

CSA

Part II

SECTION-I

(c) Global Warming

Global warming is the long term increase in Earth's average surface temperature. It means the entire planet is getting warmer over the long period. The main cause is burning of fossil fuels, along with deforestation, agriculture practices and industrial processes.

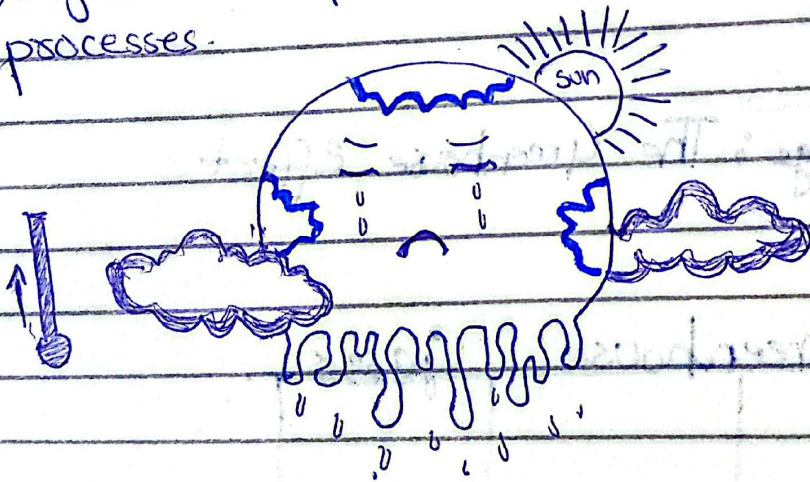


Image: Global warming

The Core Mechanism: Greenhouse Effect

Greenhouse Effect:

It is a natural process where certain gases in Earth's atmosphere - called as greenhouse

gases trap some sun's heat after it bounces off the Earth's surface. This is essential to keep our planet warm enough to support life like a blanket. This extra layer of gases act like a blanket, trapping too much heat and causing the Earth's average temperature to rise.

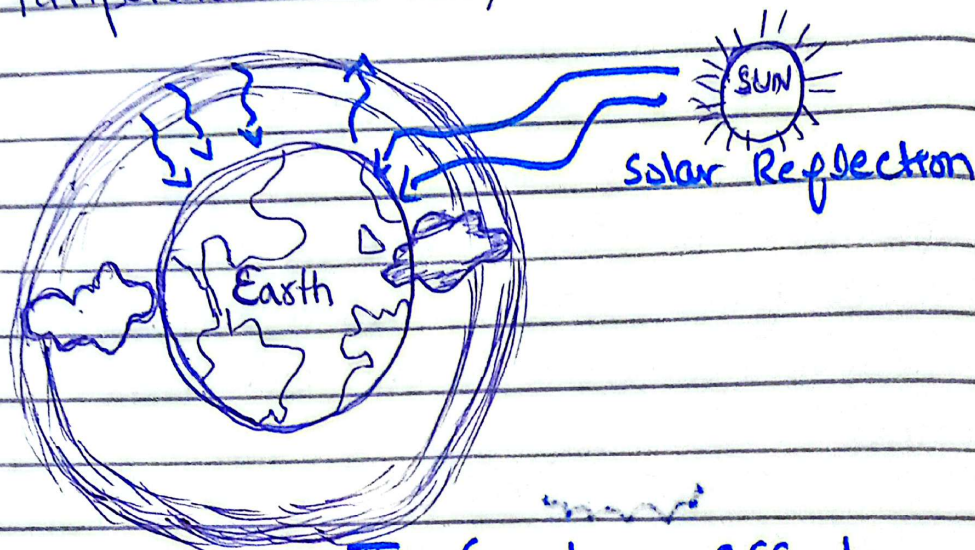


Image: The Greenhouse Effect

The Greenhouse Gases

Carbon dioxide
 CO_2

Methane
 (CH_4)

Nitrous
oxide (N_2O)

