

(33898 - Zain Atta - 066)

General Science and

Ability

—(Section - II B)

—(Ans. No 7 B)

—(a)—

If 20% of x = y

then let $x = 100$

20% of 100 = 20

So, $y = 20$

Then, the value of y in terms of x will be,

20% of x = y

$$\boxed{x = 4}$$

Dos and Don'ts for General Science & Ability Paper

Hi there, you've done well. Know that acquiring knowledge is one thing and reproducing it in paper according to what's asked is another. There are a few things I would like to highlight.

1. A 5 marks part requires at least 2 and at max 3 sides of a paper. Know that there can be two or three parts of a question and their marks are divided accordingly.

So, address all of them in a just manner.

2. Focus on time management. You get 35 minutes to solve one question and about 8 minutes per 5 mark part. Manage your time accordingly.

3. You need to understand that your paper is supposed to look more scientific than theoretical. So, add flowcharts and diagrams where required.

4. Your handwriting and neatness can be really impactful. Avoid cutting and overwriting.

5. Focus on your spellings and your grammar. Here, in GSA there's no deduction in marks but your expression will definitely create an impact.

6. In ability portion, give explanation for analytical ability question in words. You need to understand that a 5 mark part requires all steps written and explained.

Good luck for CSS 2025. You're gonna rock in sha Allah. :)

—(b)—

$$\frac{P+Q}{2} = 5050$$

$$P+Q = 5050 \times 2 = 10100$$

Similarly,

$$\frac{Q+R}{2} = 6250$$

$$Q+R = 6250 \times 2 = 12500$$

And,

$$\frac{P+R}{2} = 5200$$

$$P+R = 5200 \times 2 = 10400$$

So, the value of P will be

$$Q+R + P+Q + P+R = 12500 + 10100 + 10400$$

$$2P+2Q+2R = 33000$$

$$P+(Q+R) = \frac{33000}{2}$$

$$P+12500 = 16500$$

$$P = 16500 - 12500$$

$$P = 4000$$

— (c) —

Two coins are tossed for 500 times, and we get:

Two heads = 105 times

One head = 275 times

No head = 120 times

P of getting two heads according to the given data

$$P(\text{2 heads}) = \frac{105}{500} = \frac{21}{100}$$

$$P(\text{2 heads}) = \frac{21}{100}$$

$$P(\text{one head}) = \frac{275}{500} = \frac{11}{20}$$

$$P(\text{one head}) = \frac{11}{20}$$

$$P(\text{no head}) = \frac{120}{500}$$

$$= \frac{120}{500} = \frac{3}{5}$$

$$P(\text{no head}) = \frac{3}{5}$$

-(d)-

$$\text{Dad's age} = 4 \times \text{James's age}$$
$$D = 4J$$

After 14 years,

$$D + 14 = 2 \times J$$

$$\text{James's age was } \frac{D}{4} = J$$

$$J = D/4$$

After 14 years,

$$D + 14 = 2J$$

$$D + 14 = 2\left(\frac{D}{4}\right)$$

$$D + 14 = \frac{D}{2}$$

$$14 = \frac{D}{2} - D$$

$$14 = \frac{D - D}{2}$$

$$28 = 1 - D$$

$$D = 1 - 28$$

$$D = 27 \quad \text{Now;}$$

$$J = \frac{D}{2} = \frac{27}{2} = 13.5$$

So, sum of their age is

$$J + D = 13.5 + 27 \Rightarrow 40.5 \text{ age}$$

→ Ans No. 8 B

-(a)-

Formula of Brian for calculating
charge to his customers.

$$\text{Charge} = £20 + 4n$$

If a house has 7 windows

then $n = 7$

~~$$\text{Charge} = £20 + 4(7)$$~~

$$= £20 + 28$$

$$\text{Charge} = £48$$

-(b)-

(i). valciip =

(ii). tyhniaum =

(iii). a13ehcc =

(iv). moniteah =

(v). ta1eph =

—(c)—

$$A = \{10, 11, 12, 13, 15\}$$

$$B = \{10, 12, 14\}$$

$$U = \{10, 11, 12, 13, 14, 15, 16, 18\}$$

$$(A \cup B)' = A' \cap B'$$

$$A \cup B = \{10, 11, 12, 13, 14, 15\}$$

$$(A \cup B)' = U - (A \cup B) \text{ (complement)}$$

$$U - (A \cup B) = \{16, 18\}$$

Now

$$A' = \{14, 16, 18\}$$

$$B' = \{11, 13, 15, 16, 18\}$$

$$A' \cap B' = \{16, 18\}$$

So, hence proved that

$$(A \cup B)' = A' \cap B'$$

-(d)-

Total number of triangles
in the figure were = 24

2

—(Section - I)B—

—(Ans No. 3)B—

—(a)—

Lunar Eclipse

According to pure astronomical terms, earth and moon are also kind of satellite which are in constant motion. In simple words, the earth revolves around sun and sun also has a motion. Moreover, the moon is also motion and revolves around the earth, and therefore it called the satellite of the earth.

