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Name : Aiman Munir

Question no 1

(a)

What is circulatory system?
Describe the working of
human heart?

Circulatory System:

"The circulatory system is a body system responsible for the transport of blood, oxygen, nutrient, hormones or waste products throughout the body."

It helps maintain body temperature, homeostasis.

Parts:

Circulatory system has three main parts:

- (i) Heart (The pumping organ)
- (ii) Blood (The transport medium)
- (iii) Blood vessels (arteries, veins and capillaries)

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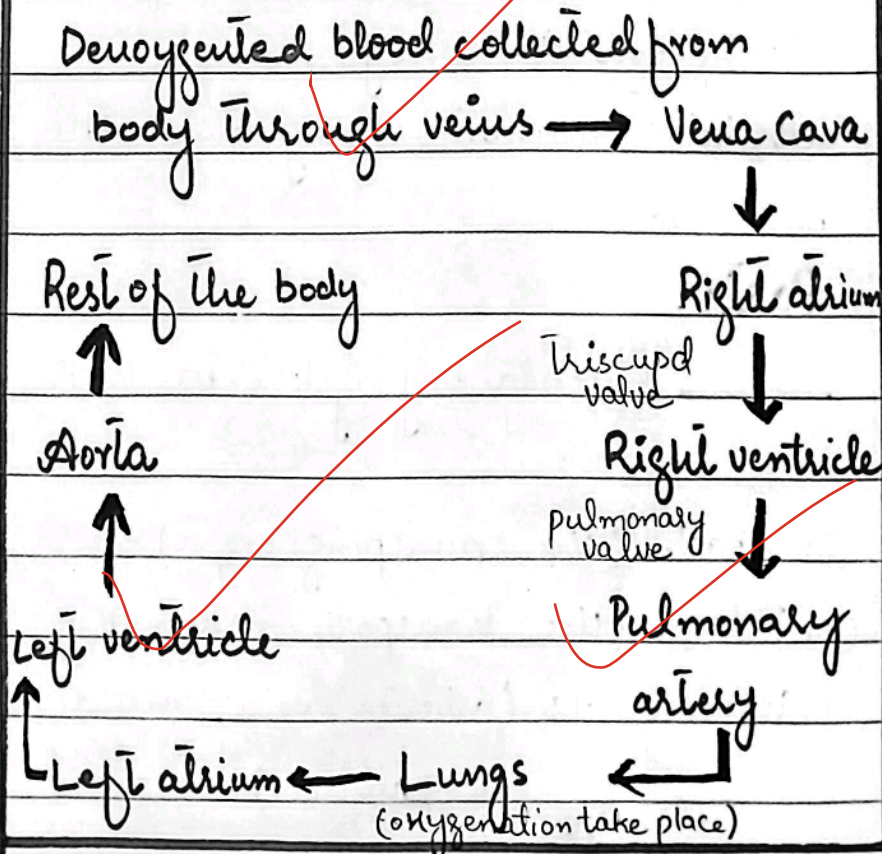
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Working of Human Heart:

The human heart is a muscular, hollow organ located in the chest between the lungs. It works as a "double pump" and has "four chambers":

- (i) Right atrium
- (ii) Right ventricle
- (iii) Left atrium
- (iv) Left ventricle

Working:



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(i) Deoxygenated blood from the body enters the right atrium through the superior and inferior venacava.

(ii) The right atrium contracts and pushes blood into the right ventricle through the tricuspid valve.

The right ventricle pumps blood to the lungs via the pulmonary artery for oxygenation.

(iv) Oxygenated blood returns from the lungs to the left atrium through the pulmonary veins.

(v) The left atrium contracts and sends blood to the left ventricle through the bicuspid valve.

(vi) The left ventricle pumps oxygen rich blood to the entire body through the aorta.

(b)

Internal Structure of Earth

The internal structure of Earth is

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made up of three main concentric layers based on composition and physical properties:

(i) Crust

(ii) Mantle

(iii) Core

(i) Crust:

The outermost and thinnest layer of the Earth.

Thickness:

Its thickness is 5-10 km under oceans and 30-70 km under continents.

Composition:

It is composed mainly of silicon and aluminium in continental crust and silicon and magnesium in oceanic crust.

It is a layer where life exists.

(ii) Mantle:

It is located beneath the crust and extends

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to about 2900 km deep.

It makes up the largest volume of the earth.

Composition:

It is composed of silicate minerals rich in magnesium and iron.

(iii) Core:

It is the innermost layer of the Earth.

Composition:

It is mainly composed of Iron and Nickel hence called NIFE.

(c)

**Production of
Bio Diesel and Biogas**

Production of Bio Diesel:

(a) What is Bio Diesel?

Biodiesel is a renewable fuel made from vegetable

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oils, animal fats or used cooking oil. It can be used in diesel with little or no modification.

(b) Raw materials:

- (i) Vegetable oils
- (ii) Waste cooking oils
- (iii) Alcohol
- (iv) Catalyst (sodium hydroxide or potassium hydroxide).