Fluorinated
gases

• Carbon dioxide

Produced from burning fossil fuels, solid waste, industrial processes

• Methane

Emitted from sources like coal, natural gas, oil, agriculture, livestock

• Nitrous oxide

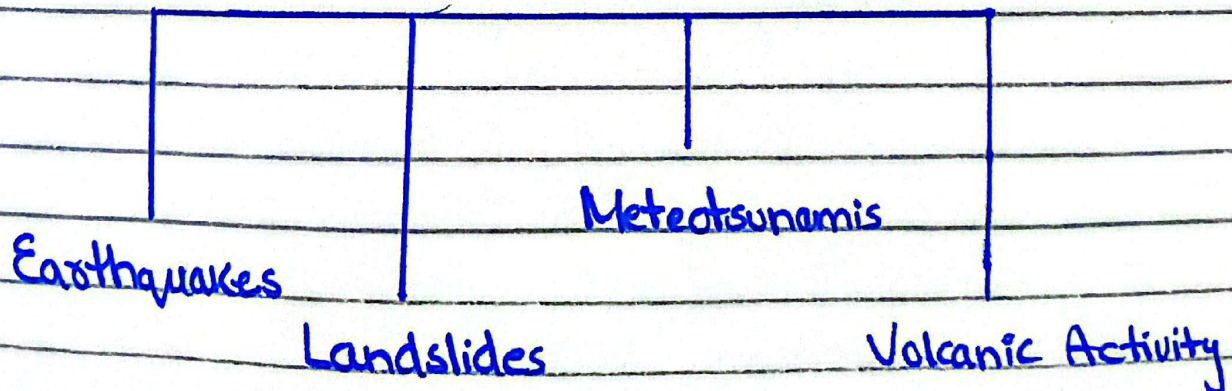
Released from organic agriculture and industrial processes, fuel combustion

(d) Tsunami

A tsunami is a very series of very long waves in a large body of water, typically ocean caused by large and sudden displacement of water.

The word comes from the Japanese tsu (harbor), and nami (wave)

↳ Natural Processes that Trigger Tsunami



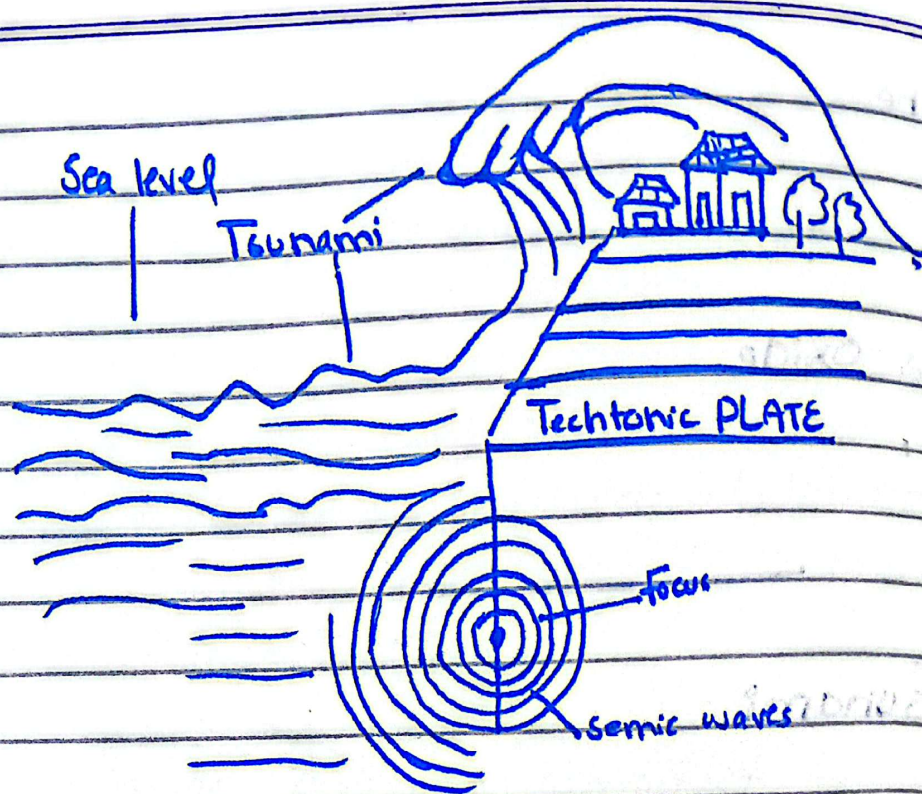


Image : Tsunami and Earthquake

a) Earthquake

The most common cause is large submarine earthquake (under the ocean) where one tectonic plate slide under another.

b) Landslides

Large slump of sedimented or rocks on the steep continental slope, can trigger by Earthquake or simply gravity. This moving mass of material rapidly displaces the water creating tsunami.

c) Volcanic Activity

Violent volcanic eruption can cause tsunami.

It can be explosive force of an underwater eruption or can be rapid moving of hot gas and ash plunging into ocean pushing water forward.

d) Meteotsunami

These are meteorologically generated long waves caused by rapid changes in atmospheric pressure associated with intense weather like thunderstorms. The air pressure disturbance pushes the water surface, creating a wave that amplifies in shallower coastal areas.