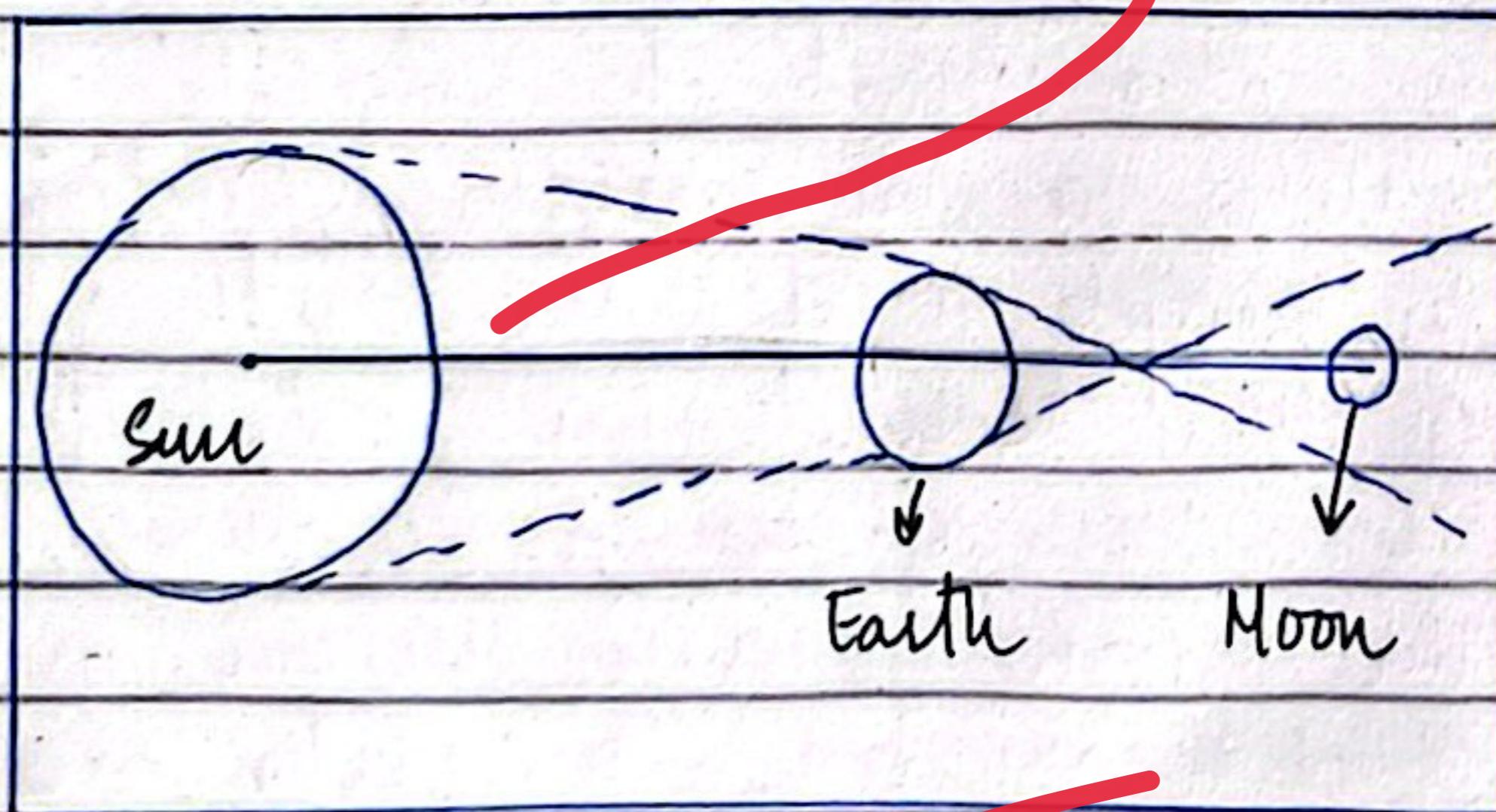
Add proper diagram
Explaining all
things



Solar and lunar eclipse are natural phenomenon which occurs when a perfect alignment takes place between these bodies.

