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Department : Radiology

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Section : B

Q1 Write the functions and composition of blood?

ANS 1) Blood provides the body's cells with oxygen and removes CO_2 .
Function click to play an animation of the role of blood in respiration. Blood absorb O_2 from air in the lungs. It transports the oxygen to cells throughout the body, and it removes waste (Carbon dioxide) from the cells. In the lungs, ~~the~~ the carbon dioxide moves from the blood to the air and is exhaled.

2) White blood cells protect the body from pathogens. There are many types of white blood cells in blood. White blood cells also called leukocytes, are the disease fighting components of blood. They account for just 1% of circulating blood but multiply during infection.

or inflammation.

3) Blood brings waste products to the kidneys and liver. Filtration of the blood in kidney. Blood transport waste substances to the organs that removes and process them for elimination.

4) Platelets clot Blood at sites of injury click to play an animation of the small intestine absorbing nutrients. When a blood vessel tears, Platelets and plasma proteins work together to stop blood loss.

5) Blood regulates Body temp. The size of capillaries near epidermis affects heat retention in the human body. Blood absorb and distributes heat throughout the body. It helps to maintain homeostasis through the release or conservation of warmth.

Composition of Blood:-

Blood is composed of the following elements.

i) Plasma:-

It is liquid part of blood and Pale yellow in ~~col~~ colour and made up of,

- * 92% water
- * Hormones.
- * Minerals ions
- * CO_2
- * Glucose and nutrients
- * Proteins.

o Plasma proteins

o ~~Ab~~ Albumin -- Regulation of PH.

o Globulin -- defense.

o Fibrinogen -- blood clotting

⇒ Formed elements.

* RBC.

It is Biconcave in shape and its diameter is 7.8 micrometer and thickness is 2.5 Micrometer it is present 52,00,000/cubic millimeter of blood in males and 47,00,000 in females.

* WBC :-

It is present 7000 per microliter of blood. There are 6

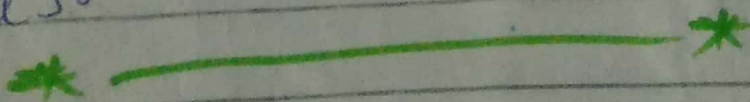
Types of WBC

- * Polymorphonuclear neutrophils 62%
 - * Polymorphonuclear eosinophils 2.3%
 - * Polymorphonuclear basophils 0.4%
 - * Monocytes 5.3%
 - * Lymphocyte 30%
- 3 Platelets

3000,000 per microliter of blood.

4) Erythrocyte:-

Red blood cells, or erythrocytes, are most abundant type of blood cell. Approximately 2.4 million new erythrocytes are produced per second. Approximately a quarter of the cells in the human body are red blood cells.



Q2 What is erythrocyte, erythropoiesis, erythrocytosis and

erythropenia?

ANS Erythrocyte:-

A cell that contains hemoglobin and can carry O_2 to the body. Also called a red blood cell (RBC). The reddish colour is due to the hemoglobin. Erythrocytes are biconcave in shape, which increase the cell's ~~size~~ surface area and facilitates the diffusion of oxygen and carbon dioxide.

Erythropoiesis:-

Erythropoiesis is the process which produces red blood cells, which is development from erythropoietic stem cell to mature red blood cell.

It is simultaneously decreased O_2 in circulation, which is

detected by the kidneys, which then secrete the hormone erythropoietin.

Erythrocytosis :-

Erythrocytosis is defined as an increase in red blood cell mass, usually absolute, and is also associated with an increased hematocrit (HCT) and hemoglobin concentration. Although some use the term polycythemia interchangeably with erythrocytosis.

Erythropenia:-

A decrease in number of erythrocytes, associated with anemia.

Q3 what is plateletes and write about clotting mechanism and its all steps.?

Ans Platelets.

Platelets are tiny blood cells that help our body from clots to stop bleeding.

If one of our blood vessel gets damaged it send out signals to the platelets the platelets then rush to the site of damages. They form a plug to fix the damage.

Clotting Mechanism

Coagulation also known as clotting is the process by which blood changes from liquid to a gel forming a blood clott. It is potentially result in hemostasis the cessation of blood loss from damage vessel.

followed by repairs. The mechanism of coagulation involves activation, adhesion and aggregation of platelet as well as deposition and maturation of fibrin.

Activation

∴ Coagulation begins almost instantly after an injury to the blood vessel has damaged the endothelium lining the blood vessel. Exposure of blood to the subendothelial ~~tissue~~ ~~space~~ space initiates two processes: change in platelets and the exposure of subendothelial tissue factor to plasma factor VII which ultimately cross link fibrin formation.

