PART_II

Section-1

Q:2

(a) Briefly explain lipids. What are some major types? What are their functions?

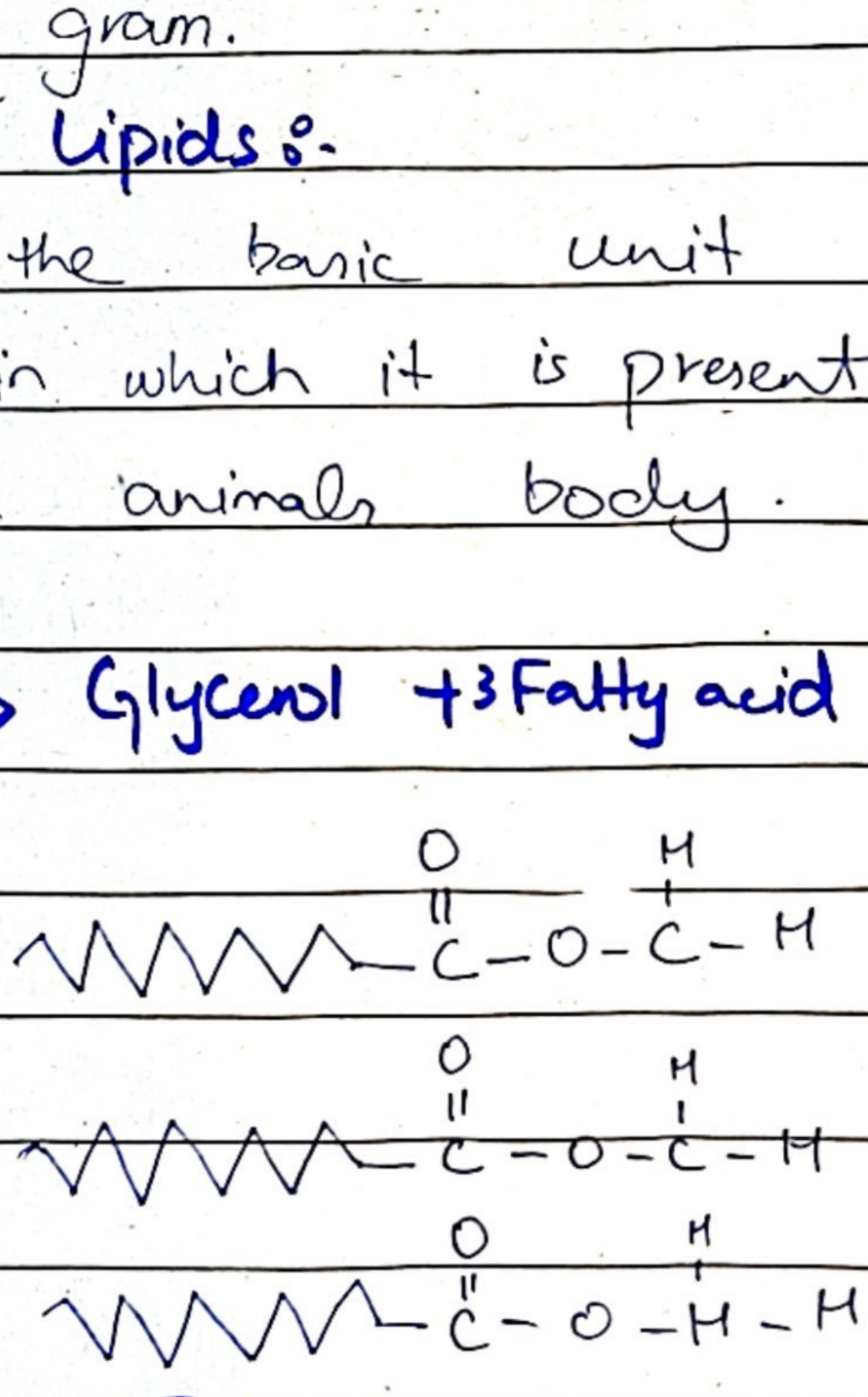
Lipids :-

Lipids are naturally occuring organic compounds having oils and fats. Lipids are present in micro-organisms, animals and plants. Lipids provide 9.1 kcal. of energy per gram.

Basid unit of Lipids :-

Triglyceride is the basic unit of Liquid in which it is present in food and animals body.

Triglyceride → Glycerol + 3 Fatty acid



Structure of Triglyceride

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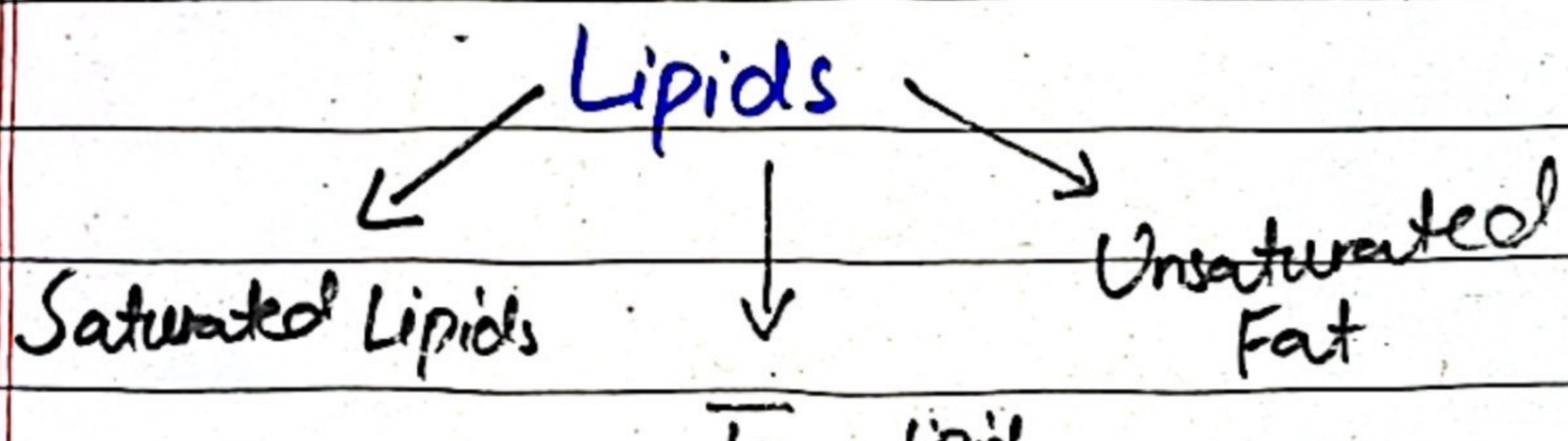
Another important lipid is phospholipid.

Phospholipid ⟶ Glycerol + Fatty acid + Phosphonic acid + Alcohol

Common phospholipid is lecithin.

Types of lipids :-



(a) Saturated Fats :-

These are Solid at room temperature like animal fats.

Common Examples :-

Animal butter

Margarine

Cheese

Milk

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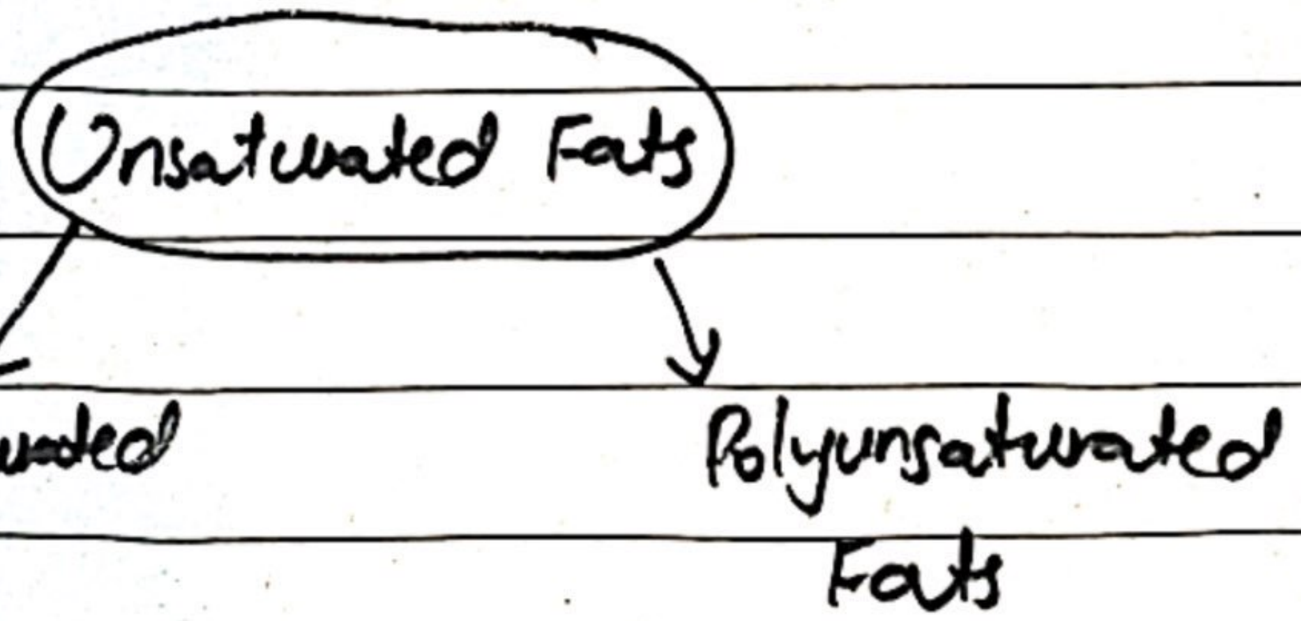
All have saturated fats. Bakery products like cookies, snacks are ~~ma~~ have saturated fat.

