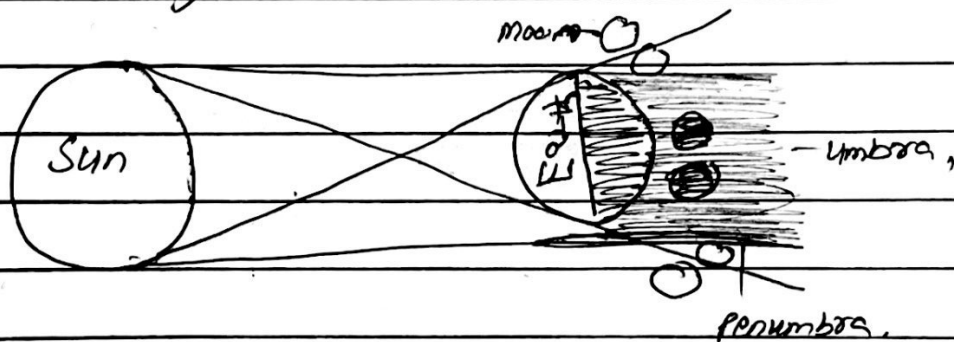


Q No. 3

(a) Lunar eclipse:

The moon moves around the earth, at the same, the earth orbits the sun. Sometimes the earth moves between the sun and moon. When this happens, the moon change its colour due to the unavailable light of the sun reflected by moon. The moon get covered by the shadow of the earth. It can only happen twice a year. And it is only visible at night to human eye.



There are three types of lunar eclipse.

- (1) Penumbraled lunar Eclipse:- It happens when the moon only passes through the shadow of earth. It is not visible as there is only slight change in moon's colour.
- (2) Partial lunar Eclipse:- when the moon is only half covered by the shadow of the earth.
- (3) Total lunar Eclipse. when the entire moon passes through the shadow of earth.

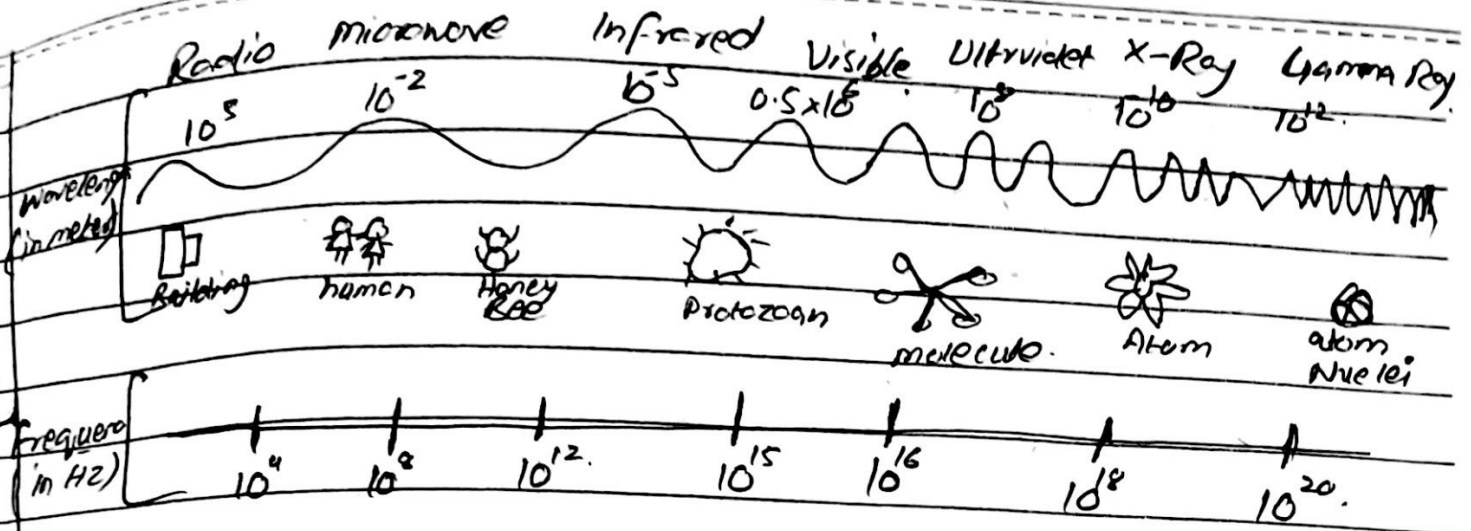
(b) Function of Enzymes:

The most ~~important~~^{basic} function of Enzymes is to increase the rate of reaction.

