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ST. LAWRENCE HIGH SCHOOL

FOR GOD AND COUNTRY

A JESUIT CHRISTIAN MINORITY INSTITUTION

ANNUAL EXAMINATION

Sub: LIFE SCIENCE **Class: IX** **F.M: 75 Duration: 2 hours 30 Minutes** **Date: 30.07.2018**

Group-A

1.1 Which of the following forest is also known as the cloud forest?

a. Temperate forest ***b. montane forest*** c. plantation forest d. tropical rain forest

1.2 Green plant ⟶ man ⟶ *Entamoeba* is an example of

a. Predator food chain ***b. Parasitic food chain*** c. Saprophytic food chain d. both a & b

1.3 Which of the following is not a Baculovirus?

a. *Trichoderma* ***b. Nuclear polyhedrosis virus*** c. Granulosis virus d. None of these

1.4 Which of the following is known as "break bone fever"?

a. Malaria ***b. Dengue*** c. Pneumonia d. AIDS

1.5 Which of the following is not a killed vaccine?

a. cholera vaccine b. polio vaccine ***c. Tetanus*** d. hepatitis A vaccine

1.6 Heparin is secreted from

a. Neutrophil b. eosinophil ***c. Basophil*** d. Lymphocytes

1.7 Feeding on blood of vertebrates is called

a.Sanguinivory b.coprophagy c.saprozoic d.parasitic

1.8 Contractile proteins are found in

a.bone ***b.muscle*** c.blood d.cartilage

1.9 Which of the following cell organelle is found in prokaryotes?

a.ribosome b.mitochondria c.plastid d.lysosome

1.10 The largest lymphatic organ of our body is _____.

a.Liver b.Kidney ***c. spleen*** d.both a & c

1.11 Which is absent in amphibians?

a.Scales b. mucous gland c. Gills or lungs d. 3 chambered heart

1.12 Lasso cells are found in _____ .

a.cnidaria ***b.ctenophora*** c.platyhelminth d.nematoda

1.13 Vaccination is associated with

a.active immunity b.passive immunity c.innate immunity d. a, b & c

Group-B

I. Tetanus is also known as the ***lock-jaw*** disease.

ii. Glomerulus occurs within the ***Bowman's*** capsule.

iii. ***Pancreas*** has both exocrine & endocrine function.

iv.Muscles are covered with a sheath called **epimycium.**

B.STATE TRUE OR FALSE:

I.Platelets originate from large megakaryocyte. ***TRUE***

ii.Amphibians are poikilothermic. ***TRUE***

iii.All immunoglobulins are antibodies.***FALSE***

iv.Blood group A contains antibody b.***TRUE***

C.MATCH THE FOLLOWING:

i.Tuberculosis	***c.Mycobacterium***
ii.Diphtheria	***a.Corynebacterium***
iii.Typhoid	***d.Salmonella***
iv.cholera	***b.Vibrio***

D.GIVE ONE WORD FOR THE FOLLOWING:

I.Name one water based ECF. ***BLOOD PLASMA/INTERSTITIAL FLUID***

II.Name one protein present in blood plasma ***ALBUMIN, GLOBULIN***

iii.Name the calcium oxalate crystals found in *Colocasia* ***RAPHIDES***

iv.What is the type of interaction found between hermit crab and sea anemone?***SYMBIOTIC RELATIONSHIP/ COMMENSALISM***

v.Name a fungal plant parasite. ***Trichoderma viridae***

Group- C

A. Answer the following questions:- 2x10=20

1. Differences between antigen and antibody.

	Antigen	***Antibody***
Overview	***Substance that can induce an immune response***	***Proteins that recognize and bind to antigens***
Molecule type	***Usually proteins, may also be polysaccharides, lipids or nucleic acids***	***Proteins***
Origin	***Within the body or externally***	***Within the body***
Specific binding site	***Epitope***	***Paratope***

2. Write any two functions of cerebro -spinal fluid.

Cerebrospinal fluid has three main functions:

- ***CSF protects brain and spinal cord from trauma.***
- ***CSF supplies nutrients to nervous system tissue.***
- ***CSF removes waste products from cerebral metabolism.***

3. In which super class does hagfish belong to? Give any one reason.

Superclass : Cyclostomata/Agnatha

Any one reason : jawless, mouth circular and sectorial, single median nostril, 6-14 pairs of gills.

4. What is natality? How does it affect population density?

Natality is number of births per unit population per unit time, e.g., per thousand per year in humans Natality in population ecology is the scientific term for birth rate. Along with mortality rate, natality rate is used to calculate the dynamics of a population. They are the key factors in determining whether a population is increasing, decreasing or staying the same in size. Natality is the greatest influence on a population's increase. Natality adds to population density

5. Mention one cause, mode of transmission and one symptom of Hepatitis B.

Hepatitis B is caused by infection of the body with the hepatitis B virus. The hepatitis B virus (HBV) is found in blood and bodily fluids. It can be transmitted through semen, vaginal fluids, and blood, and it can pass from a mother to a newborn during delivery

6. Describe the structure and function of flame cells.

A flame cell is a specialized excretory cell found in the simplest freshwater invertebrates, including flatworms, rotifers and nemerteans; these are the simplest animals to have a dedicated excretory system. Flame cells function like a kidney, removing waste materials. Bundles of flame cells are called protonephridia.