Disadvantage:-

By eating too much saturated fat, the level of cholesterol increases in body and it may cause liver diseases like "fatty liver".

(b) Unsaturated Fats:-

These are liquid at room temperature like plant oils. Unsaturated fats are good for health.



Monounsaturated Fats:-

Fats extracted from plant oils like Soyabean, olive oil, canola and nuts

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Avacado have monounsaturated fat.

Advantage:-

By eating monounsaturated fat, the level of bad cholesterol LDL decreases and the level of good cholesterol HDL will increases. It is useful for health.

LDL ↓ HDL ↑

By taking monounsaturated Fats

Disadvantage:

By taking only unsaturated fats and not cut back to saturated fat will not reduce cholesterol level.

Polyunsaturated Fats:-

Fats extracting from Seshan oil, Sufflawor and Sunflower and corn oil are polyunsaturated fats. They also reduce bad Cholestrol level

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in body.

Common types:-

Omega - 3

Omega - 6

Trans Fats :-

These are fats, produced from hydrogenation process. Actually it increases the shelf life of fats and make it hardened at room temperature.

Example :-

Cookies

Salad dressings

Snacks

Hydrogenated Food

Processed Food

All made from trans fats. But by eating too much trans fat will raise body cholesterol level.

Functions of Lipids

Lipids have many functions in functioning of body. Some are as follows :-

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① Lipids are storage Compounds :-

① Lipids store in body and provide energy to body on need.

② Lipids are common storage of fat soluble vitamins like A, D, E, K.

② Lipids as Insulator :-

Lipids cover myelin sheath which help in trans travelling of nerve impulse.

③ Lipids help in metabolism :-

Some homones like prostaglandin and steriod are lipids in nature which help in metabolism.

④ Lipids part of enzymes

Some enzy Lipids are part of enzymes which help in catalyzation of a process.

⑤ Form Structure in Body :-

Phospholipids are structural compounds of cell membrane in animals and plants.

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(6) Protection of body organs

Fat layer in body help in organs protection like kidneys and heart.

(7) Regulation of Temperature

Fat layer is present below body skin layer this help in body's temperaturature regulation.

eg Fish :- Brown Fat layer is present which protect them from cold even in chilled water.

(b) Enlist a few measures for energy conservation and its Sustainable use.

Energy Conservation

"Energy conservation means the use of energy in sustainable way as to consere it for our future generations."

Energy conservation is one of SDG's which are to be met till 2030's.

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Measures for Energy Conservation

There are few measures enlisted below to conserve energy :-

① Turn off unnecessary electrical appliances :-

① Unnecessary electrical appliances means in households everyone should sit at one place and turn off the ⊛ separate fans, AC, lights etc.

② On Day light, there is no need of electric lights so put them off.

② Everyone when go outside, he should be caution to turn off fan, light etc.

② Prefer walk or cycle :-

Instead of using transport all the time, people should prefer walk or cycle.

Transport → either use Battery Charge
→ or use fuel

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Both are dangerous, as they damage atmosphere and consume more energy too.

(3) Use alternate cooking methods :-

Cooking methods must be modified on in Past household cooking was dependent on fossil fuels which polluted the atmosphere. But with advancement of technology, people are using electric kettles, electric stooves to cook food. Though it saves environment from pollution but consume more energy. So, find alternate way of cooking like solar pressure cookers.

(4) Use energy-efficient appliances :-

Our bod building codes and energy efficiency standards for consumer appliances sold on the market are not best in class and must be urgently revised to promote energy conservation.

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5. Do household transks manually:

Household tasks like washings of clothes can be done manually. For example instead of using washing machine and drier machine, wash clothes manually and dry them in sunlight to consene energy.

6. Replace incandescent bulbs with LED:

The incandescent bulbs must be replaced with LED lights to save energy as the revia has started but it need more comprehensive approach to accomplish the task.

7. Connect roof-top solar plates with batteries:

The roof-top solar plates must be connected with batteries and grid station to store energy in day-light for its use in after sunset.

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8- Give General awareness to public about peak and non-peak tariffs :-

Peak tariffs → It is time at which energy consumption is maximum because demand of energy is high.

In ~~Dec~~. winter it ranges from 5- 9 pm.

In summer, it ranges from 7-12pm.

Non-peak tariffs :-

It is time at ~~at~~ of remaining day, when energy demand and consumption both are less.

It is a best way to safe electricity bills.

Measures for sustainable usage of energy :-

For sustainable usage of energy we should move towards ~~non~~ renewable energy sources, to conserve energy for our future generations :-

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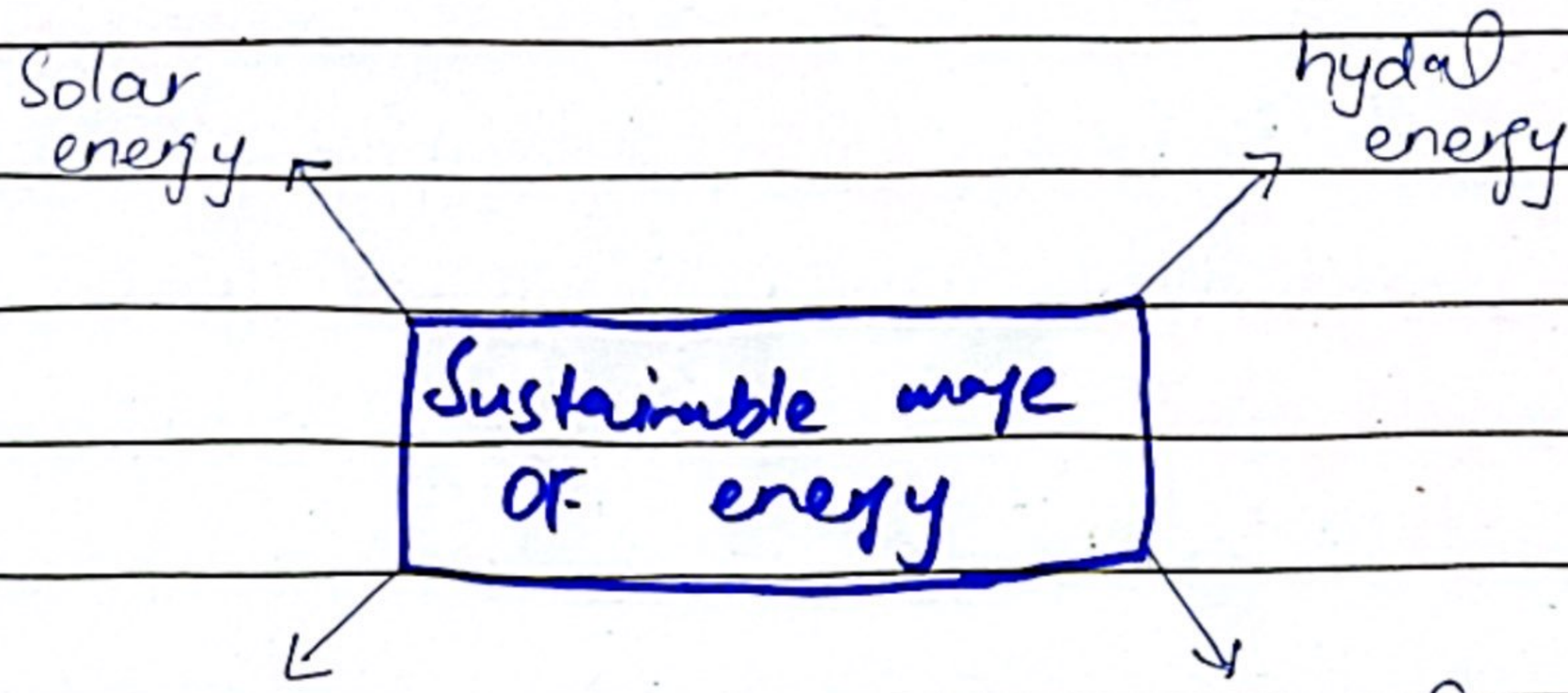


For sustainable usage of energy, the current energy generating mechanisms should be shift to :.