- Enzymes helps in digestion. For example-
- Lactase:- Breakdown the lactose, sugar found in milk. People who are lactase intolerant lack sufficient lactase, leading to digestive issues when they consume dairy products.
 - Amylase:- It helps in breaking starch into sugar during digestion. It is found in saliva. e.g, when you chew bread, amylase start breaking down the starches, making it sweeter as you chew.
 - DNA polymerase:- Crucial for DNA replication, this enzyme help to form new strand of DNA during cell division.
 - lipase:- This enzyme breakdown fats into fatty acids aiding in fat digestion.

(C) Electromagnetic Radiation

It is a form of energy all around us in the form of x-rays, radiowaves, microwaves etc.. It is characterized either by frequency or wavelength of their oscillation. To form Electromagnetic Spectrum, which includes in order to increase frequency and decreasing wavelength: radiowave, microwave, infrared, visible light, ultraviolet, x-ray and gamma rays. This array of rays are called Electromagnetic waves.



Electromagnetic Spectrum.

(d) Earthquake and volcanic eruption interconnection.

Answer:-

Yes, Earthquake and volcanic eruptions are definitely interconnected in various ways:

- ① **Tectonic plates:** Both earthquake and volcanic eruption are caused by the movement of tectonic plates. These plates move across the underlying mantle of the earth's crust.
- ② **Subduction zones:** When one plate is being forced under the other, pressure builds up leading to earthquakes and volcanic eruptions.
- ③ **Volcanic activity:** Volcanic eruptions can trigger earthquakes as the movement of magma causes stress on rocks. Similarly, earthquakes can sometimes precede volcanic eruptions by destabilizing the magma chambers.
- ④ **Ring of fire:** A well-known example is the Pacific Ring of Fire, where many earthquakes and volcanic eruptions occur due to the active plate boundaries.

Q104:

(a) Noise pollution:

Noise pollution is the presence of excessive and disturbing noise that can cause harm to humans, animals and ecosystems.

• Harmful effects.

- ① Health problems: It can disturb sleep patterns, and also lead to hearing loss, and cardiovascular disease.
- ② Mental Issue: Excessive noise can ~~develop~~ ^{develop} anxiety, depression, and anger issues.
- ③ Cognitive Issue: It can lead to disturb consciousness and memory loss, especially in children.

• Ways to curb Noise pollution.

- ① Legislative Enforcement: Enforcing laws on noise regulation and setting permissible noise ~~or~~ levels in different areas.
- ② Urban planning: Design urban place to combat noise, such as creating greenbelts and sound barriers.
- ③ Technology: Using quieter machinery, vehicles equipment. Implementing sound-cancelling technologies in urban infrastructure.
- ④ Public awareness: Create awareness among people ~~of~~ about the dangerous effects of noise on human health.
- ⑤ Natural solutions: Planting trees and shrubs that can act as natural sound barrier.

(b) Importance of fibre in diet:

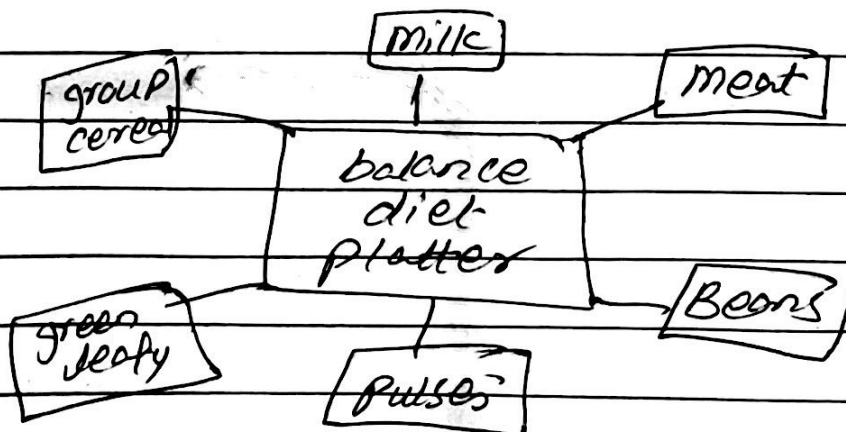
Following are the ways which shows the importance of fibre in diet.

