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#063

Part-II

(Section-A)

Question #3

a- What are proteins and Carbohydrate? Give the digestion.

Carbohydrate

The word carbohydrate derived from the Greek word SAKKYON which means sugar. carbohydate is the chief source of energy. It provide 3.9 calories per gram of energy. When carbohydrates are broken down into monosaccharide it convert into the simplest form of sugar.

Empirical Formula

carbohydrate have empirical formula $C_m(H_2O)_n$. m is different from the n. It is organic compound consist of carbon, Hydrogen, oxygen.

Example:

1- Glucose 2- Lactose 3- Hylauranicacid.

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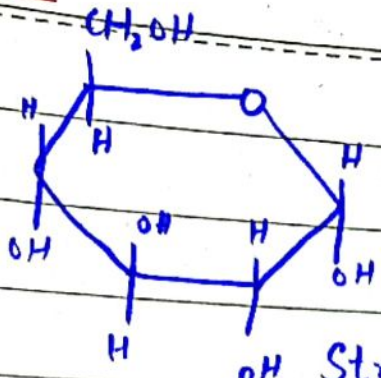

Structure of glucose.

What is Digestion:

It is the breakdown of larger and complex molecule into the smaller molecules in the presence of enzyme. The basic organs involves in the digestion is mouth, Stomach, small intestine.

Digestive system of Human Body:-

1- Mouth or Buccle cavity
2- Esophagus
3- Stomach
4- small intestine (ileum, Jejuneum duedenum)
5- Large intestine

Digestion of carbohydrate:-

Carbohydrates are the complex form of sugar like polysacchride, disacchride - complex sugar which is broken down into simplest form. In the mouth, it is broken down by the amylase enzyme. It produce saliva in buccle cavity and larger particles convert into smaller one. Then it enters into stomach and the small intestine. In the stomach, sucrase, maltase enzyme secrete which helps the digestion of carbohydrate.

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The resulting simple sugar absorbed by bloodstream through the help of finger like projection villi.

Protein:

Protein are the chief builder of the body. It consist of carbon, Hydrogen, oxygen, nitrogen and sometimes sulphur and phosphorous. Proteins are used to make enzyme, hormones, contractile proteins for the development of body. The requirement of protein depends upon the weight of body, generally 1g/kg needs the body. It provides 4.1g of energy. Children, nursing mothers needs high content of Protein.

The Process of digestion:-

The digestion of Protein decreaise the constituents of amino acids. A person can take 15-20% of protein in total calories of food. This process occur into the stomach, as mucosa which secrete glandular gastric gland. It is consist of three kind of cell; mucous cell, secreting mucous and oxyntic cells, secreting HCl, zymogen cell, secreting pepsinogen the secretion of all this cells is collectively called gastric

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juice. The secretion of gastric is regulated by smell, sight, quality of food

Protein food > gastric juice > better digestion

Pepsinogen converted into the pepsin in the presence of HCl which convert protein into peptones and polypeptides. It is chains of small amino acid which get absorbed by the bloodstream. So, protein is digested.

b- Explain the following Atmospheric pressure/ temperature and Humidity

Atmospheric Pressure

Pressure

Force per unit area is called pressure. It's unit is N/m^2, mm of Hg. But in geographic studies, pressure unit is millbar.

Atmospheric pressure:-

It is a pressure exerted by the moleules of atmosphere on the earth suoface. It is measured in atm. Variation is the atmospheric pressure cause global change in the weather

Pressure Variation due to Temperature:

The increase in the temperature will dry out the water vapours in the air. It will decrease the air mass then it decrease the pressure. It cause various weather variation like thunderstorm, cyclone.

> Temperature < air mass < Pressure.

Pressure Variation due to Height:

Horizantally pressure donot change But vertically atmospheric consistently change. When moved vertically, the thickness of atmospheric blanket decrease which decrease

the pressure. Variation in the pressure due to heigh cause cyclone, heavy flow of air from higher atmospheric area to low atmospheric area.

Temperature:-

Where heat comes from?

Sun is the chief source of energy. It provides 99.7% energy of all physical process. In fact, all the radiation of the sun do not pertain to increase the temperature of earth.

is there any difference b/w heat & temperature?

Yes, there is a difference b/w heat & temperature because heat is the form of energ which can convert from one point to another. It is measured in Joule. Temperature is measured in celsius and Farehite. Temperature is the overall heat & cold of the body. In the night, radiation are emitted and temperature becom low. In the day time, earth absorbed all kind of radiations. that's why temperature of earth at day time increase.

There are number of factors which influence the distribution of heat energy and radiation.