Solar energy :-

Full fill energy requirements through sunlight. It is eternal source of energy till the Last Day.

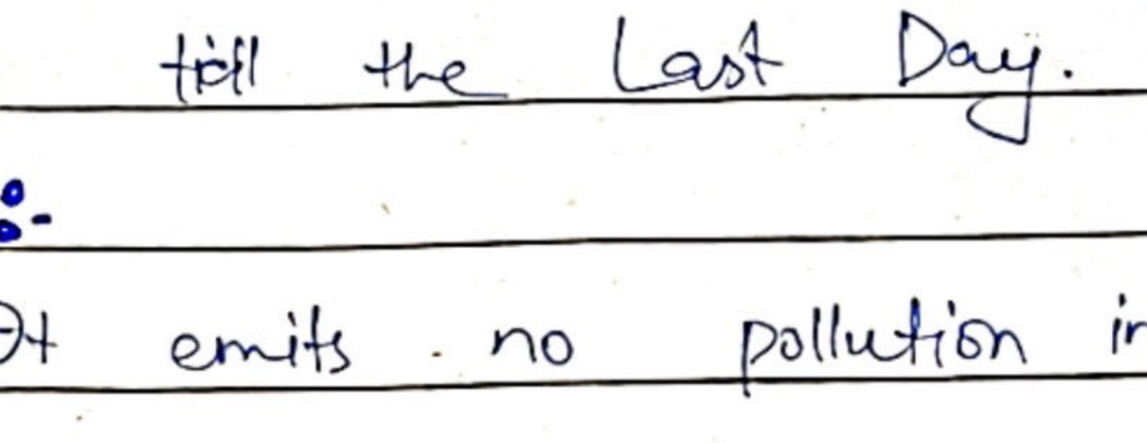
Advantage :-

1- It emits no pollution in atmosphere.

2- It is cheap in cost.

Hydal energy :-

From water energy can be produced



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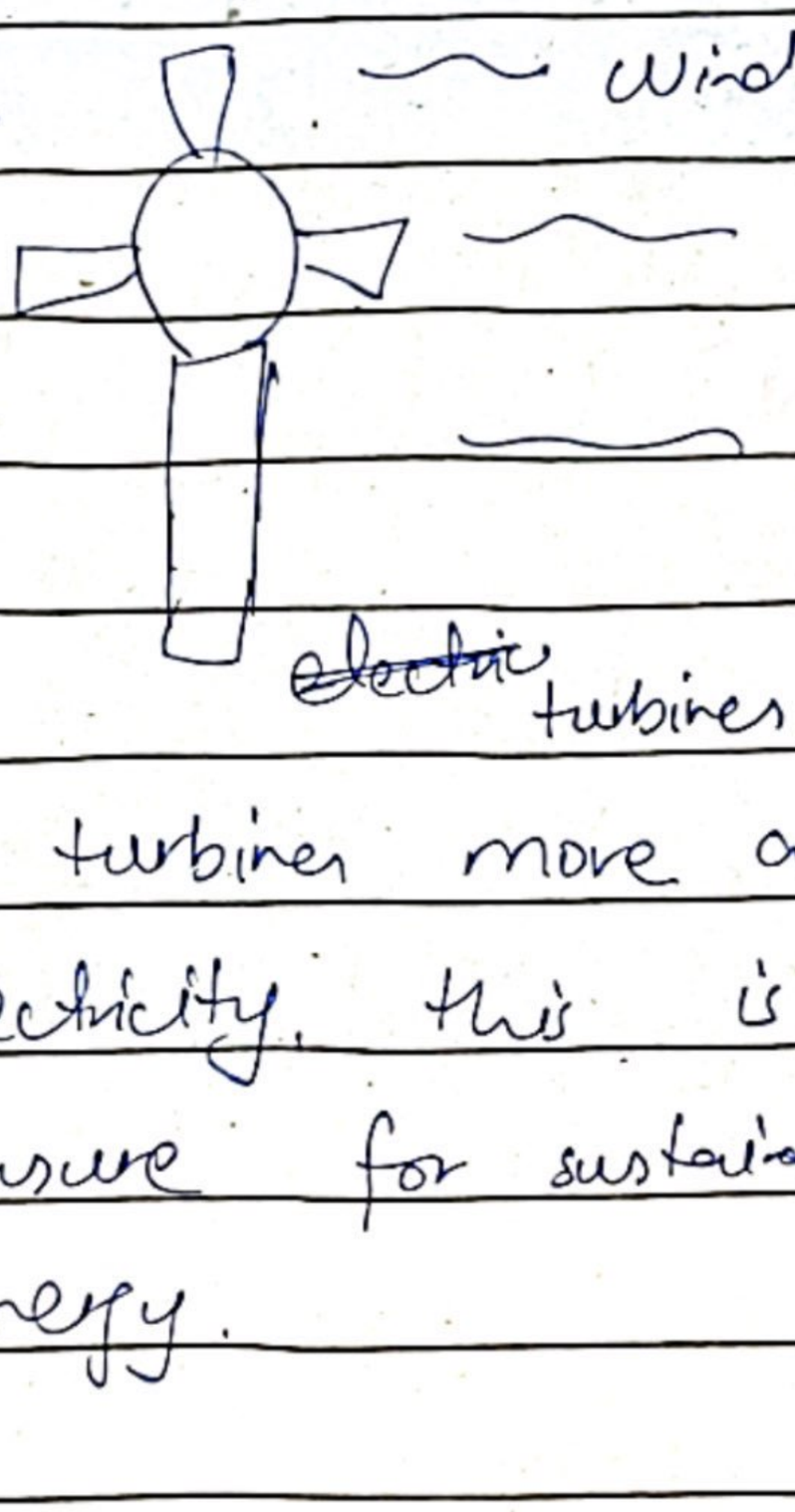
it release energy, which is used to run turbines and hence electricity is generated. This is renewable method and even free of cost to produce energy.

Tidal Energy :-



With wind these turbines more and ~~so~~ generate electricity. this is one of the measure for sustainable useage of energy.

Biomass :-

Energy production from burning of biomass like animal waste, this is also one of the sustainable way to consene energy.