Potential Impact on Coastal Areas

(a) Massive flooding

Tsunami waves causes massive floods of low lying coastal land, creating chaos and phobia.

(b) Loss of life and Injury

Drowning is the prime cause of death. Injuries result by^{ing} from being crashed by falling structures.

(c) Displacement

Many fisherman families have to leave their homes, coastal areas to stay safe.

from tsunami. Port, fisheries and tourist industries are wiped out by tsunami.

QNO#03

(b) Enzymes

An Enzyme is a specialized protine (or RNA) that act as a biological catalyst in living organisms. They are tiny molecular machine that speed up the chemical reactions that happens inside the cell without being used up in the process. Enzymes function by lowering the amount of energy required to start a chemical reaction. This required energy is called as Active Energy.

Examples:

Function	Enzyme
Digestion	Amylase, Lipase
Metabolism	ATP synthase
Cell Repair	DNA Polymerase

Lock and Key Model

Enzymes are highly specific, each enzyme typically catalyzes only one or a very small group of reactions. This model is proposed by Emil Fischer, explains that substrate fits precisely into the active site to form an enzyme substrate complex.

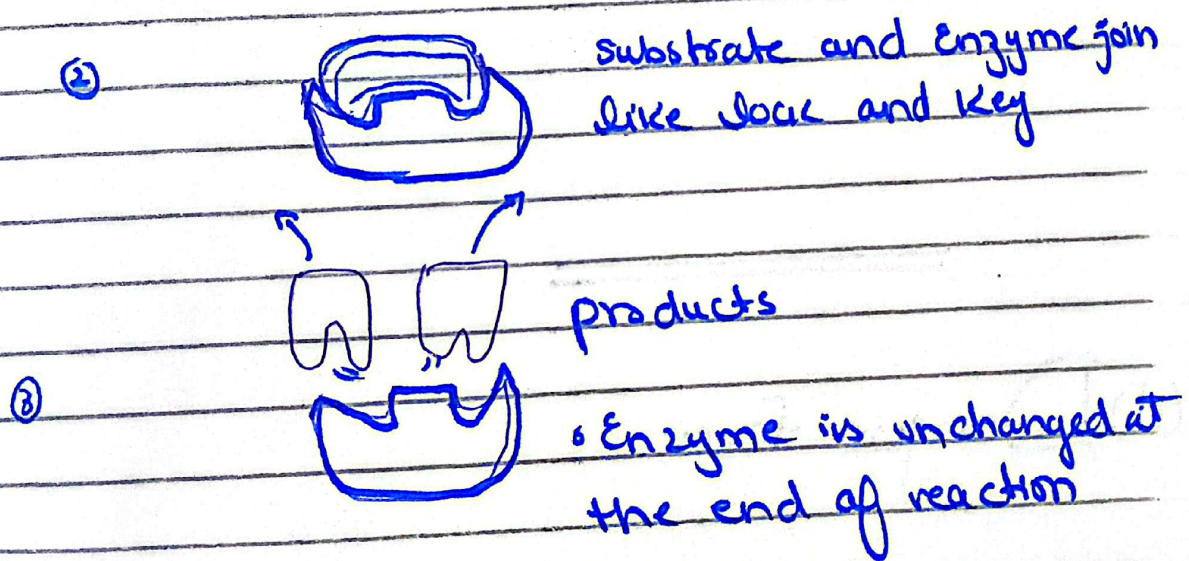
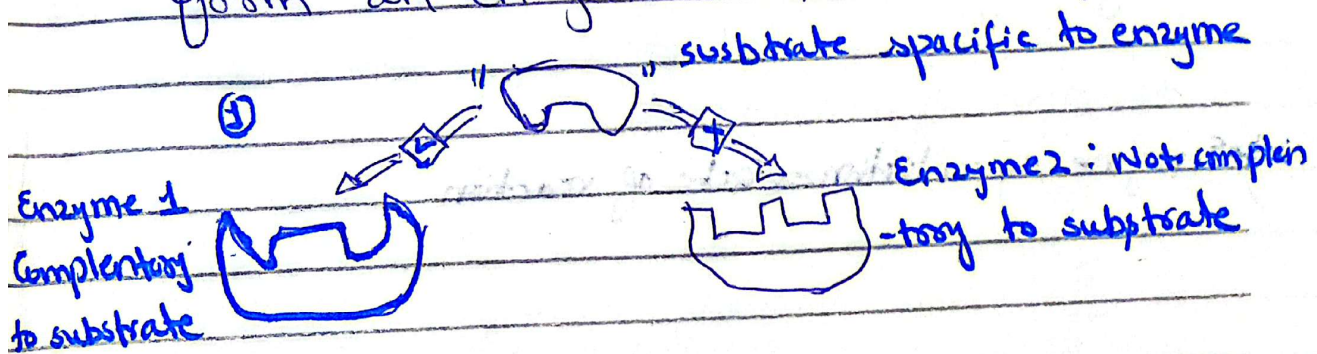