(c) Production process:

Pre-Treatment:

The oil is filtered to remove impurities and heated to remove moisture.

Transesterification reaction:

Oil reacts with Alcohol in the presence of catalyst (NaOH / KOH).

This chemical reaction breaks triglycerides into:

- (i) Bio diesel (fatty acid methyl esters)
- (ii) Glycerol (by product).

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Production of Biogas:

Biogas is a renewable fuel produced by the decomposition of organic matters such as animal dung, agricultural waste. The process occurs in specially design tank called a "Biogas plant".

Raw Material:

- (i) Cow dung or animal manure
- (ii) Agricultural residues and food waste
- (iii) Water.

Production process:

Biogas is produced through anaerobic digestion which takes place in four stages:

- 1- Hydrolysis
- 2- Acidogenesis
- 3- Acetogenesis
- 4- Methanogenesis

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(d)

Phenomena of Earthquake

Defination:

"An Earthquake is a sudden shaking of the Earth's surface area caused by the rapid release of energy stored in the Earth's crust."

This energy is released in the form of seismic waves.

Cause of Earthquake:

The Earth's crust is divided into large slab called "tectonic plates". These plates are in constant motion due to convection currents in the mantle. When plates collide, move apart or slide past each other, stress builds up along faults. Once the stress exceeds the strength of rocks, it is suddenly released producing an earthquake.

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Effects of Earthquakes:

1. Physical Effects:

Ground Shaking:

Ground shaking cause damage to buildings, bridges and roads.

Tsunami:

Tsunami occur if the earthquake occur under the ocean.

2. Human Effects:

It mainly cause loss of life and injuries. It also cause displacement of people and homelessness.

3. Economic effects:

Earthquake cause destruction of property and infrastructure. It also cause loss of industries agriculture and businesses.

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Question no 3

Hepatitis

(a) Definition:

Hepatitis is an inflammation of the liver that affects its normal functions such as detoxification, digestion and storage of nutrients.

(b) Symptoms of Hepatitis:

The symptoms of hepatitis are:

- (i) Fever or Fatigue
- (ii) Loss of appetite
- (iii) Nausea and vomiting
- (iv) Abdominal pain
- (v) Jaundice
- (vi) Dark coloured urine
- (vii) Pale stools
- (viii) Joint and muscle pain

(c) Causes of Hepatitis:

Viral causes:

• Hepatitis A and E spread through

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contaminated food and water

Hepatitis B, C and D:

Hepatitis B, C, D spread through "infected blood and blood fluids."

Non viral causes:

Hepatitis

is caused by:

- (i) Excessive alcohol consumption
- (ii) Toxin and chemicals
- (iii) Fatty liver disease

(d) Preventive measures:

The

preventive measures are:

- (a) Vaccination should be done
- (b) Drink clean and boiled water
- (c) Avoid sharing your personal things such as needles, razors or toothbrushes
- (d) Use sterilized medical instruments.

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(b) Solar System

Defination:

The solar system is a gravitational bound system consisting of the sun and other objects like "planets, moons, asteroids, comet and meteoroids".

Components of Solar System:

(i) The sun:

Sun is the central star of the solar system. It accounts for 99.8 percent of the solar system mass.

(ii) Planets:

It divides into

two groups:

(a) Terrestrial planets:

Terrestrial planets are small dense or rocky. It has few or no moon. Mercury, Venus, Earth and Mars

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are terrestrial planets.

(b) Gas giants:

They are large gaseous and less dense. It has many moons and ring systems. Jupiter, Saturn, Uranus and Neptune are gas giants.

(c)

Gaseous exchange in human body

Gaseous exchange is the process by which oxygen is absorbed from the air into the blood and carbon dioxide is removed from the blood to be exhaled.

Process of Gaseous Exchange:

1- Inhalation:

Oxygen rich air is drawn into the lungs passes through bronchi, bronchioles and alveoli.

2- Exchange at Alveoli:

Oxygen diffuses from alveoli into the blood due to higher concentration in alveoli than in blood.

3- Transport of Gases:

Oxygen binds to hemoglobin in red blood cells and is transported to body cells. Carbon dioxide is carried back to lungs.

4- Exhalation:

Carbon dioxide rich air is expelled from the lungs.

(d)

Solar and Lunar

Eclipses

Solar Eclipse:

Solar eclipse occurs when the Moon comes between Earth and the sun, partially

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or completely blocking the Sun's light for observers on Earth.

Types of Solar Eclipse:

(i) Total Solar Eclipse:

The moon completely covers the Sun.

(ii) Partial Solar Eclipse:

When only part of the Sun is obscured by the Moon.

(iii) Annular Solar Eclipse:

Annular Solar Eclipse is when the Moon is far from Earth, so it appears smaller than the Sun.

(iv) Hybrid Solar Eclipse:

It shifts between total and annular along the different locations of the eclipse path.

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