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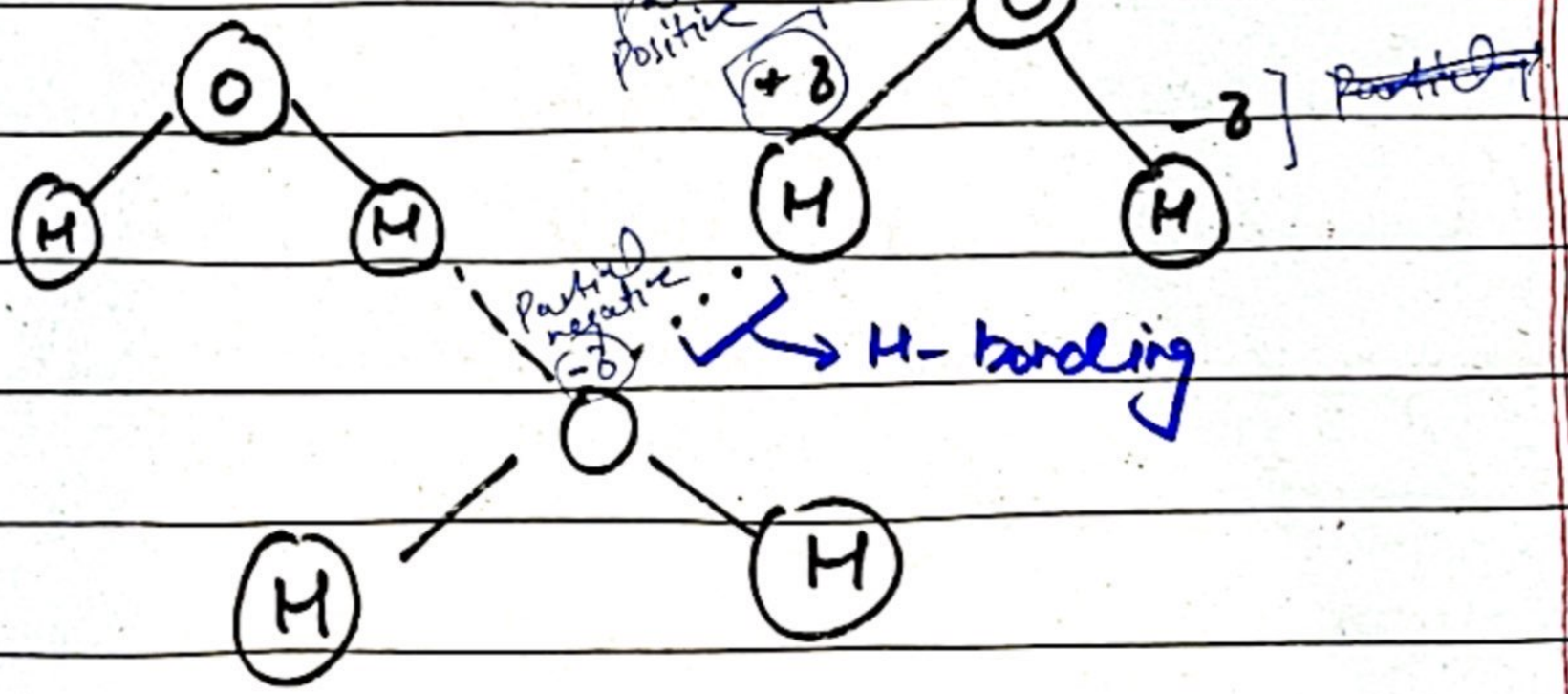
(C) What is hydrogen bonding? Give elaborating structures as examples.

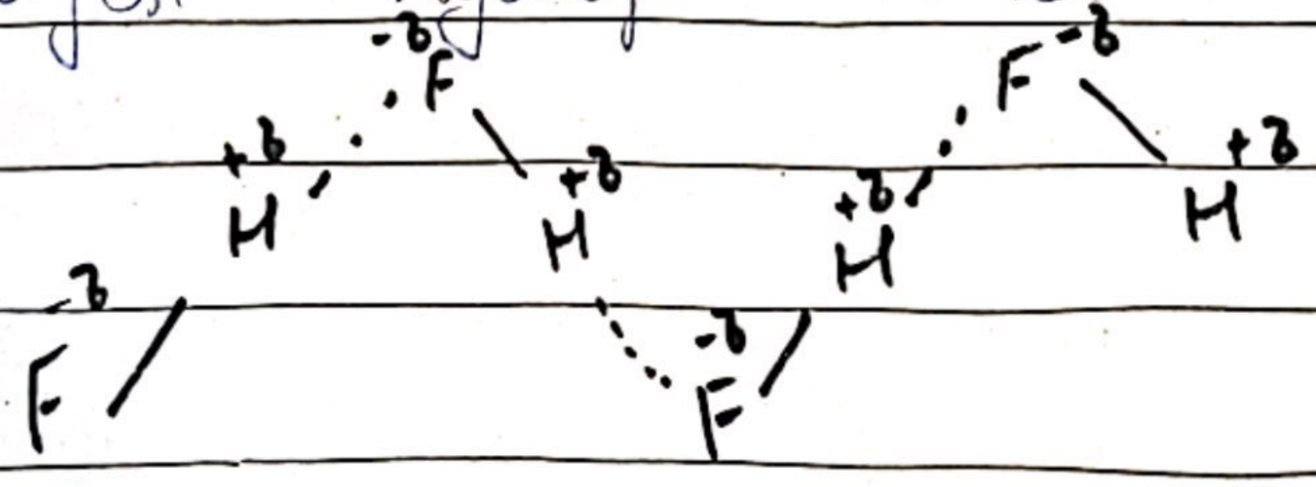
Hydrogen bonding is an intermolecular force that form a dipole - dipole attraction when a hydrogen atom covalently bonded to a more electronegative atom such as O, N, F etc.

(1) Water molecule :-



(2) H- Bonding in Hydrogen Fluoride :-

Flourine having the highest value of electronegativity forms the strongest hydrogen bond.



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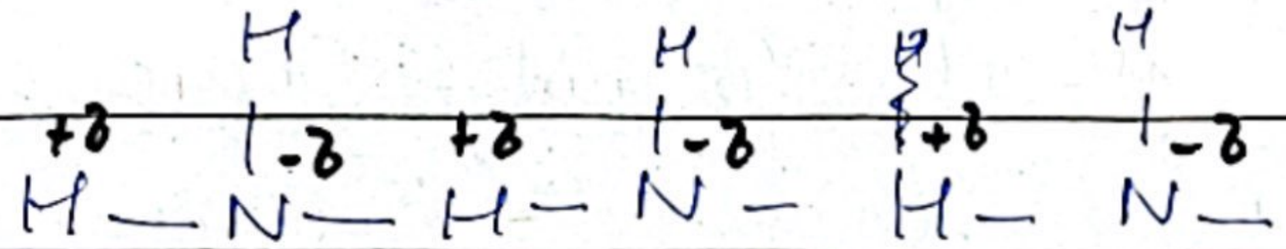
Hydrogen Bonding in Ammonia :-

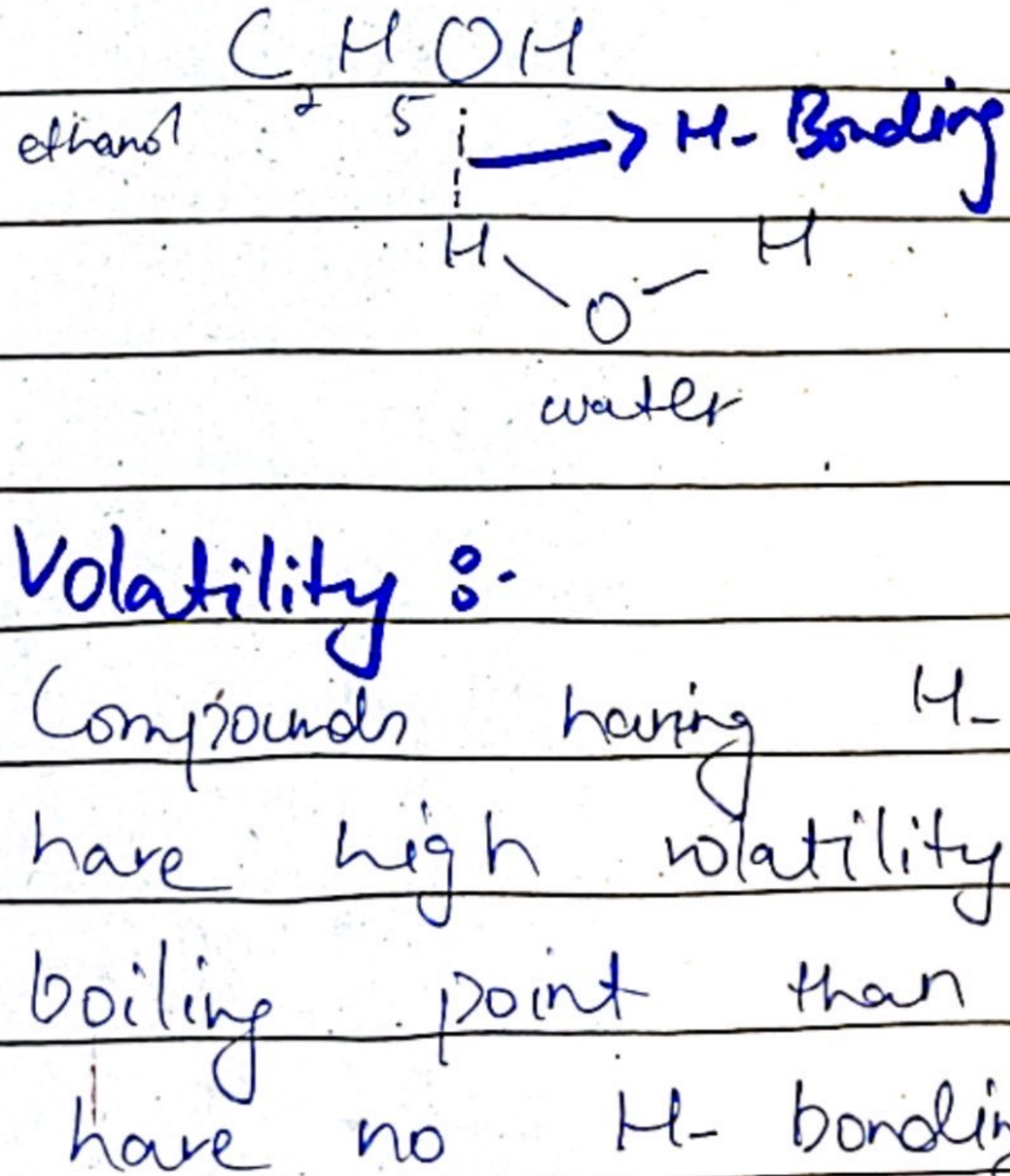
It contains highly electronegative atom nitrogen linked to hydrogen atoms.