Adhesion

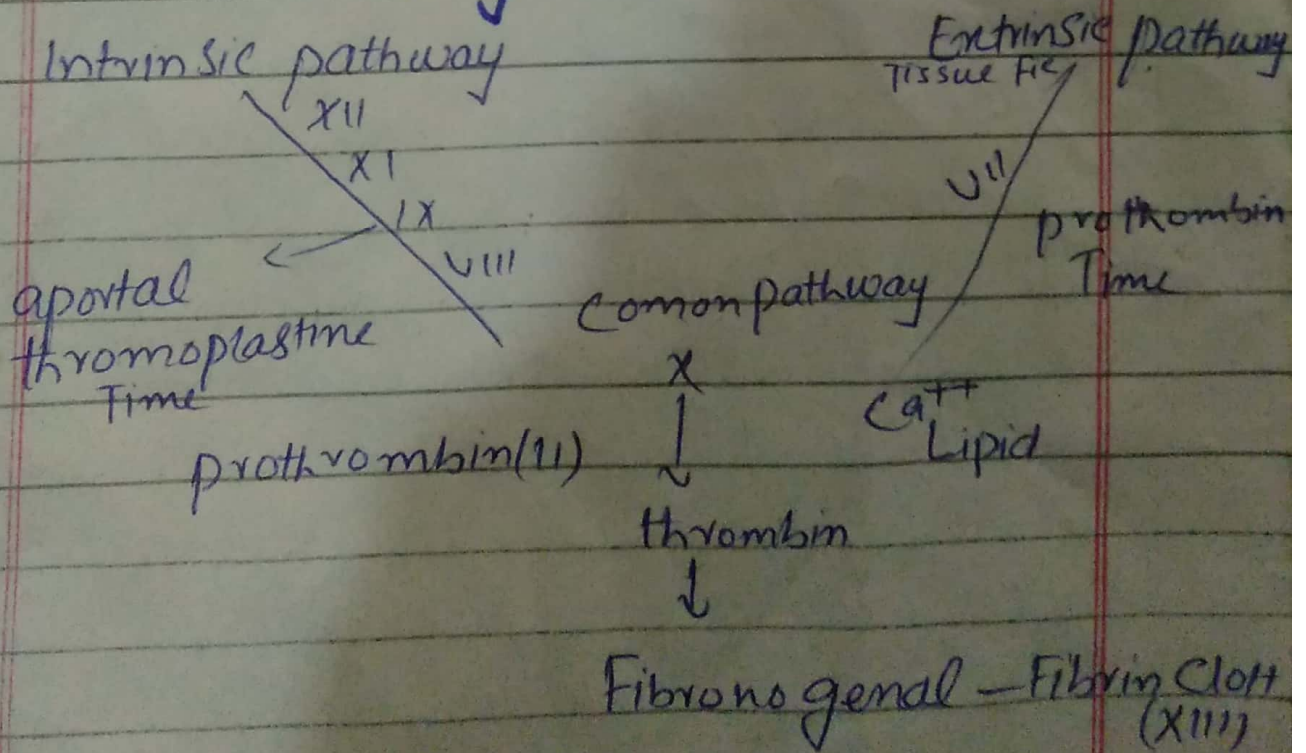
∴ Platelets immediately form a plug at the site of injury. This is called primary hemostasis.

Secondary hemostasis occurs simultaneously, additional Coagulation Clotting factor beyond factor VII respond in a Cascade to form fibrin Strand which strengthen the plateletes plug.

Aggregation

∴ Disorder of Coagulation are ~~diseased~~ disease state which can result in hemorrhage, bruising or thrombosis.

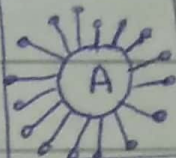
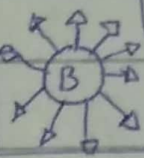


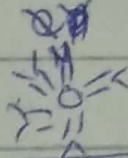
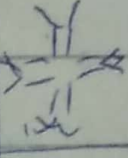

Coagulation Cascade.



Q4 write a detail note on ABO System?

Ans The ABO system is used to denote the presence of one, both, or neither of the A and B antigens on erythrocytes. In human blood transfusions it is the most important of the 36 different blood type (or group) classification systems currently recognized. A mismatch (very rare in modern medicine) in this, or any other serotype, can cause a potentially fatal adverse reaction after a transfusion, or an unwanted immune response to an organ transplant. The associated anti-A and anti-B antibodies are usually IgM antibodies, produced in the first years of life by sensitization to environmental substances such as food, bacteria and viruses.

The ABO blood types were discovered by Karl Landsteiner in 1901; he received the Nobel Prize in physiology or medicine in 1930 for this discovery. ABO blood types are also present in other primates such as apes and old world monkeys.

	Group A	Group B	Group AB	Group O
Red Blood Cell Type				
Antibodies in plasma			None	
Antigens in red blood cell	A Antigen	B Antigen	A & B antigen	None

Q5 (i) A person fell down from a tree and become unconscious, with bleeding from head, what will you do as a first aid?

Ans keep the injured person ~~by~~ lying down and quiet, with head and shoulders slightly elevated. ~~Don't~~ Don't move the person unless necessary, and avoid moving the person's head. Apply firm pressure to the wound with sterile gauze or a clean cloth. But don't apply direct pressure to the wound if you suspect a skull fracture. Maintain ABC of the patient: Airway, breathing, circulation. Then take the person to hospital.

ii) You have to meet with your friend and you came to know he is covid positive. What precautionary

Measure will you have take?

Ans When I came to know that the friend I am meeting with is a covid positive. Firstly ~~don't~~ ^{not} ~~it is~~ ^{not} important to meet that friend but if this is necessary then i will take the following precautions.

- i) Wear ~~For~~ Face Mask and Gloves and ~~the~~ It will also necessary for that friend to wear face mask and Gloves.
- ii) Keep distance of at least 2 meter.
- iii) And When came back to home a change the cloth i wear and also waste the gloves and Mask and wash the cloths and hand or take a bath with dettol if possible.