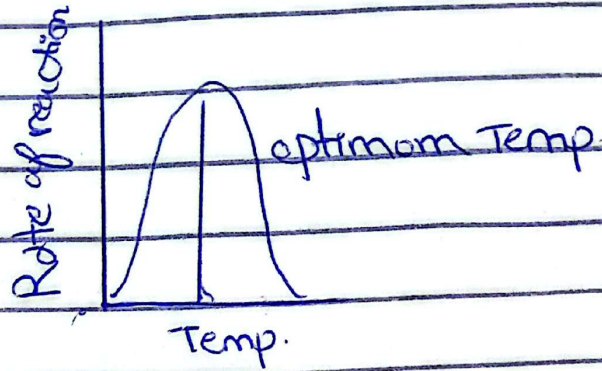
Image: Lock and Key Model

Factors Affecting Enzyme Activity

1. Temperature

All enzymes work most efficiently at an optimum temperature.

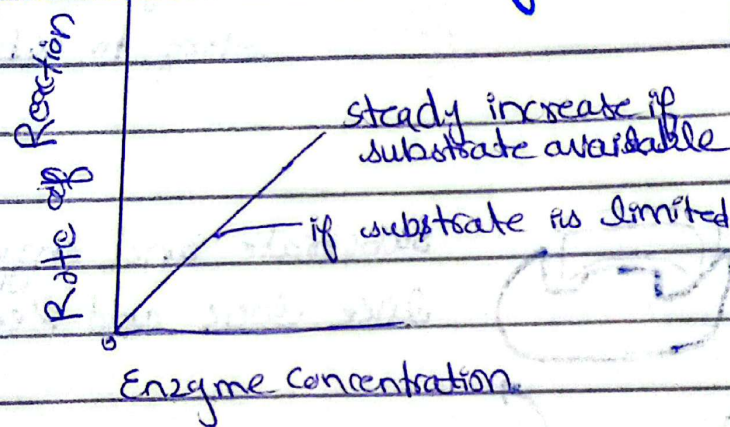
More heat = more Kinetic Energy



2) Enzyme Concentration

More the concentration of Enzyme, more is the rate of reaction

⇒ Enzyme concentration = rate of reaction