Properties of hydrogen Bonding :-

Solubility :-

Lower alcohols are soluble in water became of H- Bonding between water and alcohol.



Volatility :-

Compounds having H- Bonding have high volatility means boiling point than those who have no H- bonding.

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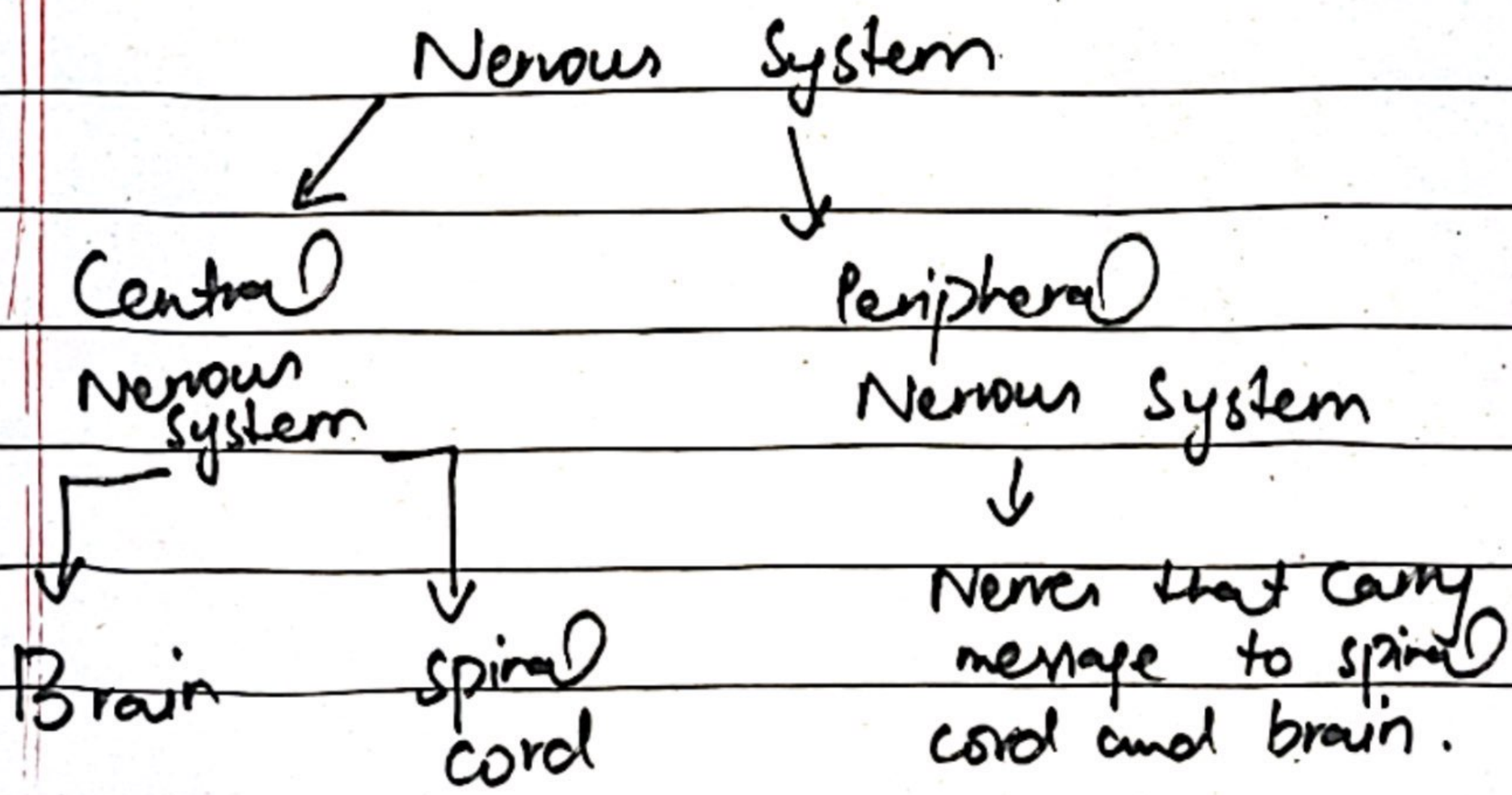
Viscosity and Surface Tension :-

The compounds having H-bonding they have more surface tension and it is difficult to more them as compared to other compounds which do not have H- bonding.

Density :-

The density of molecules having H- bonding is high. Let us compared density of ice and water. Ice floats on the surface of water because it has les density than water.

(d) Discuss the nervous structure of human Body?



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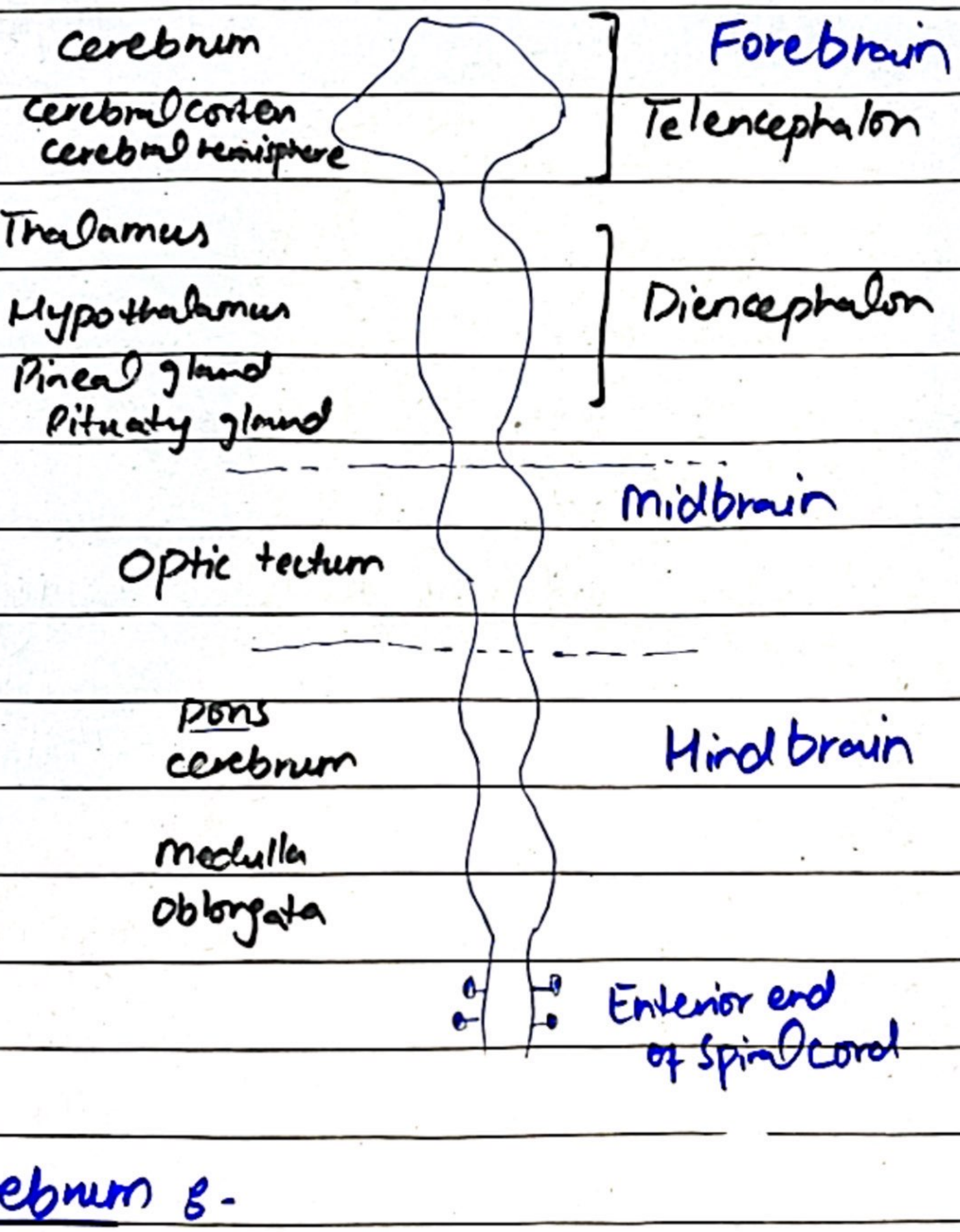
Human Brain :-

Human Brain consists of three parts :-

(1) Forebrain

(2) Hindbrain

(3) B Mid brain



Cerebrum :-

It is divided into two hemispheres, called cerebral hemisphere. The outermost part is called cerebral corten.