Spherical shape of the earth
Non-uniform distribution of heat.
Length of the day
Thickness of atmosphere
Nature of surface.

Humidity :-

Humidity is the third factor which helps to determine the weather condition. It is the amount of water vapour which are present in the air. Moreover, it is the measurement of moisture into the air. We are measuring relative Humidity. Relative Humidity tells you how water vapour is present in the air as a fraction of maximum amount of water vapor that could present in a parcel of air at current temperature or pressure.

In winter, Humidity in the air increase and in summer, it can decreased and weather become hot. Humidity can be felt when it condenm as a fog. Humidity is measured by hygrometer.

It is measured in percentage.

$$\text{Relative Humidity} = \left(\frac{\text{Actual vapor density}}{\text{saturation vapour density}}\right) 100$$

C. Explain the phenomenon of Earthquack and draw its diagram.

Earthquack:

Earthquack is the sudden movement of earth crust. The movement of earth due to release of energy in the form of seismic waves. It is occur due to the displacement of tectonic plate.

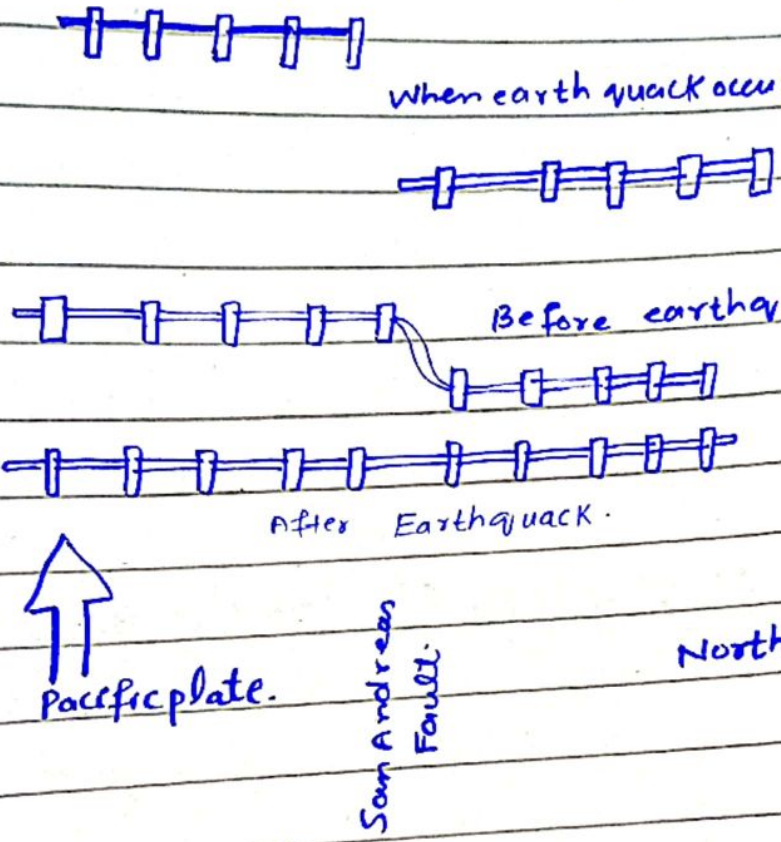
Phenomenon of Earthquack:

In the process of earthquack, Earthquack occur due to already store energy in the earth, movement of tectonic plates, volcanic erruption.

Elastic Rebound theory:

In 1906, Henry Fielding Ried proposed the theory of elastic rebound theory. He presented that "If a stretched rubber band is broken or cut then the stored energy in the band suddenly released. In the same way, earth crust stored elastic energy. When earth quack occur, it released suddenly. The accumulation and release of stress and

strain is refered as elastic rebound theory. Most of the earth quack occur due to previously stored energy.



Plat Tectonic:

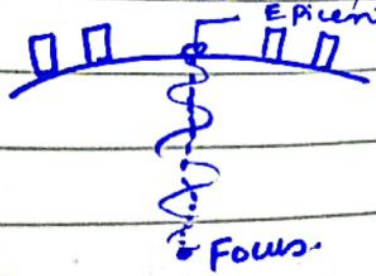
Earth crust is not smooth. It is made up of huge blocks it is called tectonic plates. The great intensity of seismic wave are found around the boundries of tectonic plates.

Faults:

For millions of year, the movement of tectonic plates cause fractures in the earth crust These Fractures is called fault.

Epicenter:

The point above the focus in the earth crust is called epicenter.



