

GSA Test 1

Q1) Overview of Vaccines:

Vaccines are substances that stimulate immune system to produce an immune response, helping the body recognize and specific pathogens like viruses and bacteria. They prevent diseases by preparing the immune system to fight against certain bacteria if they were to enter the body.

Examples of Vaccines:

- Covid-19 Vaccine
- Typhoid Vaccine
- Influenza Vaccine.

Overview of Antibiotics:

Antibiotics are medications specially designed to fight bacteria ~~and viruses~~. Antibiotics can be delivered orally or through intramuscular / intra-veinal injections. Antibiotics work by disrupting the biological processes of bacteria, thus eliminating them.

Examples of Antibiotics :

- Cefazolin
- Amoxicillin
- Penicillins.

Differences b/w Antibiotics & Vaccines

<u>Vaccines</u>	<u>Antibiotics</u>
→ Prepares immune system to fight	→ Disrupts biological processes of bacteria
→ Effective against both bacteria & to virus	→ can only work against bacteria.

B) What are cyclones:

Cyclones are strong wind currents moving in circular motion around a low pressure area. Cyclones are characterised by inward spiraling winds that rotate about a zone of low pressure.

Formation of cyclones

→ Pressure Gradient:

Pressure gradient refers to zones that ~~have~~ have different level of atmospheric pressure. Air currents move from high pressure level towards low pressure level. ~~in order~~ in order to balance the pressure difference.

→ Coriolis Effect:

This is caused by Earth's rotation. Due to ~~this~~ the Earth's rotation, the resulting forces move objects / air currents anti-clockwise in northern hemisphere and clockwise in southern hemisphere.

→ Formation of cyclone

The coupled ~~of~~ effect of pressure gradient and Coriolis result in the formation of cyclone. The strongest and destructive winds are in the eye of the cyclone.

→ Structure of cyclone:

→ The Eye

This is the center of ~~the~~ a cyclone. It has relatively low atmospheric pressure and the speed of air currents is relatively low. This is the calm part of a cyclone.

→ The Eye wall

This is the part of a cyclone where winds are at their strongest, reaching upto a speed of 74 mph. This part of the cyclone has heavy rain and thunderstorm.

What are Typhoons

Typhoons are the same as cyclones. It is just that cyclones are called Typhoons in North-west Pacific.

What are Tsunamis

The term Tsunami is derived from the Japanese word 'tsu' which means harbor and 'nami' which means 'wave' — 'Harbor wave'. Tsunamis are caused by an underwater earthquake or volcanic eruption and often causes extreme destruction when it strikes land.

Causes of Tsunami

— Earthquake:

Most Tsunami are caused by underwater earthquakes. This generates a movement on the fault especially at subduction zone generates sufficient displacement to set a tsunami running.

— Volcanic Eruption:

Submarine volcanic eruptions, massive pyroclastic flows can cause sufficient displacement of water to set a tsunami running.

Q) What is a Galaxy:

Galaxy is a fundamental unit of the universe composed of hundreds of thousands of stars / planets. Collection of galaxies is called cluster and arm of galaxies is called galactic arms.

Types of Galaxies:

Galaxies were classified by Hubble in 1924. According to him there are three types of galaxies.

→ Elliptical Galaxies:

These are the most abundant type of galaxies found in the universe. However because of their dim qualities, they are outshone by younger / brighter stars. They bear the rounded shape of an ellipse, a stretched-out circle.

→ Irregular Galaxies:

These type of galaxies have no shape. They are among the smallest galaxies.

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and are full of gas and dust. These are the small galaxies that orbit around Milky way galaxy.

→ Milky Way:

It is a spiral galaxy. It contains 10¹¹ stars and is 105 light years is diameter.

d) What is DRM:

DRM ~~refers to~~ stands for Disaster Risk Management. It is a process of using administrative directives, organizations, and operational skills to implement policies, strategies and coping mechanisms to reduce the impact of natural or man made disaster.

Components of DRM:

— Risk Assessment:

Identifying, assessing, and understanding the potential risks and vulnerabilities in a given area.

→ Early Warning Systems:

Establishing systems that can accurately forecast an impending disaster. This is a crucial element in DRM systems, which can save many lives.

→ Mitigation:

Implementing measures to reduce or eliminate the damage of disasters. These are the coping mechanisms put in place to reduce the negative impacts of disasters on population.

Q2) a) Overview on Fats

Fats are a crucial macronutrient that play a vital role in the body, such as providing energy, supporting cell structure, and aiding in the absorption of certain vitamins.

Good Fats

Good Fats include Monounsaturated Fats

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and Polyunsaturated Fats. These are the healthy & type of fats that can improve heart health by reducing levels of LDL (low-density lipoprotein) while maintaining or increasing HDL (High-density lipoprotein).

Sources of Good Fats:

- > Fatty Fish
- > Avocado
- > Olive oil.

Bad Fats:

Bad Fats ~~are~~ include ~~the~~ saturated fats and trans fats. These are unhealthy fats typically resulting in an increase in LDL levels. Such sources of fats can result in heart strokes and other cardiovascular diseases of such nature.

Sources of Bad Fats

- > Full-fat dairy products
- > Red meat
- > Bakery products.

B) Vitamin B complex

- 1) Energy Metabolism:
 - converts energy into
- 2) Brain Function:
 - maintain cognitive functions including memory & concentration
- 3) Red Blood Cell Formation:
 - B9 & B12 are important for Red Blood cell formation
- 4) Nervous system support:
 - maintenance of healthy nervous system
- 5) Skin & Hair Health:
 - promotes healthy skin, hair & nails.

Vitamin E

- 1) Antioxidant Protection:
 - protect cells against oxidative damage
- 2) Skin Health:
 - Promotes healthy skin.
- 3) Eye Health:
 - Promotes/maintains eye health.
- 4) Heart Health:
 - positive impact on cardiovascular health
- 5) Immune Function:
 - supports immune system

Vitamin D

- 1) Calcium Absorption:
 - essential for absorption of calcium
- 2) Immune system:
 - maintain immunity
- 3) Mood Regulation:
 - maintains good mental health
- 4) Muscle Function:
 - important for good muscle function
- 5) Bone Health:
 - strengthens bones

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- 1) Oxygen Transport:
 - Key component of hemoglobin transporters
- 2) Energy production:
 - involved in cellular respiration
- 3) Prevention of Anemia:
 - Immune function
- 4) Cognitive Development:

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