Their excretory system consists of two tubules connected to a highly-branched duct system that leads to pores located all along the sides of the body. The filtrate is secreted through these pores. The cells in the tubules are called flame cells (or protonephridia) because they have a cluster of cilia that looks like a flickering flame when viewed under the microscope. Flame cells function like a kidney, removing waste materials through filtration. The cilia propel waste matter down the tubules and out of the body through excretory pores that open on the body surface; cilia also draw water from the interstitial fluid, allowing for filtration. After excretion, any useful metabolites are reabsorbed by the cell.

7. Name any two non-nitrogenous waste products in plant and mention one economic importance of each.

Non – nitrogenous substances exuded by plants include

- ***tannins found in tea leaves,***
- ***essential oils that are deposited in leaves of lemon, tulsi and eucalyptus plants,***
- ***resins and glue that are deposited on the bark of pine trees.***
- ***Resins are used in varnishes and polish.***

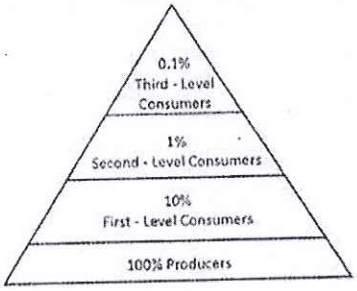
8. Where is histamine secreted from? What is the function of histamine?

Histamine is secreted from Basophill cells .

Histamine is involved in the inflammatory response and has a central role as a mediator of itching

9. What is 'ten percent law'? Explain with one example.

When the plants are consumed by animal, about 10% of the energy in the food is fixed into animal flesh which is available for next trophic level (carnivores). When a carnivore consumes that animal, only about 10% of energy is fixed in its flesh for the higher level. The amount of energy at each trophic level decreases as it moves through an ecosystem. As little as 10 percent of the energy at any trophic level is transferred to the next level; the rest is lost largely through metabolic processes as heat.



10. What is hydrolysis? Which component of gastric juice is used in the process?

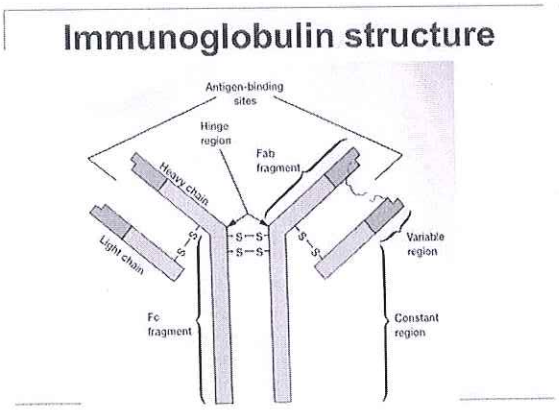
Breaking down of one molecule of water while disintegration of proteins by enzymes is called hydrolysis.

HCl is used in this process.

Group- D

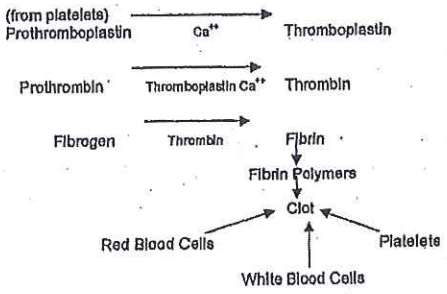
1. Draw and describe the structure of immunoglobins. What is agglutinogen?

Antibody (or immunoglobulin) molecules are glycoproteins composed of one or more units, each containing four polypeptide chains: two identical heavy chains (H) and two identical light chains (L). The amino terminal ends of the polypeptide chains show considerable variation in amino acid composition and are referred to as the variable (V) regions to distinguish them from the relatively constant (C) regions. Each L chain consists of one variable domain, VL, and one constant domain, CL. The H chains consist of a variable domain, VH, and three constant domains CH1, CH2 and CH3. Heavy and light chains are held together by a combination of non-covalent interactions and covalent interchain disulfide bonds, forming a bilaterally symmetric structure. The V regions of H and L chains comprise the antigen-binding sites of the immunoglobulin (Ig) molecules. Each Ig monomer contains two antigen-binding sites and is said to be bivalent.