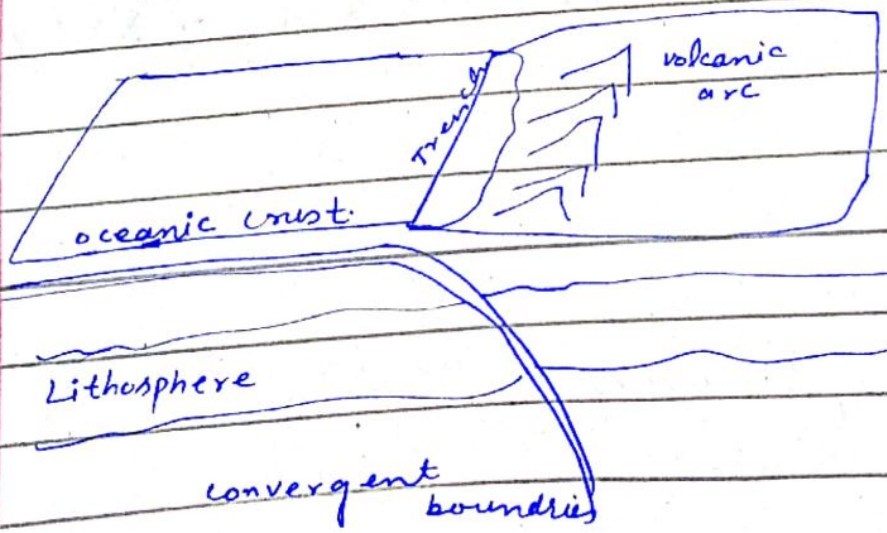
Hypocenter:-

The point at which the earth quack starts in the earth crust.

Types of Tectonic plates:-

Convergent boundaries:

These occur when two plates come towards each other. It either form a continental collision or subduction zone. The impact of the two colloiding plates buckles the edge of one or both plates up into a rugged mountain range. Powerful earthquack occur due to convergence of boundries.



Divergent Boundries:-

Divergent Boundries where two plates slide apart from each other. Mid-ocean region and active zone are formed Along these boundries, there is fracture where magma rises from the focus.

Transform Boundries:-

When two plates sliding past eachother forms a tranform plate boundary. Rocks that line the boundry are thin as the plate grind along.

Example

Earthquack occur in TURKey in 2023 with the magnitude of 7.8.

In pakistan, Sawat face the earthquack with the range 4.8 in 2024

Recently, In Tibet, earthquack occur in January 2025 with the magnitude of 7.1.

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d Explain the working of Radar

Radar:

Radar is the object-detection system. It is used to determine the angle, velocity of the object.

Components of RADAR:-

Radar consist of following components;

transmitter → that produce electromagnetic

radiation in the radio or microwave domain
transmitting antenna
Receiver and processor.
Radio waves from the transmitter reflect off the object and return to the receiver, giving information about object location.

Uses of Radar:

It can be used to detect aircraft, spacecraft guided missile, motor vehicles.

Working:

A radar system consist of transmitter that emit radio waves called Radar signals in predetermined objects. When these signals comes in contact with the object, they are usually reflected or scattered in various direction. But some of them absorb or penetrate in some extent into the object. Radar signals are reflected well in the electrical conductive objects. The radar signals reflect back to the transmitter, that makes it workable. If the object is moving either toward or away from the transmitter, it is due to the change in

frequency of radio signals, it is called doppler effect. Radar receiver usually not in the same location as transmitter the reflected radar signals are captured by the receiving antenna and it can be amplified by electronic amplifier.

Question

Sun:

Sun is a star. It is huge ball of gases such as lithium and helium. Nuclear fusion occur in this star. That's why it is too hot and it can be seen in day time. The other star which have distant, they can be seen in night.

Scientist usually divided sun into three main regions: the Sun interior, solar atmosphere, and visible surface of the sun which lies b/w the interior & atmosphere of the sun.

Parts of Sun:-

The Core:-

The core in the center of sun. It is hotter than other part of the sun. Nuclear fusion occur in this part of the sun. The temperature of this part is 15 million celsius. It's density is 150 times the density of water. The core of the sun is extend 25% of the solar radius.

Radiative Zone:

Moving outward, next comes the radiative zone. Its name is derived from the way energy is carried through this layer, carried by photons as thermal radiation. The intense heat transferred to the outer region

Convective Zone:

The third part of the solar interior is convective zone. It is also dominant flow of energy in the upward convention. The convention plasma is not dense or hot enough to transfer the heat energy

of the interior outward through radiation. As a result, thermal convection occur. Once the material cool down then it moves downward to heatup again and repeat this cycle.

Photosphere:-

The boundary b/w the sun's interior and the solar atmosphere is called Photosphere. Sun also has an atmosphere. The lower region of the solar atmosphere called **Chromosphere**. Its name comes from the greek word chroma meaning color, appears bright red when solar eclipse occur.