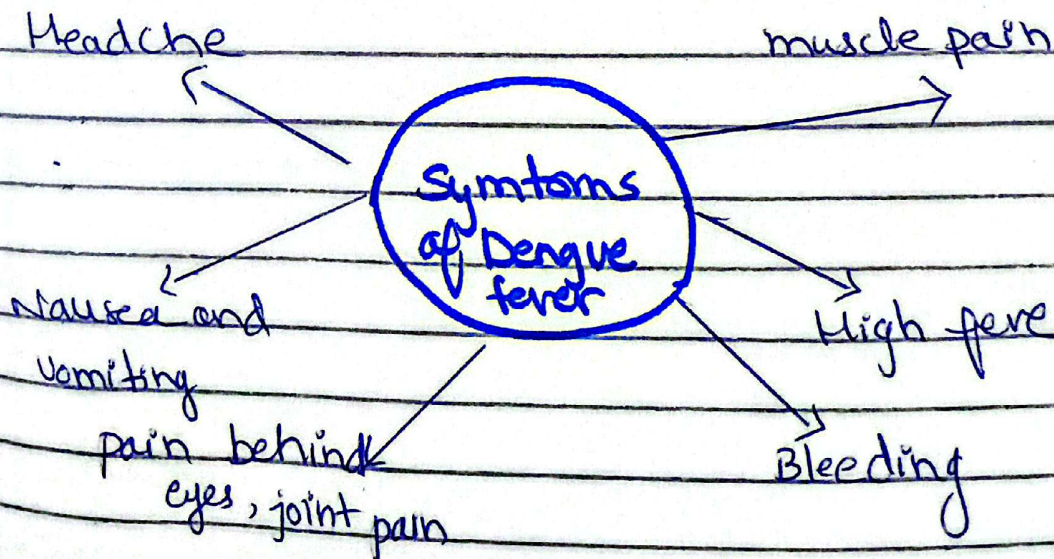
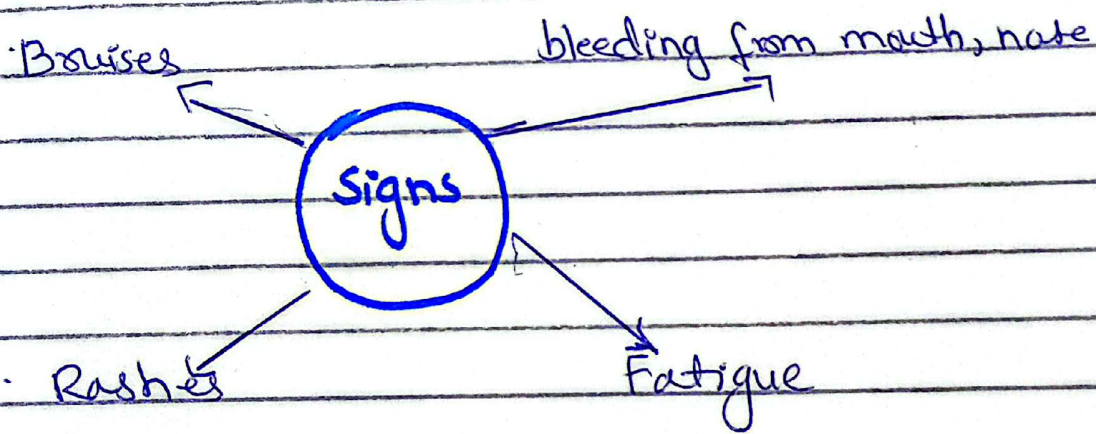
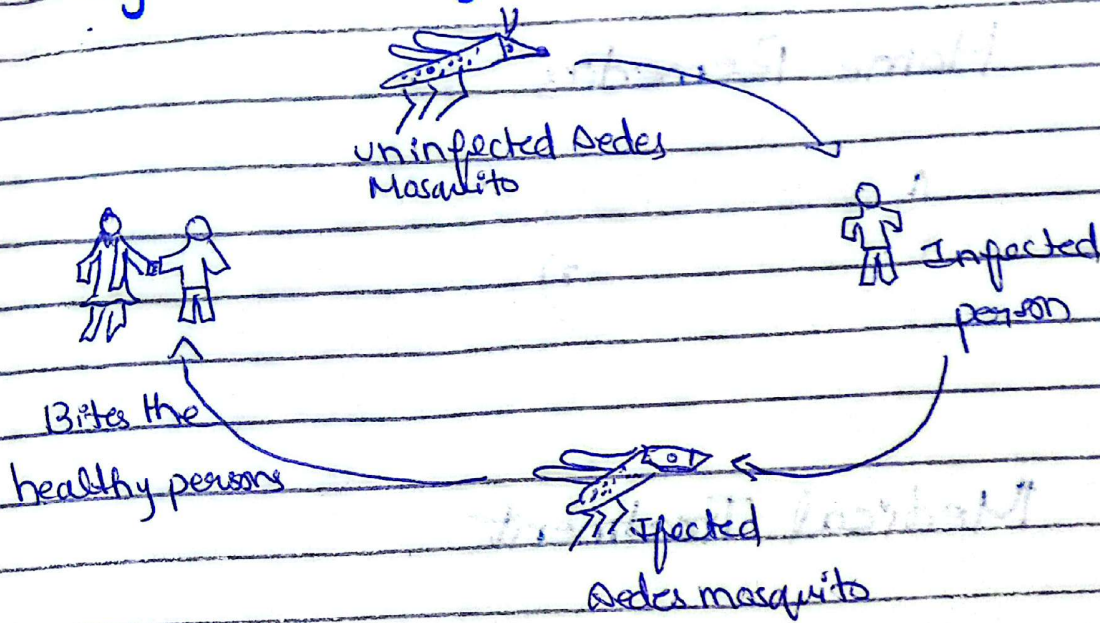
(d) Dengue fever

Dengue is a viral infection caused by dengue virus and spread by the infected Aedes Mosquito.

Vector of Dengue

- yellow fever mosquito (Aedes Aegypti)
- Dengue virus (DENV)
- Mosquito breed in standing water (pots, tyres etc).

