

General Science (Sir Majid)

Assignment # 1

Write a short note on dengue, malaria and hepatitis (definition, symptoms, causal agents, treatment)

Answer

→ Dengue Fever:

It is also called as the 'break bone fever.' and is caused by any one of the five closely related dengue viruses. It is a mosquito-borne illness that occurs in tropical and subtropical areas of the world.

→ Symptoms:

The symptoms of dengue fever include:

- Sudden, high fever
- Severe headache
- Pain behind eyes.
- Nausea.
- Fatigue
- Vomiting
- Severe joint and muscle pain.
- Skin Rash.

→ Treatment:

There is no specific medicine to treat dengue infection. One should rest, take plenty of fluids and use pain relievers.

→ Prevention:

- Use mosquito repellents.
- Stay away from heavily populated residential areas

Date: _____

Day: M T W T F S S

- When outdoors, wear long sleeved shirts & long pants
- Use mosquito nets
- Avoid standing water around house like in tyres which may attract mosquitos.

→ Malaria: Causative agent:

The virus causing dengue fever belongs to the Flaviviridae family. There are 4 distinct dengue viruses (DENV-1, DENV-2, DENV-3, and DENV-4). without cross immunity. All 4 viruses are of Asian Origin.

Vectors are the primary agents that are responsible for spreading of disease. The primary vector responsible for dengue virus is known as *Aedes aegypti* mosquitoes.

→ Hepatitis

Hepatitis refers to inflammatory condition of the liver.

→ Causes:

Primarily it is a viral disease. However, sometimes medication, drugs, toxins & alcohol are also responsible for autoimmune hepatitis. A disease that occurs when a human body makes antibodies against liver tissues.

→ Symptoms:

- Fatigue
- high fever
- vomiting
- loss of appetite
- nausea
- abdominal pain

→ Types:

Hepatitis is mainly classified into five categories: Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis D and Hepatitis E, among which the first three are better known.

→ Prevention:

→ Hepatitis A, formerly called infectious hepatitis is a mild viral liver disease transmitted through ingestion of contaminated food or water. So safe water supply, food safety, regularly washing hands are effective ways to combat the disease.

→ Hepatitis B, (serum hepatitis) varies from acute to chronic liver disease and is caused by DNA virus. It is transmitted through person to person contact with the blood or bodily fluid of another infected person. It is a major occupational hazard for health workers and can be prevented through vaccines, avoiding syringes, safe sex practices etc.

→ Hepatitis C, formerly called Non A-Non B hepatitis is a chronic to acute to chronic hepatitis infection caused by RNA enveloped virus. It is a blood-borne disease transmitted through unsafe injection practice, inadequate sterilization of medical equipment, unsafe sex etc.

There is no vaccine for Hep. C but safe sex practices, quality assured screening of all donated blood & proper disposal of used syringes can be effective prevention strategies.

Date: _____

Day: **M T W T F S S**

→ **Malaria**

Malaria is a life threatening mosquito-borne disease. The Anopheles mosquito transmits a parasite known as Plasmodium to humans which leads to malaria.

→ **Symptoms:**

- Fever
- chills
- headaches
- loss of appetite,
- mild jaundice
- abdominal pain
- fatigue.

→ **Treatment:**

The treatment for malaria includes:

- supportive care.
- medication to eliminate parasite from blood stream
- intensive care and hospitalization in severe cases.

→ **Prevention:**

Strategies for preventing malaria includes:

- being aware of the risk.
- preventing mosquito bites (insect repellent usage)
- taking anti malarial tablets when travelling to an area where malaria occurs
- administering the vaccine to children who live in places where malaria is endemic

(Q) Classification of carbohydrates, proteins & fats.

— • Answer. —

Carbohydrates:

Carbohydrates are organic compounds that contain C and H in them. They are also

called 'sugars', and are the most abundant molecules on the surface of the Earth.

→ Classification:

Carbohydrates are classified into 3 types,

1. Monosaccharides:

They are the simplest sugars that cannot be further hydrolyzed. They contain 3 to 9 carbon atoms, (trioses, tetroses, hexoses)
e.g - Glucose and fructose.

2. Oligosaccharides:

They contain 2 to 9 units of monosaccharides that can be further hydrolyzed e.g disaccharides, trisaccharides.
Sucrose is an example of oligosaccharides.

3. Polysaccharides:

They are macromolecules that contain hundreds and thousands of monosaccharides.
e.g - starch and cellulose.

→ Proteins:

Proteins are sources of energy essential for boosting immunity, muscle building, bone repairing etc.

→ Classification:

→ Based on physical-chemical properties:

- simple proteins (made of one type of amino acid) globulin, collagen
- compound/conjugated proteins (attached to some non-protein groups (prosthetic group e.g lipo protein, phospho protein etc))
- Derived proteins (derived from simple or conjugated proteins under action of heat, enzyme or chemical agent e.g Proteases, oligopeptides etc)

Date: _____

Day: **MTWTFSS**

→ Based on structure of proteins:

- Primary protein (The sequence of amino acids that make up the polypeptide chain)
- Secondary protein (the regular folding patterns within a protein such as alpha helices and beta sheets)
- Tertiary protein (three-dimensional structure formed by the bending and twisting of polypeptide chain (globular structure))

→ Lipids

Lipid is derived from 'Lipos' which means fat. Primary building blocks of lipids are fatty acids, glycerol & steroids.

→ Classification:

Lipids are classified into 3 types:

- Simple lipids (compounds of fatty acid with glycerol e.g. - common fats and oils).
 - Compound lipids (compounds of fatty acid with glycerol and possess additional groups also e.g. - phospholipids (phosphoric acid), Glycolipids (carbohydrates), lipoprotein).
 - Derived lipids (substances derived from simple and compound lipids by hydrolysis e.g. steroids, Vitamin D and Terpenes).
-