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It is used in written and spoken forms in human.

Thalamus :-

It relays all sensory information to higher brain centers.

Hypothalamus :-

It regulate body temperature, sexual desire, hunger and thirst.

Pineal gland

It controls body rythums

Pituatary gland

It secretes hormones

Midbrain

It has functions in touch and hearing.

Medulla Oblongata

It is helpful in breathing, swallowing.

Cerebellum

It is linked with limbic movement

Pons

It is a bridge that connect cerebellum with cerebrum.

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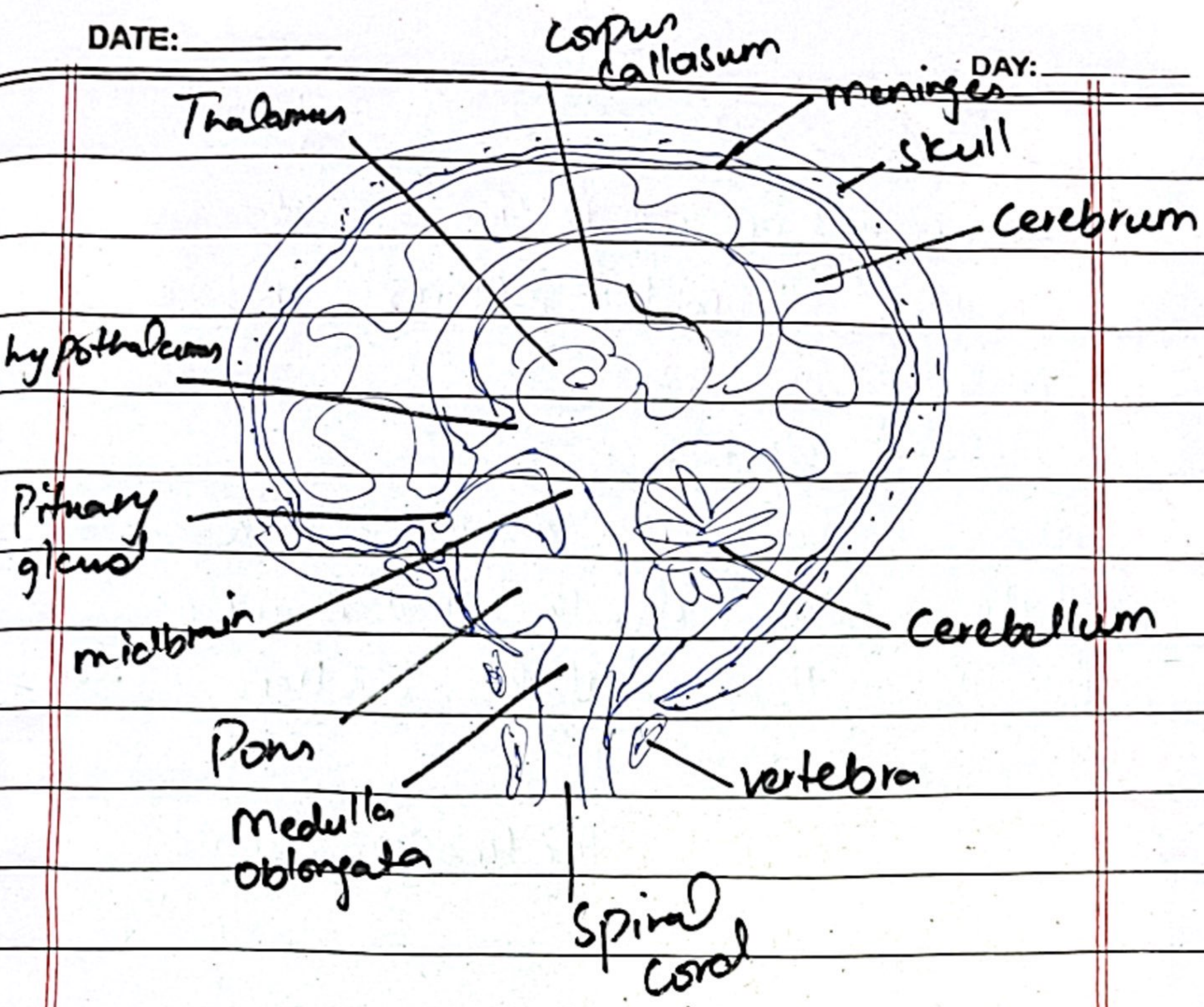

Human Brain

Spinal Cord

Functions :-

① It connect brain with all other parts of body.

② It controls spinal reflex action.

Its cross section has following parts :-

① Neural canal :

It is present in the centre of spinal cord. It contains cerebrospinal fluid.

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2- Gray matter:-

It consists of cell bodies and dendrites. It control reflexes in Spinal cord.

3. White matter:

Its axons are covered with white myelin sheath that's why it is called White matter.

4. Meninges.

The layers of protective membranes called meninges.

Spinal cord of Human

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Peripheral Nervous System :-

It consists of paired cranial nerves and spinal nerves.
There are three types of nerves :-

Nerves

Sensory Nerves	Mixed Nerves	motor Nerves
Contain only Sensory axons e.g optic nerves	contain sensory and motor axons e.g Vagus nerves	Contain only motor nerves

Q no. 4

(a) What is hepatitis? Explain its causes, symptoms and Prevention.

Hepatitis :-

The viral infection of liver is called hepatitis.

Types of Hepatitis :-

There are different types of hepatitis, their causes, Symptoms and prevention vary

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according to the type of hepatitis.

Hepatitis types	Causes	Symptoms	Prevention
Hepatitis A	contaminated water, Food Poor sanitation contact with infectious person	vomiting Diarrhoa Yellowing of skin and eyes	vaccination is available Use safe water, Food and improved sanitation.
Hepatitis B	contact with blood of infected person, body fluid contaminated food and water From mother to child.	vomiting, Diarrhoa Yellowing of skin	Vaccination is available Bed rest for Patients. Avoid contact with contaminated syringes or blood.
Hepatitis C	Hepatitis C virus unsafe injection Practices inadequate sterilization of medical equi- transfusion of unscreened blood	bleeding from body parts Tiredness Yellowing of skin	Antiviral drug therapies are available NO Proper vaccination is available Its end stage is cirrosis Liver trans- plant is