→ To understand lunar eclipse, a diagram is drawn, which will explain about the occurrence of lunar eclipse.

"Lunar eclipse takes place when the earth comes in between the sun and moon, and hence no sunlight reaches to the moon"



(Diagram of lunar Eclipse)

-(b)-

Enzymes

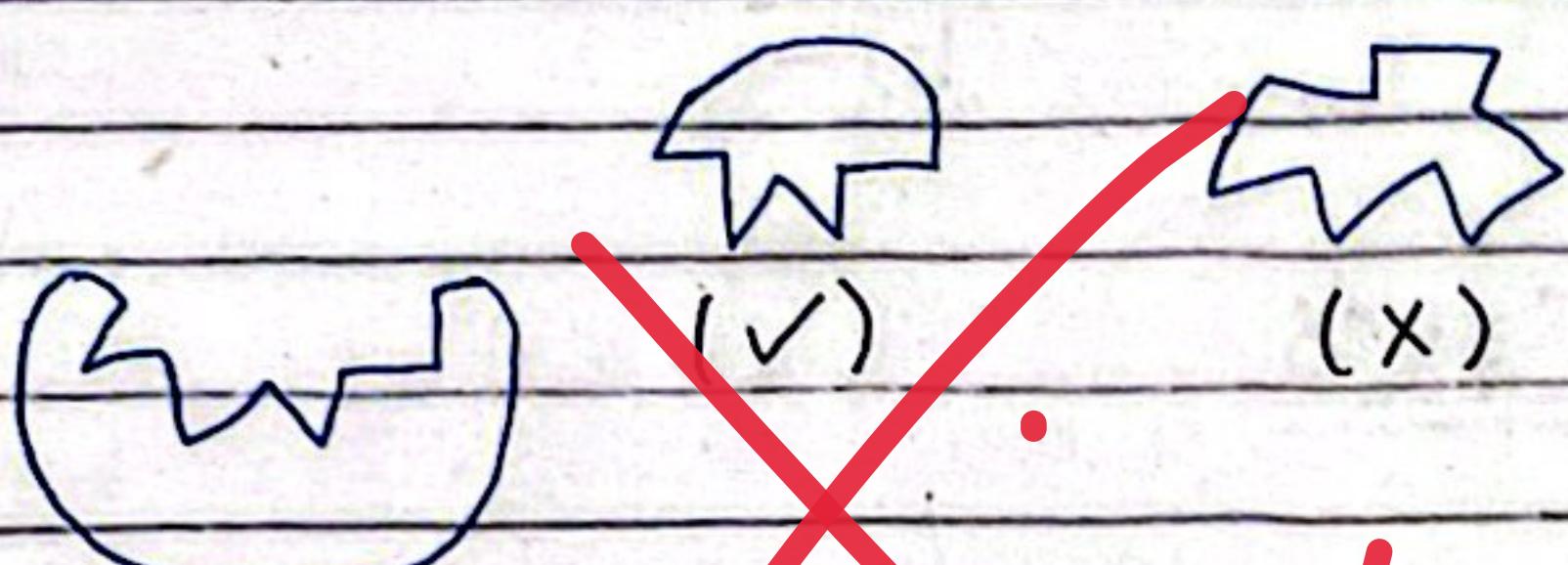
"Enzymes are those which speeds up the rate of chemical reaction inside our body without having themselves being used"

→ Enzymes can be helpful for a wide range of things in our body i.e. it can speed up the process of metabolism.

→ Two models are used in the past, which explains the functioning of enzymes.

(a). Lock and key model

According to lock and key model, the substrate are rigid and they do not change their shape what so ever, its like lock in which only the appropriate key will be used;