Cycle



Preventions

• Community level

- education and awareness
- Management of water bodies
- Mosquito Repellent sprays everywhere
- Active Monitoring
- Health Emergency in Dengue season

• Individual level

- use - Mosquito net
- Mosquito repellent lotions
- Cover the waterbodies
- Immunization

4S - strategy for Prevention

- Search and destroy
- self protection measures
- seek Early Consultation
- Support Spraying

Qno# 04

(b) Acid Rain

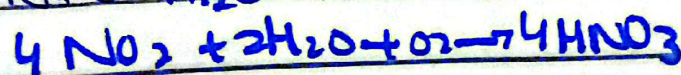
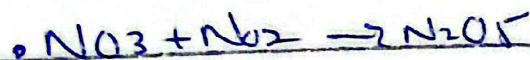
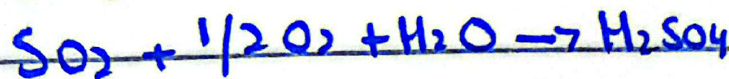
Acid rain is a rain or any other form of precipitation that is usually acidic. It describes as a any form of precipitation that contains high level of nitric

sulphuric acid.

pH : 4-2-4-4



Reactions



Effects

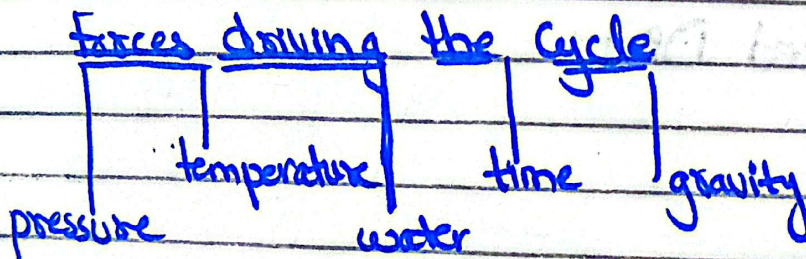
- It destroys vegetables, make them useless and harmful to health
- Aquatic life damage
- Damage buildings and environments.

(a) ROCK CYCLE

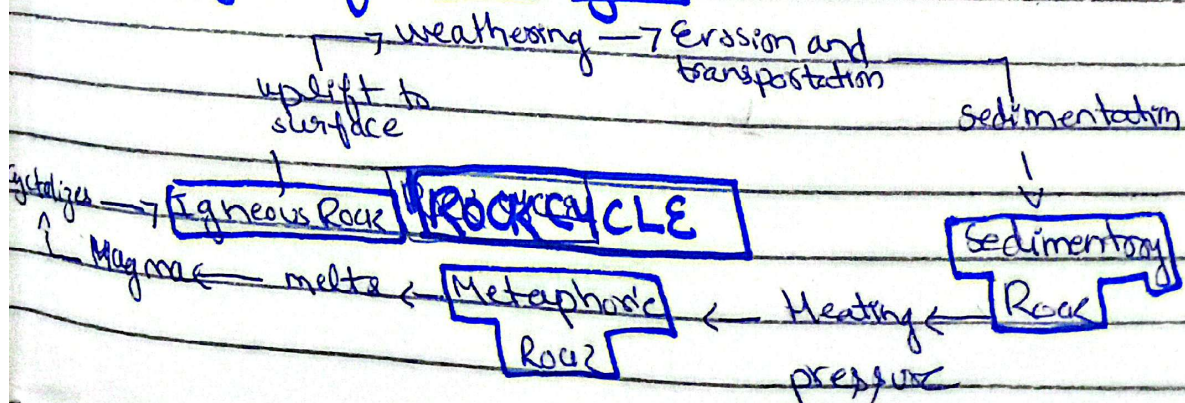
The transition through the geological time among the three main Rock types, Sedimentary, metamorphic, and Igneous.

