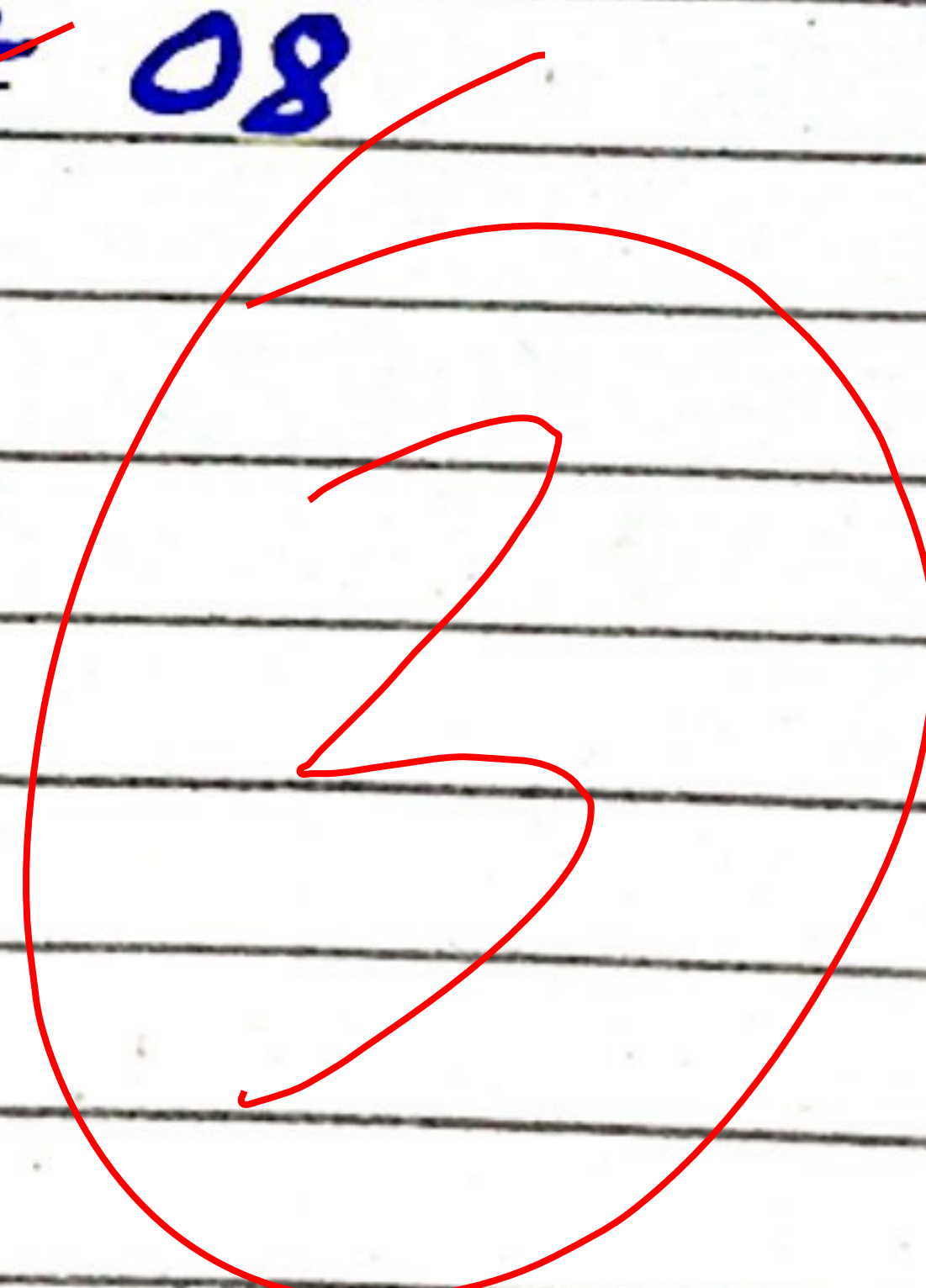
Answer



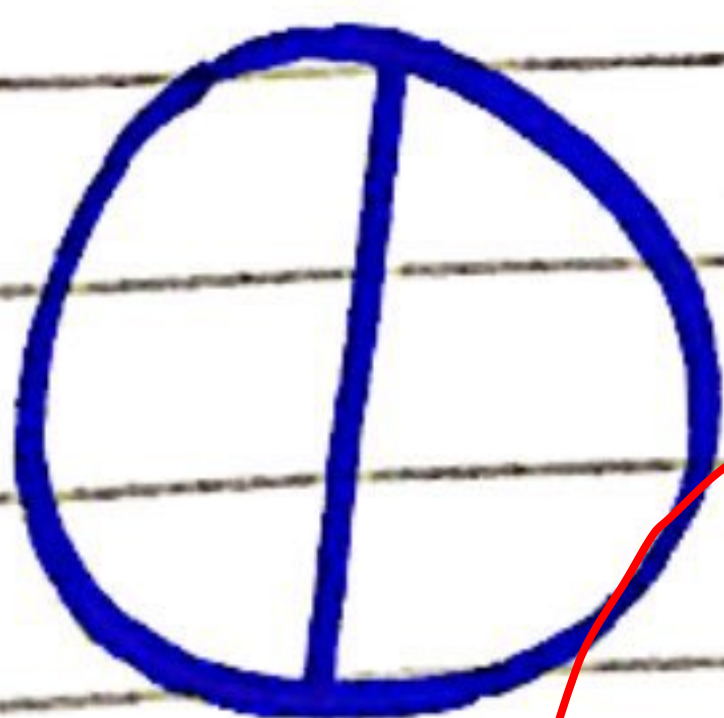
### Question # 08

(b)