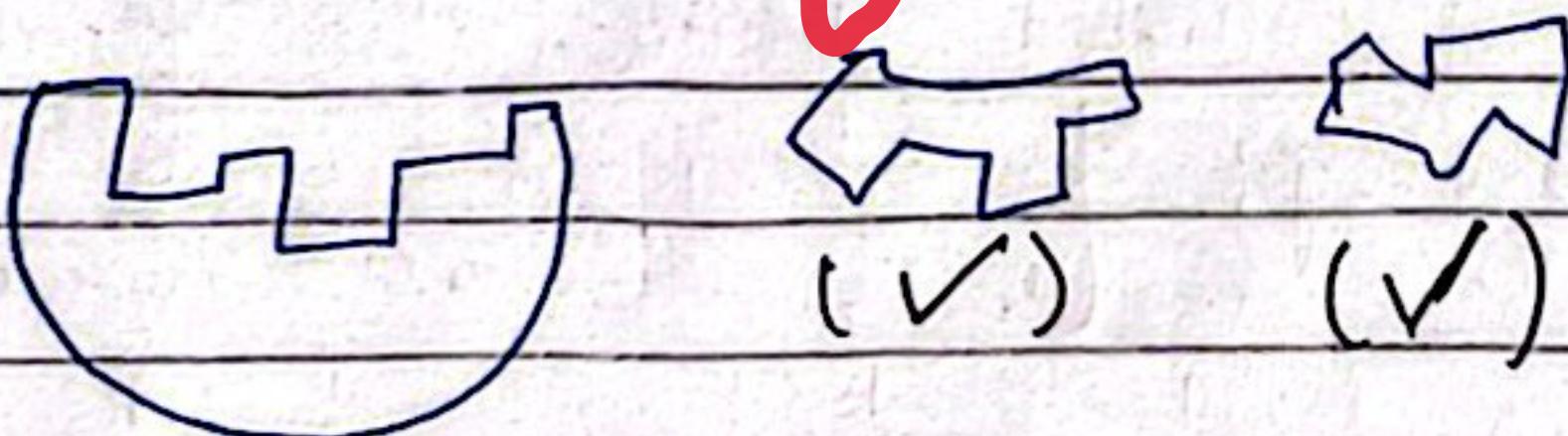


(Lock and key model)

(b) Induced-fit model

This model is flexible, as the object can change its shape according to the requirement which means that substrate is much more adaptable and flexible.

→ There are alloenzymes, holoenzymes and others as well.



(Induced fit model)

Functions and Uses of Enzymes

Enzymes can be used in many industries as an agent to speed up the chemical reactions.

For instance, it can be used in following industry;

- a - Leather Industry
- b - Textile
- c - Enzymes are most widely and commonly used in detergents i.e Surf Excel or Borax kinds of detergents to speed up chemical reaction with the stain.

~~acb~~

EMR

EMR stands for electro-magnetic radiations and they are also widely used in our day to day gadgets as well as in high tech military equipments.

Diagram

curr.

Grest

Trough

Trough

"The distance between two consecutive crests or troughs is known as wavelength"

→ The shorter the wavelength the stronger the electro magnetic radiation is.

Uses of EMR

a- In TV or AC, remote infrared (a type of EMR) is used.

b- Detonators of bombs also uses similar kind of technology.

c- Our mobile phones are incomplete without EMR.

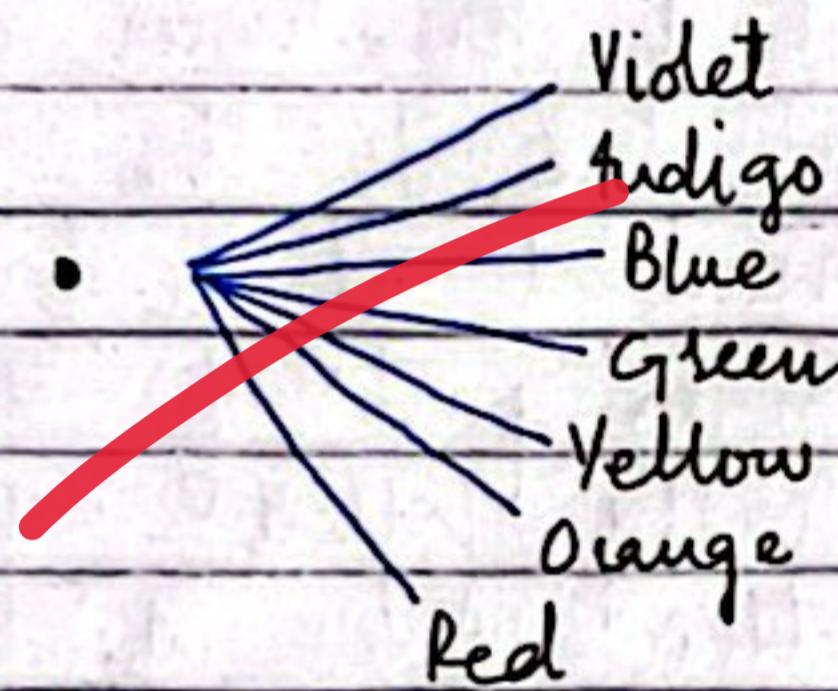
d- Similarly, microwaves are used in ovens to heat or cook food are also an example of EMR.