Types

- 1) Sedimentary
- 2) Metamorphic
- 3) Igneous



Stages of Rock cycle



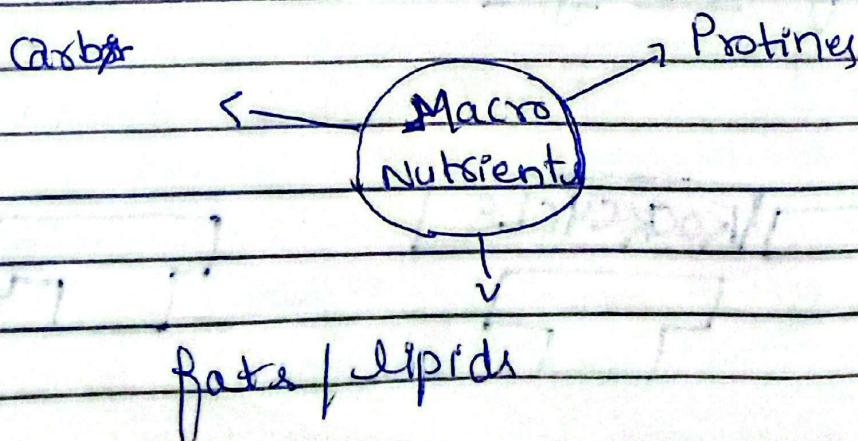
Difference between

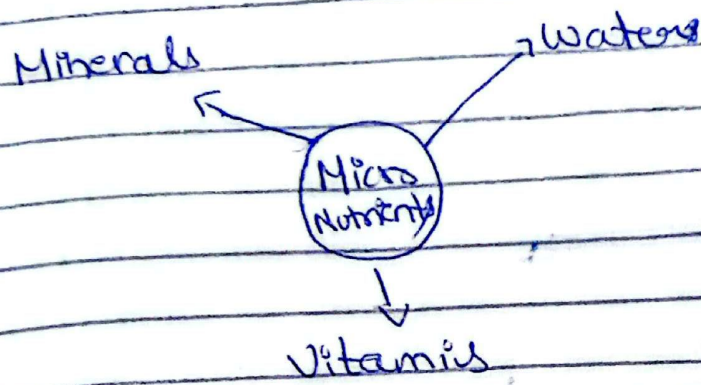
<u>Sedimentary</u>	<u>Metaphoric</u>	<u>Igneous</u>
• Form from sediment compaction	Forms by transformation of other rocks	Forms by magma and lava solidification
• It is crumbly and layered	Relatively hard, may or may not have layers	Hard, no layers
Example: Sandstone, Limestone	Marble, slate	Obsidian, granite

Q No # 05

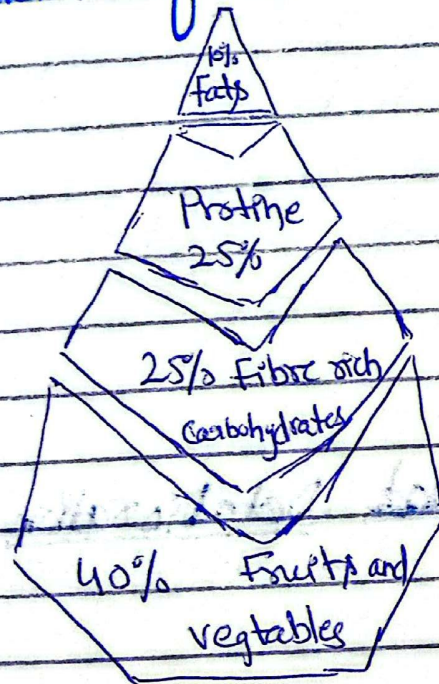
(a) Balanced Diet

It is a part of diet which contains the right proportion of essential nutrients. It can be macro or micro.





Constituents of Balance Diet



Function of Carbohydrates

- primary Energy: Breakdown of glucose
- Energy storage: glycogen for later use
- Sparing protine: allowing protine to focus on its structural role
- Building Blocks: RNA, DNA and ATP.