- (i) Pumpkin
- (ii) Snack
- (iii) Fierce
- (iv)
- (v)

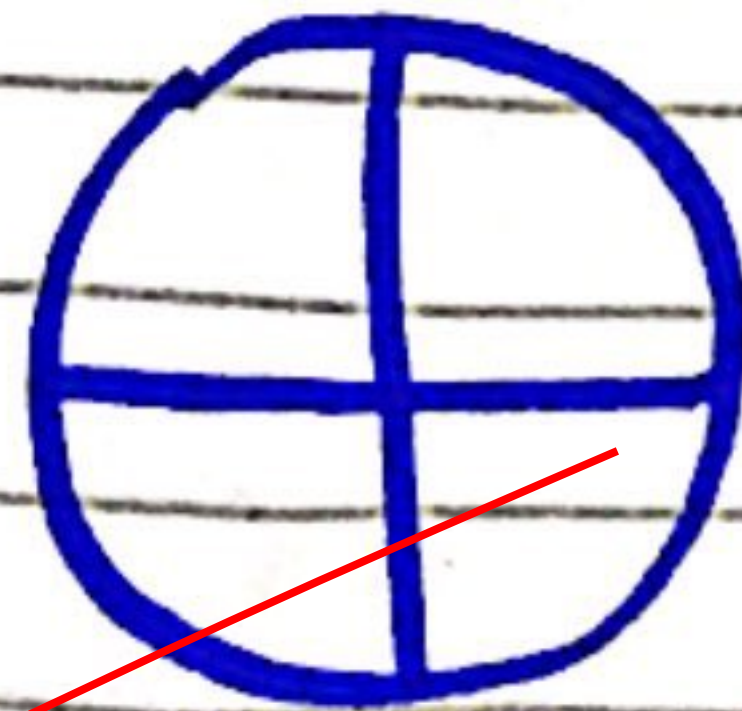


(c)



circle

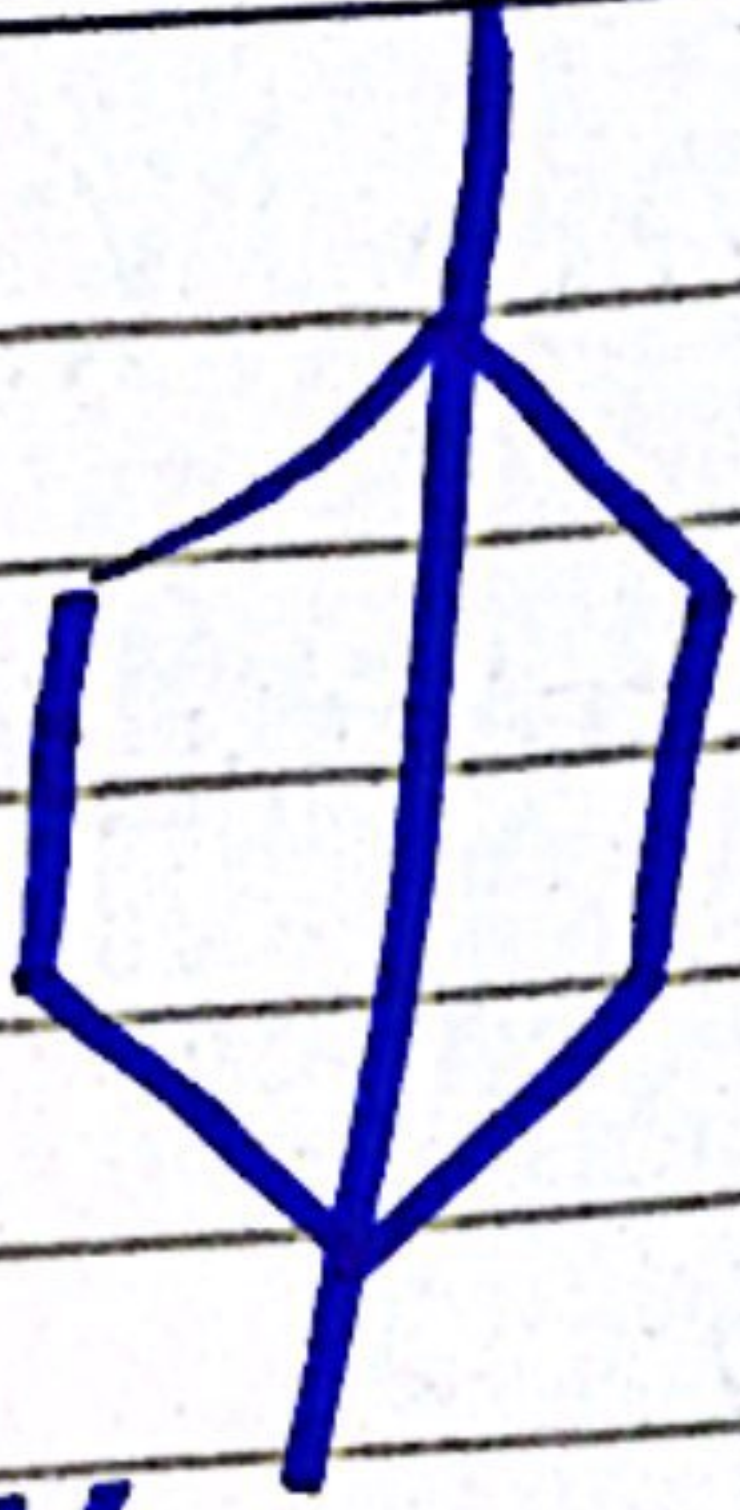
(1)