→ Radiowaves, microwaves or infrared radiation are examples of EMR

EMR Spectrum

EMR spectrum means different kinds of lights with different wavelengths.

→ VIBGYOR



→ The red has the shortest wavelength and is stronger and violet is the weakest in the spectrum.

— (d) —

Earthquakes and Volcanoes

Earthquakes and volcanoes are both naturally occurring phenomenon, which can serious disaster. Earthquakes usually takes place due to the movement of tectonic plates and the movement of the plates

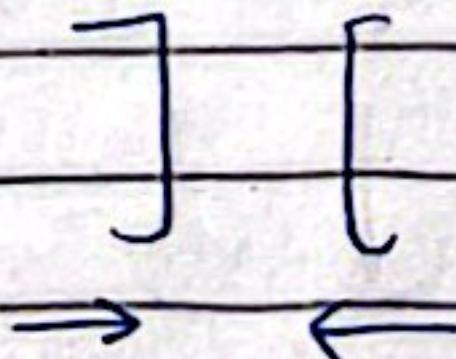
Can occur naturally as well as through man's activities.

→ Testing of nuclear bombs or through heavy drilling.

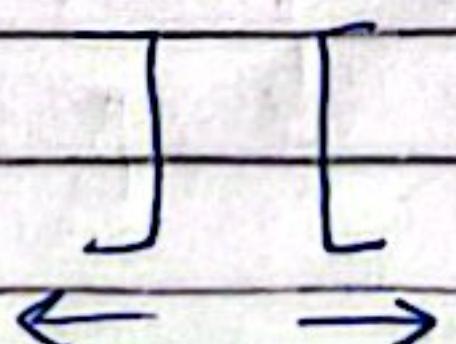
→ Earthquakes and volcanoes are both interlinked sometimes, and mostly occurs due to the divergent movement of tectonic plates. The inner part of the earth is usually filled with hot and molten rocks which is known as magma. So, when the tectonic activity takes place it triggers volcanic eruption and it can happen inside the ocean as well as on land.

Movements of Plates

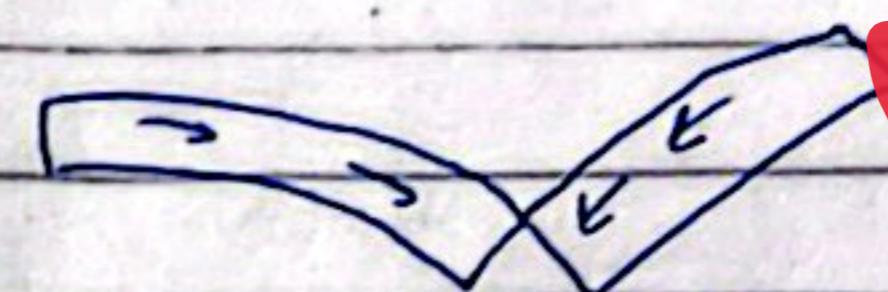
a. convergent



b. Divergent

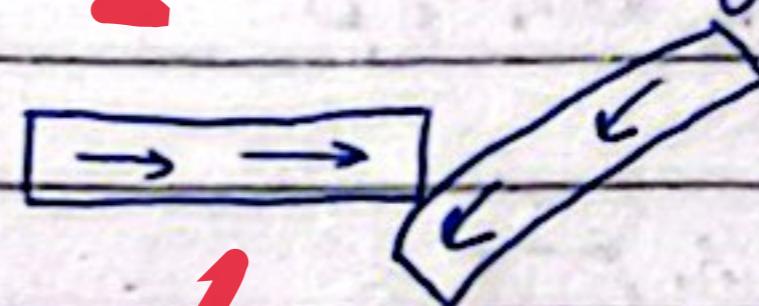


In case of oceanic-oceanic shelf movement, this happens;



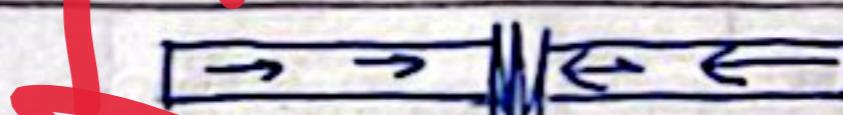
(which causes earth quake)

In case of oceanic-continental shelf;