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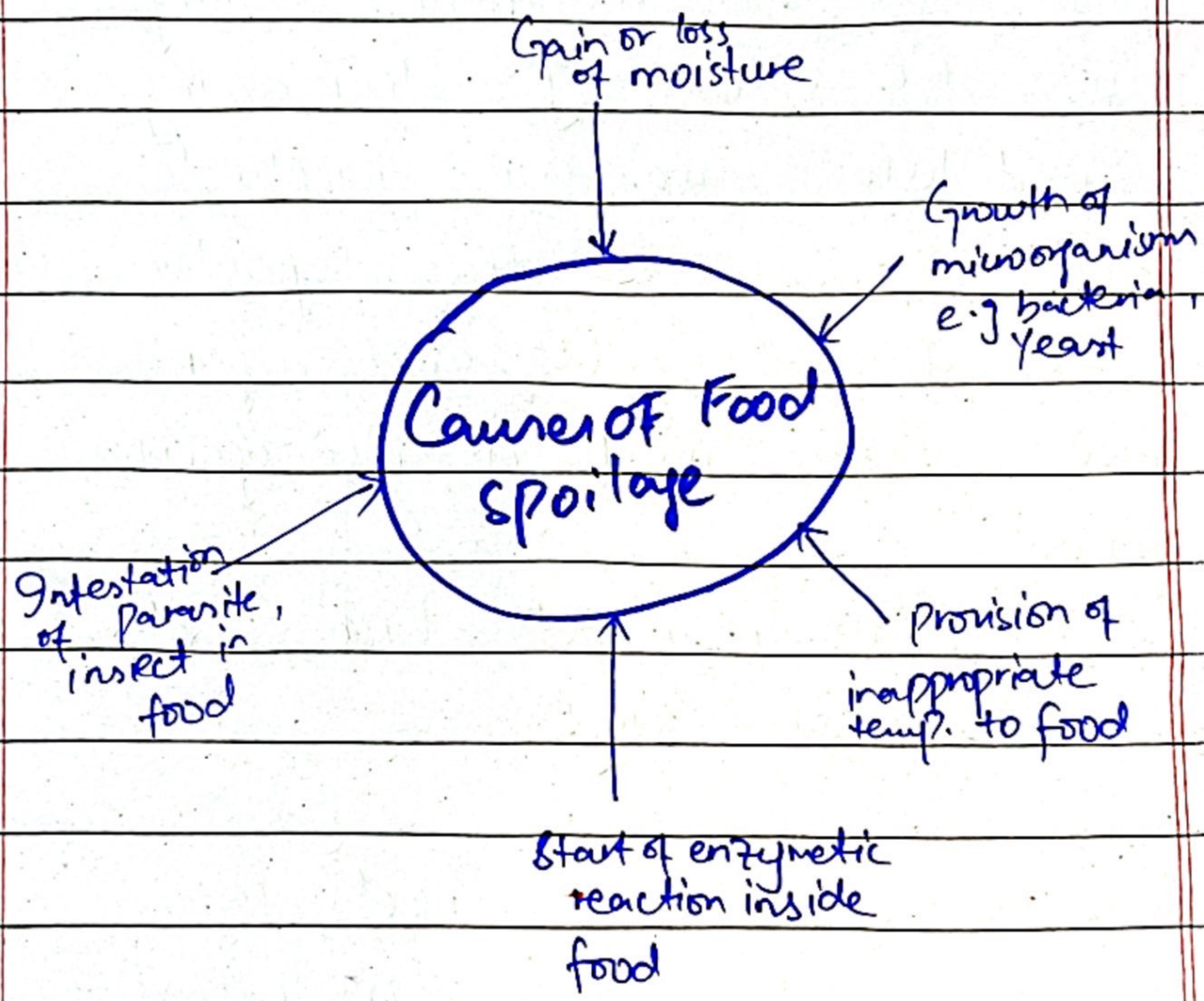
(b) Elaborate a few methods of Food preservation.

Food Preservation :-

Food preservation is any method by which food is kept spoilage after harvest or slaughter.



Methods for Preservation of Food :-

① Heat :-

Some Food is preserved by boiling it high temperature because at high temperature

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certain bacterias become inactive.

e.g. Pasturized milk

It is pasturized by at 63°C for 30 min.

2- Cold :-

Most bacteria, yeast, molds grow best at temperature range 16 - 36°C, So by decreasing temperature, we can inactivate them. Because at low temperature water freezes, salts and sugar also, so the growth of micro-organisms stops.

e.g: Frozen meat, Fish and other things.

3- Drying :-

Sometimes food is dried in the sunlight to remove excess water from it, so the micro-organisms growth stops in it.

e.g: Mint is dried in sunlight and can be used for long time.

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4. Acid :-

The addition of acid to food denatures the protein of food so the bacterial protein also becomes inactive.

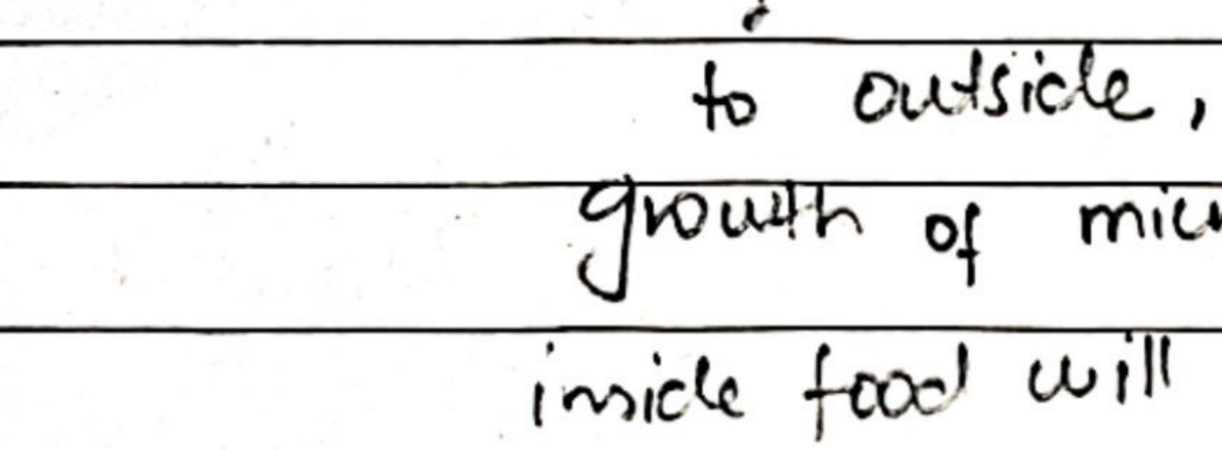
example :

① Citric acid

② Phosphoric acid added to soft drinks.

5. Sugar and salt :-

Meat is preserved in salt brine, Fruit are preserved in sugar syrup.



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6- Smoke :

Meat by proding smoke can be preserved from spoilage. In past this technique was efficiently used.

Smoke → Formaldehyde + Meat → Preservation of Food

7- Chemicals :

Chemicals like Sodium benzoate can be added in soft drinks and acidic foods to inhibit the growth of micro-organisms. Sulphur dioxide Control the browning of fruits and vegetables caused by enzymes.

8- Radiations :

Radiation like x-rays, ultraviolet radiations, microwaves, ionizing radiations can be used to inactivate enzyme that spoil foods like vegetables.

e.g Potato Sprouting

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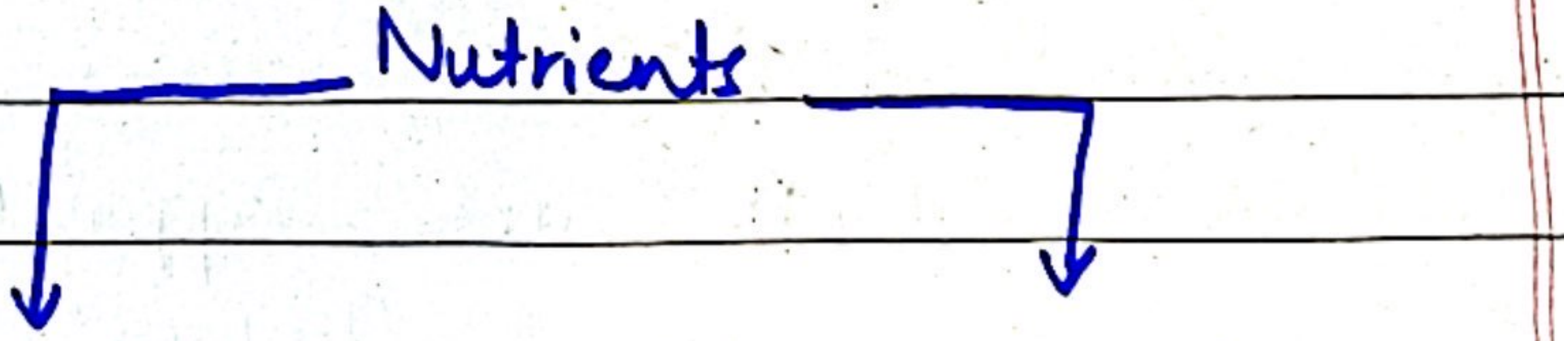
(C) Explain Fertilizers. What are their types.

Fertilizers :-

Fertilizers are organic or inorganic compounds which are naturally occuring or synthetic in nature having certain nutrients and apply to soil or plants to fullfill their nutrient requirements.

Types of nutrients :-

There are two types of nutrients :-



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Classification of Fertilizers on the basis of their mode of application on soil:-

The classification is as follows:

① Direct Fertilizers:-

These fertilizers are directly given to soil to fullfill its nutrient required. These are mineral salts

Example:

Super phosphate

Nitrate

② Indirect Fertilizers:-

Fertilizes which are applied to soil to increase biological activities, mechanical and chemical resiliance.