Any of the antigens that are present on the outer surface of red blood cells is agglutinogen. It is any antigen, or foreign cell, toxin, bacteria, or anything else that gets the immune system reacting, that makes your body generate agglutinins

2. Describe the steps of blood clotting in human beings. What is PMN in blood?



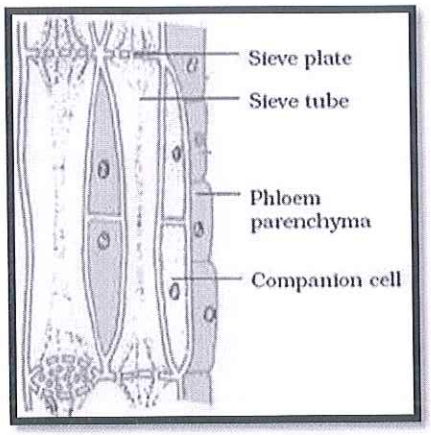
A type of immune cell that has granules (small particles) with enzymes that are released during infections, allergic reactions, and asthma. Neutrophils, eosinophils, and basophils are PMNs. A PMN is a type of white blood cell. Also called granular leukocyte, granulocyte, and polymorphonuclear leukocyte.

3. Mention any two functions of osmosis. What is active osmotic absorption of water ? What is osmotic pressure?

Some functions of osmosis are: exchange of gases between blood and tissues. transportation of water from ground to the root. transportation of molecules across the plasma membrane.
Active absorption refers to the absorption of water by roots with the help of adenosine triphosphate, generated by the root respiration: as the root cells actively take part in the process, it is called active absorption. It is the absorption of water, usually against the concentration gradient

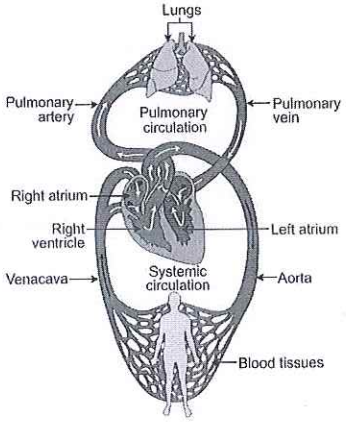
Osmotic pressure is the minimum pressure which needs to be applied to a solution to prevent the inward flow of its pure solvent across a semipermeable membrane. It is also defined as the measure of the tendency of a solution to take in pure solvent by osmosis.

4. Draw the structure of phloem tissueand label any three parts .Write any two functions of phloem. Give an example of lateral meristem.



- ***Phloem is the vascular tissue responsible for the transport of sugars from source tissues (ex. photosynthetic leaf cells) to sink tissues (ex. non-photosynthetic root cells or developing flowers).***
- ***Other molecules such as proteins and mRNAs are also transported throughout the plant via phloem. The vascular cambium and the cork cambium are good examples of a lateral meristematic tissue.***

5. Describe the process of double circulation through heart along with a diagram.



The human circulatory system is a double circulatory system. It has two separate circuits and blood passes through the heart twice: the pulmonary circuit is between the heart and lungs. the systemic circuit is between the heart and the other organs.

Blood enters the heart:Deoxygenated blood from the body enters into the right atrium of the heart.

Blood pumped to lungs:This deoxygenated blood is pumped out of the heart and towards the lungs by the right ventricle.

Lungs oxygenate the blood:At the lungs, the deoxygenated blood exchanges carbon dioxide for oxygen. This is how it becomes oxygenated (contains oxygen).

Blood returns to the heart:Oxygenated blood returns to the left atrium of the heart.

Blood pumped to the body:This oxygenated blood is pumped out of the heart and to the body by the left ventricle.

Blood returns to the heart:The oxygenated blood gives its oxygen to body cells in exchange for carbon dioxide. The blood becomes deoxygenated and returns to the heart

6. Describe any five major types of forests in the world along with their characteristics, climatic *conditions and place of occurrence.*

Tropical Deciduous Forests:These trees have broadleafs. India also has temperate deciduous forests but they are very less in number. These broad leaves are shed in the autumn season but it is in case of temperate deciduous mode. The tropical deciduous forests have the trees that shed their leaves in the winter season.
Tropical Rain Forests:These are also called equatorial rainforests. Rainforests are those forests which are characterized by heavy rainfall between 1750 mm and 2000 mm. These forests incur heavy showers of 100-600 cm a year, so they are named so. Coffee, bananas, and chocolates come from tropical rainforests.
Montane Forests:This type of forest is found in mountain or hilly areas. These areas include the hilly area of Himalayas and Vindhyas or Nilgiri hills. The forests in the northern region are denser than in the South. At higher altitudes, fir, juniper, deodar, and chilgoza can be found.
Tropical Thorn forests:They are found in the area with very little rainfall (as little as 50cm). Arid regions of Rajasthan, Madhya Pradesh, Gujarat, Uttar Pradesh have these forests.

Swamp Forests:These are also called Wetland forests in Gujarat, Rajasthan, and in Rann of Kutch. The other name of these forests is Littoral forests.

Other geographers may even name alpine forests as another category of forests, but technically speaking there are commonly known as only five categories of forests, which are enlisted above.