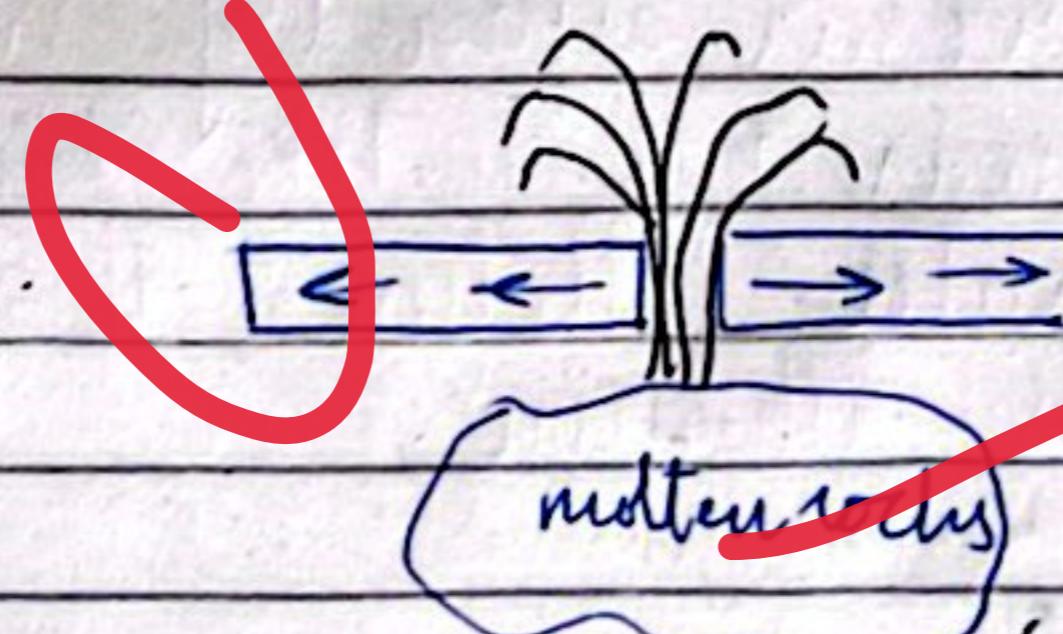


(It also triggers earth quake)

and in case of continental-continental shelf a strong magnitude of earth quake takes place

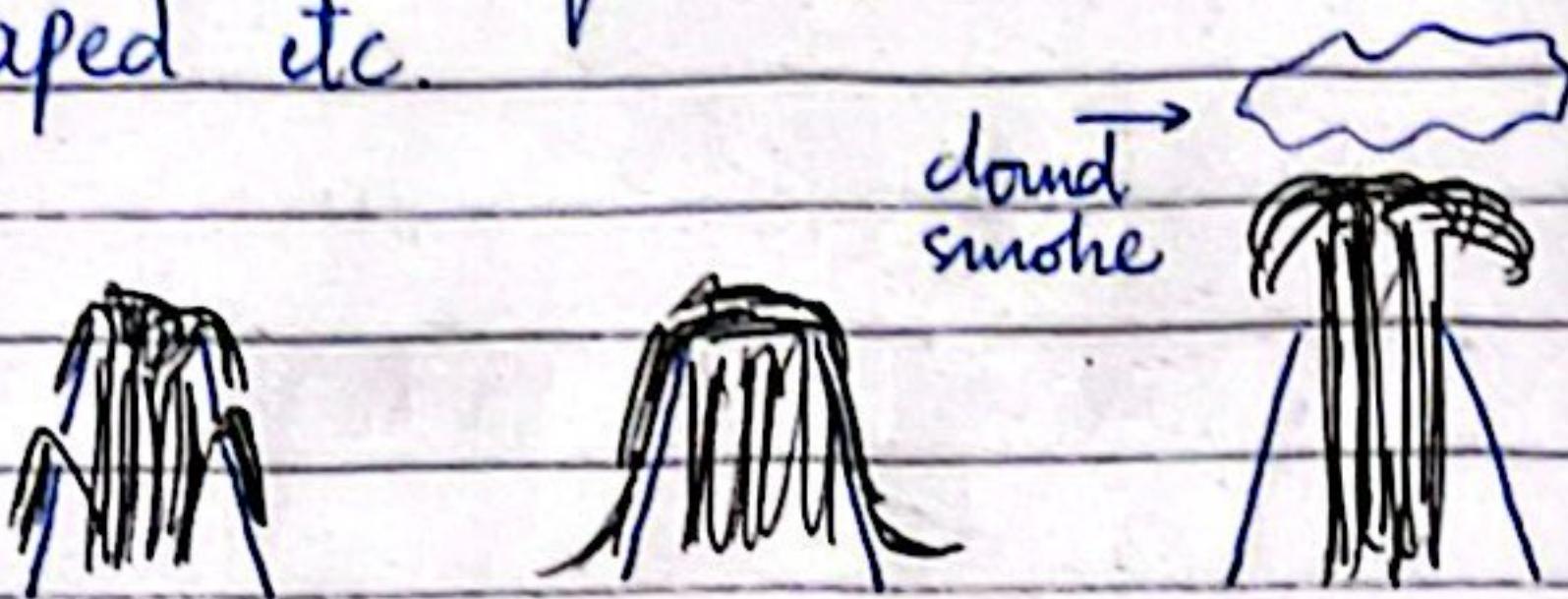


But, usually volcanic activity happens due to the divergent movement;