- (1) Digestive health: It helps in moving the food smoothly during digestion.
- (2) ~~Steady sugar level~~ ^{Heart health} Heart health: It prevents heart diseases by controlling the cholesterol level.
- (3) Blood sugar level: Fibre slows down the absorption of sugar in blood to prevent the ^{risk of} type 2 diabetes.
- (4) Weight management: High-fibre food are more filling and can help control the appetite, leading to better weight management.
- (5) Gut health: Fibre act as 'prebiotic', feeding the bacteria beneficial in the gut.

Platter of food considered balance diet.

Balance diet include food from 5 groups

- (a) Carbohydrates
- (b) minerals
- (c) Vitamins
- (d) Fats
- (e) Fibre.



(c) Drinking water quality & standards

WHO's Guidelines for Drinking-water Quality, set up in Geneva, 1993, and are the international reference point for standard setting and drinking water safety.

DATE: _____

Pakistan Environmental Protection Agency
finalised National standards for quality
Drinking water in June 2008:

Parameters	Pakistani Standards	WHO Standard
• Bacteria.		
E. coli or thermo-tolerant	must not be detectable in any 100	must not be detect in any 100.
Physical.		
→ Colour	≤ 15 True Colour Unit	≤ 15 True colour units
→ Taste	Non objectionable/Acceptable	Non objectionable Acceptable.
→ Turbidity	5 NTU (units)	5 NTU (units)
→ Total hardness	≤ 500 mg/l	—
→ TDS	1000	1000
→ PH	6.5-8.5	6.5-8.5.
Essential Inorganic	mg/litre	mg/litre.
Calcium	200	No guideline
Magnesium	100	No guideline
Sodium	200	200
Sulphate.	400	500
Nitrate.	50	50.

(d) Lithosphere:

The lithosphere is the outermost layer of the earth, consisting of crust and uppermost part of the mantle. It is rigid and cool in comparison to other layers of earth. It is broken into tectonic plates.

Minerals

Naturally occurring inorganic substance with a specific chemical composition and crystalline structure.

→ Each mineral has unique physical properties like hardness, colour and lustre.

Rocks :: Rocks are made of one or more minerals. Minerals are the building block of rocks.

Types of rocks.

- ① ~~These~~ igneous rocks: These rocks are formed from solidification of magma.
- ② Sedimentary rocks: formed from accumulation and compression of ~~rocks~~ sediments.
- ③ metamorphic: formed from the transformation of existing rocks, under high pressure and temperature.

Section - II

Q No. 6

(a) 9, 8, 10, K, 12, is 15

$$\text{mean} = \frac{9+8+10+K+12}{5} = 15$$

$$= \frac{39+K}{5} = 15$$

$$= 39+K = 75$$

$$= K = 36 \text{ Ans.}$$

(d) -10, -8, 6, 40, 102, ?

Sol:

-10, -8, 6, 40, 102, ?

-10, -8, 6, 40, 102, 98 Ans.

Q No 7:

$$(b) \frac{P+O}{2} = 5050$$

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

$$3) \frac{P+R}{2} = 5200$$

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

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

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

$$= (P+Q) + (Q+R) + (P+R)$$

$$= 10100 + 12500 + 10400$$

$$= 33000 \text{ divided by } 2.$$

$$P+Q+R = 16500$$

$$= (Q+R) - P+Q+R.$$

$$= 16500 - 12500 = 4000$$

$$P = 4000 \text{ Ans.}$$

(c)

Sol:-

$$\text{probability of two heads} = \frac{105}{500} = \underline{0.21}$$

$$\text{probability of one head} = \frac{275}{500} = \underline{0.55}$$

$$\text{probability of no head} = \frac{120}{500} = \underline{0.24}$$

(d)

Jamie's current age = J Jamie's dad age = $4J + 14$ y.Jamie's dad twice age of Jami = $4J + 14 = 2(J + 14)$

$$= 4J + 14 = 2J + 28$$

$$2J + 14 = 28$$

$$2J = 14$$

$$J = 7.$$

Jamie's dad's age = $4 \times 7 = 28$.

The Sum Jamie's age now and Jamie's dad's age

$$= 7 + 28$$

$$= 35.$$