Example:-

Limestone $CaCO_3$ to reduce acidity

Gypsum → to improve the properties of soil having high salt content.

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(3) Complete Fertilizers :-

Those fertilizers which supply all ~~fert~~ nutrients to soil are called complete fertilizers.

Example :

Zorawar

Zarkhaiz Fertilizers.

(4) Incomplete Fertilizers :-

Those fertilizers which praide only One or two nutrients and given to only specific part of soil are called incomplete fertilizers.

Example :

Potassium Chloride

KCl

only K is Pirmary nutrient and this fertilizer is given to certain soil.

(5) Mined Fertilizers.

When fertilizer is mined with other fertilizer and is given to soil it is called mined fertilizer.

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Example:-

When urea is added to single superphosphate and potash it becomes mined fertilizer.

⑥ Microfertilizer :-

These fertilizers have only one type of nutrients and given to soil.

Example:- zinc, Copper fertilizer.

Types of Fertilizers on the basis of nutrient supplied :-

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Sulphate of Potash :

Great fertilizer apply in gardens, before and after winter.

① To improve fruit taste

② To improve flower colours.

Muriate of Potash :

~~Contai~~ also called. potassium chloride, it contains protein and sugars.

(d) What is the anatomy of human tooth?

teeth

- Primary teeth (childhood) — baby teeth
- Secondary teeth (adulthood)

Teeth types :-

①	Incisors	8
②	Canines	4
③	Premolars	8
④	Molars	12

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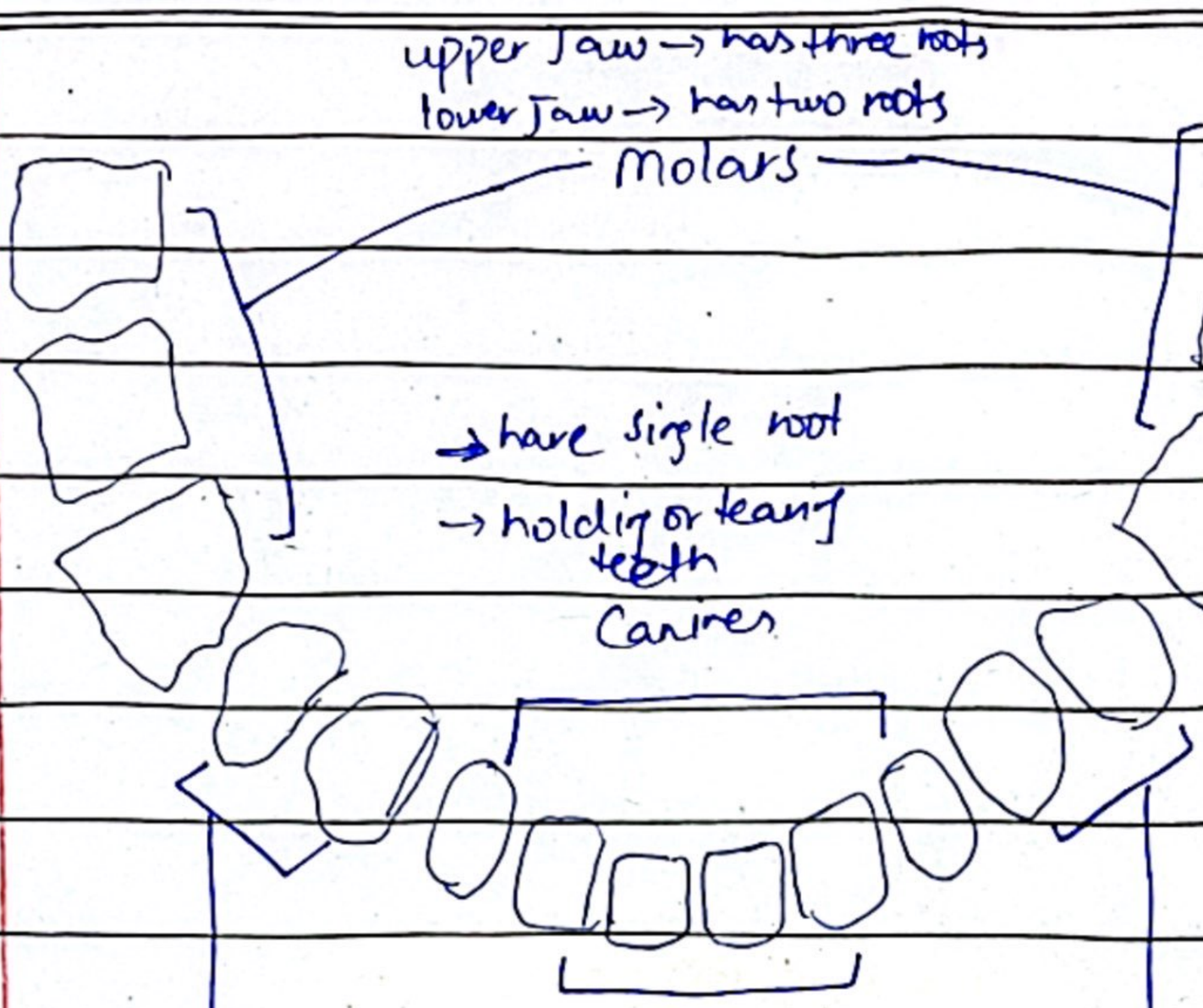

Anatomy of teeth :-

The structure of teeth has following parts :-

① Tooth Enamel
② Dentine or Ivory
③ Dental pulp
④ Cementum
⑤ Gums

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Enamel

① It is hardest part of teeth

② Protective structure

③ inorganic and non-living part of bone.

Dentine

① It is soft bone below enamel

② absorb pressure of eating

③ support tooth

④ a number of micro-fibers are present here

Pulp

① It is soft connective tissue containing nerves and blood vessels that nurish the tooth

① It is the most internal structure of tooth

Cementum

It covers dentine

It is attached to bone of Jaw with little elastic fibers

Anatomy of human teeth

Section - II

(C) **Solution :**

Diameter of circle = 6cm

Circumference = ?

area = ?

As,

Circumference of circle = πd

$= 3.14 \times 6$

$C = \boxed{18.84 \text{ cm}}$

3.14
$\times \quad 6$
$\overline{18.84}$

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Area of circle $= \pi r^2$

as $r = \frac{d}{2}$

$d = 2r$

$= 3.14 \times \left(\frac{d}{2}\right)^2$

$= 3.14 \times \left(\frac{6}{2}\right)^2$

$= 3.14 \times \frac{\cancel{36}^{9}}{\cancel{4}}$

$13.14 \times 9 = 28.26$

$A = 28.26 \text{ cm}^2$

(d) Identify the missing :

(i) 13, 24, 46, 90, 178, ... 354

+11 +22 +44 +88 +176

$178 + 176 = 354$

So, the missing no. is 354.

(ii) 5, 6, 9, 14, 21, ...30

+1 +3 +5 +7 +9

So, the missing no. is 30.

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(a)

Sum of 3- digit no. is 15

Sum of 10th and unit digit is 12

diff. of unit digit from 10th is 2

What is three digit no. = ?

Q#7 (a.) Distinguish I.Q and E.Q

I.Q	E.Q
• I.Q measures intectual skills • like working memory, Analytical thinking knowledge retention **I.Q calculation:-** $I.Q = \frac{\text{mental age}}{\text{Chronological age}} \times 100$ e.g A person mental age is 12 and he is 10 years old, it is calculated as $I.Q = \frac{12}{10} \times 100$ $I.Q = 120$	• It refers to emotional abilities and social skills • like regulation of interpersonal relations, empathisitig with others. • It enable humans to identify biases. • To coup with emerging technologies. • E.Q enable persons to think beyound box. • Emotional intelligence enhance over time.

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(b) present age of Anum = ?

after 20 years

(c) Peter mow lawn = 40 min.

John = 60 min.

Total time = ?

$$= \frac{\text{total time}}{\text{no. of persons}}$$

$$= \frac{40+60}{2}$$

$$= \frac{100}{5}$$

$$= 50 \text{ min.}$$

Bath will take 50 min. to mow the lawn.

(d)

Let no. = x

when multiplied with 3/5

$$x \times \frac{3}{5}$$

$$= 0.6$$

when x with $\frac{5}{3}$ $= 1.667$

$$= 1.667 - 0.6$$

Error = 1

$$5 \overline{)30} \quad 0.6$$

$$3 \overline{)5.0} \quad 1.667$$

3

20

18

1.667

0.6

1.0