(magma)

→ Following types of volcanoes erupt due to earthquakes, such as cone-shaped etc.



—(Ans No. 4)—

—(a)—

Noise Pollution

“A kind of Pollution that can cause disturbance in the habitat of planet and environment due to high amount of sound energy is said to be Noise pollution”

→ Noise pollution has become a serious concern especially in urban areas, but unlike land, air or water pollution, it garners very less attention.

like every other species, humans also respond to sound energy but its excess can cause serious problem for health of human and the environment. For instance, listening to relaxing music soothes our body but if the music becomes too loud it makes us uncomfortable.

Harmful Effects

a. Unnecessary use of horn can cause road rage, which can lead to anxiety as well as accident.

b. Moreover, the anxiety and depression caused by noise pollution can also lead to domestic violence in homes especially on children and women.

c. Similarly, noise pollution can cause hearing issues and sometimes lead to permanent hearing loss.

d. It can also cause miscommunication in all

events of social life. For example, Batsmen often miscommunicate during running in a high-voltage match (Pakistan vs India), and get out, which can affect the whole team. It happens due to extreme level of noise.

Similarly, soldiers can miscommunicate in battlefield and teachers in the classroom

Ways to Curb

- a. Heavy fine on unnecessary working
- b. use of soundproof shield in sports stadium
- c. Promoting the use of headphones over loudspeakers
- d. Banning loudspeakers for music in election campaigns
- e. Media Awareness on the issue of noise pollution

f- Government's role in socialization of masses; leading them by example.

g- long term tolerance strategy among masses can be helpful in reducing unhealthy noise level.

—(d)—

Lithosphere

- Our Planet Earth is composed of different things such as lithosphere, hydrosphere and biosphere.
 - When they combine they form the complete habitat of Earth.
- According to functionalists, all of them are necessary for sustaining life on Earth.

“Everything that constitutes our land is known as Lithosphere”

→ our lithosphere consists of different kinds of rocks, minerals in the form of deserts, mountains etc.

Rocks are also part of lithosphere which can be of different types such as igneous rocks.

→ Some rocks like marbles and stones are very rare and expensive and are formed after hundreds of years beneath the earth i.e Ruby or Sapphire or diamonds.

→ Rocks are widely used in every field of life from jewellery to construction.

→ African region is so abundant in such natural resource.

a. Diamonds in rings or jewellery

b. Marbles on floor or walls

Similarly, minerals are absolutely essential for the living organisms such as plants, animals, or humans, because they are needed for the proper functioning of body.

→ Minerals like potassium, phosphorous, calcium, zinc are necessary. Moreover, iron is also a very important minerals.

→ Minerals use;

a. Minerals are used for the growth of plants

b. Zinc is a crucial component of human sperm

c. Calcium is necessary for bones, so do phosphorus and potassium (K).