Function of Protine

- Tissue Building and Repair

- Enzymes and hormones
- Immune function
- Structural support

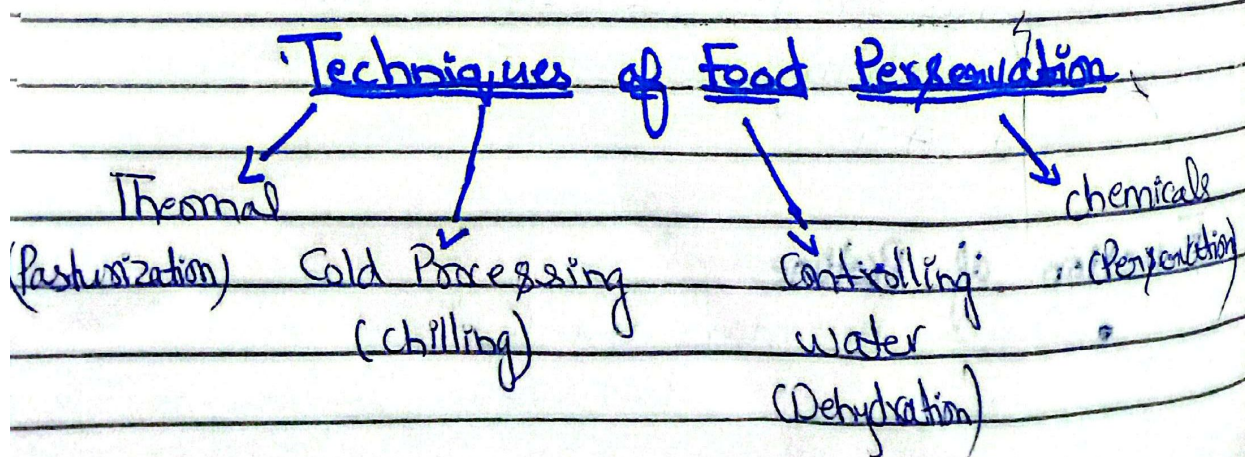
(b) Food Preservation

Food preservation is defined as processes and techniques adopted in order to maintain internal and external factors which may cause food shortage.

Causes of Food Deterioration

- Microorganisms e.g. bacteria, yeast
- Food enzymes
- Insects, rodents, parasites
- time
- Reaction with oxygen
- gain or loss of moisture
- changing weather

Techniques of Food Preservation



Pasturization

In this, mild heat applied for specific durations to reduce spoilage microorganisms, inactive enzymes.

It was developed by French scientist Louis Pasteur.

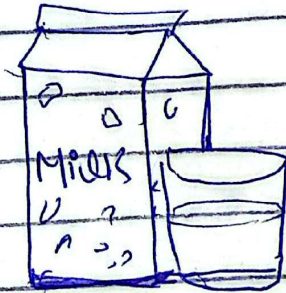


Image: Pasturized milk

Canning

Canning is a food preservation method using airtight containers and heat to destroy micro-organisms, creating a vacuum seal for a long term storage.



Image: Canned food.

Q No # 06

(d) Let n be the total no
of students = 78
 $n = 78$

Sum of 5 scores

$$98 + 95 + 92 + 90 + 85 \\ = 460$$

Equation for remaining

$$78n - 460 = 75(n - 5)$$

$$\Rightarrow 78n - 460 = 75n - 375$$

$$78n - 75n = 460 - 375$$

$$3n = 85 \Rightarrow 28$$

Hence, Total no of students = 28

Q No # 07

(c)

1 - Relative speed.

$$60 + 40 = 100 \text{ (km/hr)}$$

2. Time to meet

$$t = \frac{40}{100} = 0.4 \text{ hr}$$

City A Time = 8:00 AM

$$8:00 \text{ AM} + 4 \text{ hours}$$

$$= 12:00 \text{ PM} \text{ Answer}$$

(d)(7)

Let father's present age as F and son's age as S .

$$F + S = 75$$

$$\text{Ten years ago} = F - 10 = 4(S - 10)$$

$$F - 10 = 4S - 40$$

$$F = 4S - 30$$

$$\therefore F + S = 75$$

$$4S - 30 + S = 75$$

$$5S = 105$$

$$S = 21$$

$$F = 75 - 21 = 54$$

Hence, son age = 21, father's age = 54

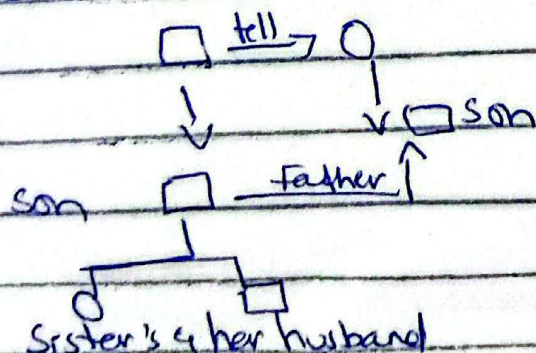
Q No # 08

(b) Sister's husband = brother in law

son of brother in law = nephew

Nephew = father of your son $\rightarrow$ you are the Nephew's wife

Hence the woman is Niece



(Q. 8 C C)

(i) Sequence : 4, 12, 6, 18, 9, 27, —
divid by 2 and multiply
by 03

$$\text{So, } 27 \times 3 = 81$$

(ii) 1, 2, 6, 24, 120, —
Multiply by

(d). Given

$$1) R < P < Q$$

$$2) Q < S < T$$

$$3) \text{Shortest} = 150$$

$$\text{Tallest} = 180$$

Height order : $R < P < Q < S < T$

Third Tallest = S

$$\text{Max range} = T - S$$

$$= 180 - 150$$

$$= 30 \text{ cm}$$