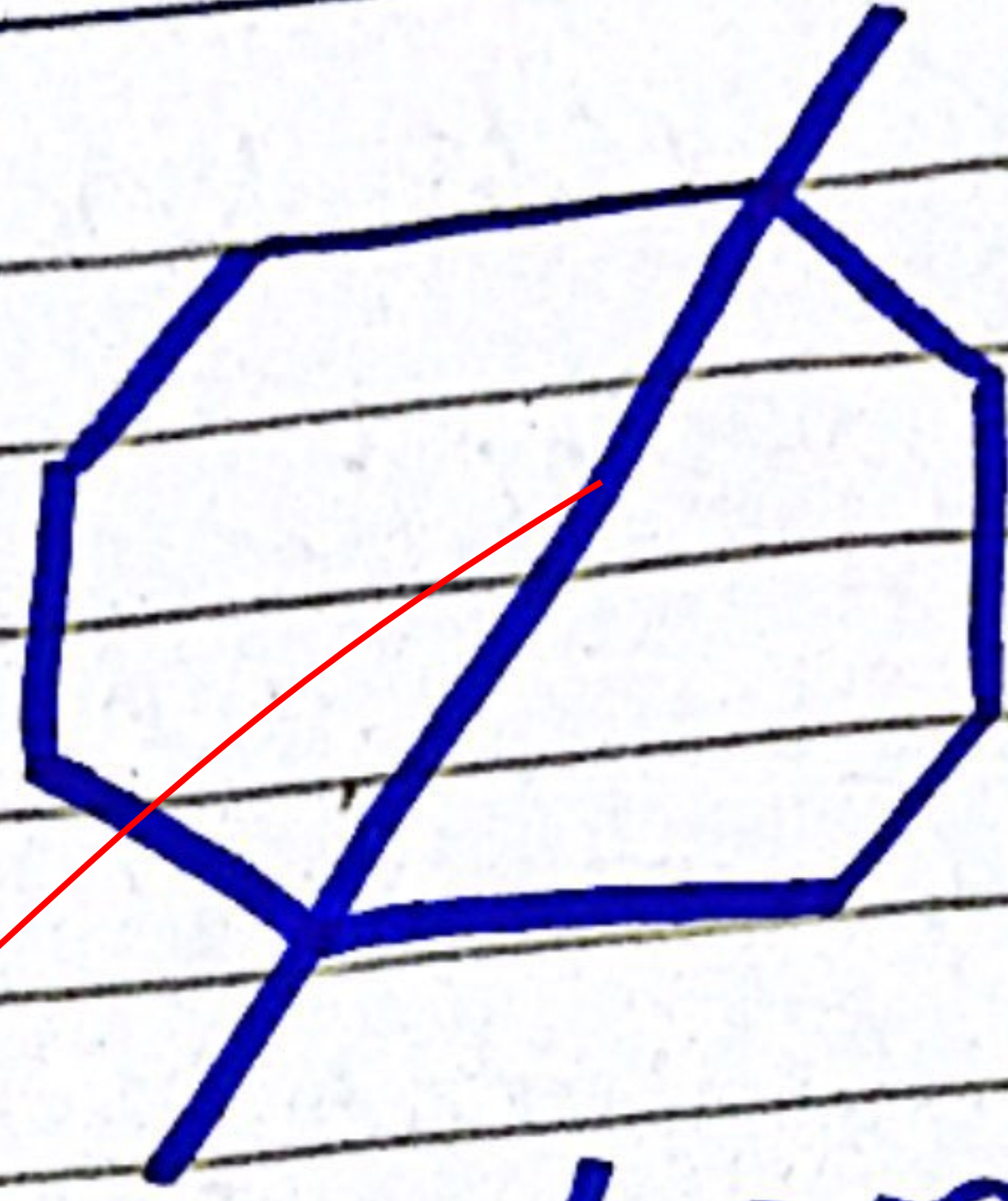
(2)

There are two lines of symmetry in a circle





Hexagon



Octagon