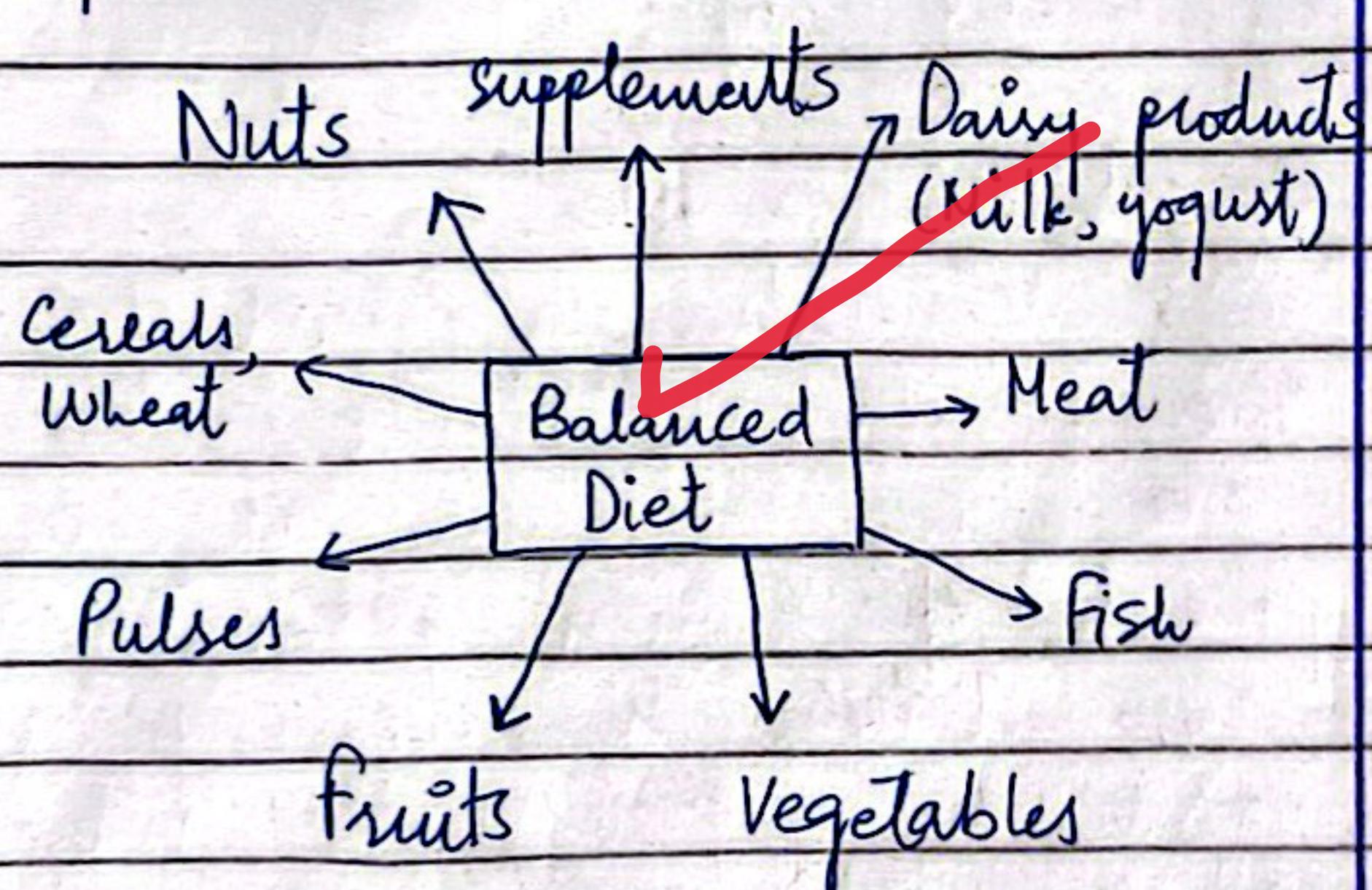
—8b3—

Fibers and Balanced diet

Human body needs amount of nutrients from 7 different in order to constitute a balanced diet.

These 7 groups are absolutely vital which include Proteins, Carbohydrates, fats, minerals, fibres, Vitamins etc.

→ If a diet is short of anything among this, then it is considered to be unbalanced diet which can cause health implications



→ In a country, where poverty is at high level, it is impossible to maintain a balanced platter in each meal. Therefore, those who can afford can make a weekly diet plan based on the 7 groups

Importance of fibre

Similar to protein, fibres are very crucial for our body. They are instrumental in;

- a- Muscle formation and strength
- b- Digestive system

Fibres provide structure to our muscle and provides them the strength to carry out demanding task.

-(c)-

Drinking Water

A drinking water quality can be measured using a pH scale which determines the base and acidity of the water.

- A water save from harmful components such as NO_x and SO_x or other rubbish and is appropriate according to pH scale is considered save for drinking purpose.

→ A water coming from a running stream is also considered safe for drinking, whereas, stagnant water can be very harmful because it can be a source of many harmful diseases.

Poor quality of water can cause;

- a. Cholera
- b. Typhoid
- c. Constipation

→ Moreover, dengue also grows in stagnant water. So, it is necessary to secure the water in cans by properly placing lid on them and using them timely.

→ Water which is drinkable can also be degraded due to man-made activities due to ocean-pollution, land-filling etc.

→ Moreover, water coming from melting glacier is also considered fresh and can be consumed for drinking.

Water drinkable standard;

a- Boiling

b- Through filtration
techniques

(These common practices can make
water drinkable and safe)

1