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Q1. write the function and composition of blood?

Ans: Function of blood:

Blood has three main functions: transport, protection and Regulation.

① Transport:

Blood transport the following substances

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Gases, namely oxygen O_2 and carbon dioxide CO_2 between the lungs and rest of the body. Nutrients from the digestive tract and storage sites to rest of the body. Waste products to be detoxified by the liver and kidneys. Hormone from gland in which they are produced to their target cells. Heat to the skin so as to help regulate body temperature.

Protection::

Blood has several roles in inflammation. Leukocytes destroy invading microorganism and cancer cell. Antibody and other protein destroy pathogenic substances.

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Regulation:

Blood help to regulate pH by interacting with acid and base water balance by transferring water to and from tissues.

Composition of blood:

Blood is classified as a connective tissue and consist of two main component.

① plasma:

which is a clear extracellular fluid

Formed elements:

they are Erythrocytes, and also known as RBC

Leukocytes, or WBC
platelets.

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Q2: what is platelets and write about clotting mechanism and its all step?

Ans: **Platelets** :-

platelets are tiny blood cell that help your body from clots to stop bleeding. if one of your blood vessels gets damage. it sends out signal to platelets.

The processes of spreading across the surface of blood vessel to stop bleeding called adhesion.

this is because when platelets get to site of injury they grow sticky tentacles to help them stick to one another.

Facts about platelets :-

platelets are made in your bone marrow along with white

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your bone marrow in the spongy center inside your bones. Another name for platelets is thrombocytes. a normal platelets count 150,000 to 450,000 platelets per microliter of blood.

Some people make too many platelets. They can have platelet count from 500,000 to more than 1 million.

clotting mechanism of platelets:

coagulation, also known as clotting processes by which blood changes from liquid to gel to forming blood clot. clotting begins almost instantly after an injury to the blood vessel has damaged the endothelium lining the blood vessel. exposure of blood to the subendothelial space initiates two processes. change in platelets, and

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The exposure of subendothelium to tissue factor to plasma factor VIII, which as ultimately lead to cross-linked fibrin formation.

Disorders of coagulation are disease states which can result in hemorrhage, bruising. The system in human has been most extensively researched and is best understood.

- ① constriction of blood vessel
- ② Formation of a temporary platelets plug. Activation of the coagulation cascade.
Formation of fibrin plug or the final clot.

Q3: write detail note on the ABO system?

Ans: **ABO blood group system:**

The classification of human blood based on the inherited blood

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properties of red blood cells as determined by the presence or absence of the antigen A and B which is carried on the surface of red blood cells. person may thus have type A and type B, type AB, type O blood group were 1st identification by Austrian immunologist in 1901.

Blood contain RBC with type A antigen on their surface has a serum antibodies against type B the RBC in injected blood will destroyed by antibodies in the recipients blood.

in the same way type A Red cells cause can be injected into with type A, B, O blood unless there is incompatibility. person with type AB blood can receive type A, B, O blood.

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| System | Recipient type | donor | donor |
|--------|------------------|-------------------------------------|---------|
| | | red cells | plasma |
| | | A ⁺ or O | A or AB |
| ABO | A | B ⁺ or O | B or AB |
| ABO | B | O | O A B |
| ABO | O | AB, A ⁺ , B ⁺ | AB |
| Rh | A ⁺ ⊕ | ⊕ or ⊖ | ⊕ |
| Rh | ⊖ | ⊖ or ⊕ | ⊖ |
| ABO | AB | AB, A B or O | AB |

The ABO antigens are developed well before birth and remain throughout life. Children acquire ABO antibodies passively from their mother before birth, but by three months of age infants are making their own. It is believed that stimulus for such in small number of pregnancies. Rarely ABO

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ABO, incompatibility may give rise to erythroblastosis fetalis a type of anemia in which RBC of the fetus are destroyed by maternal immune system! This situation occurs most often when a mother is type O and her fetus is either type A or type B.

Q4: What is erythrocyte, erythropoiesis and erythropenia?

Ans: Erythrocyte:

A cell that contains hemoglobin and can carry oxygen to the body. Also called RBC. The reddish colour is due to hemoglobin. RBC are biconcave in shape which increases the cell surface area and facilitates the diffusion of oxygen and CO_2 . This shape is maintained by flexible and change

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and change the shape when flowing through capillaries. Immature erythrocytes called reticulocytes normally account for 1-2 percent of RBC in blood.

② Erythropoiesis:

from Greek word erythro → meaning to make is the processes which produce the RBC which development from erythropoietic stem cell to mature RBC.

it is stimulated by decreases O_2 circulation, which is

detected by the kidneys which is secreted the hormone erythropoietin. This stimulates proliferation and differentiation of red cells precursors which activates increased erythropoiesis.

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in the hemopoietic tissues..
ultimately producing red
blood cells. in postnatal
birds and mammal this
usually occur in the bone
marrow within the spleen or
liver. This is termed
extramedullary erythropoiesis.
The bone marrow of essentially
all the bones produces red
blood cells until a person
is around five years old.
The tibia and femur cease
to important sites of
hematopoiesis by about age
25. The vertebrae, sternum
pelvis and ribs and
cranial bones continue to
produce red blood cells through
life. up at the age of
20 years RBCs are produce
from red bone marrow
of all the bone and
all the flat bones. such
as vertebrae, the sternum

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After the age of 20 years RBCs are produced from membranous bones such as vertebrae, the sternum, ribs, scapulas, and the iliac bones. After 20 years, the shaft of the long bones become yellow bone marrow because of fat deposition and loss of the erythropoietic function.

Erythrocytosis:

Primary erythrocytosis occurs as a result of polycythemia vera, a myeloproliferative neoplasm in which abnormal cells in the bone marrow produce too many red blood cells and platelets.

Secondary erythrocytosis develops as a result of a disorder that increases erythropoietin.

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Secondary erythrocytosis may have many causes. It can be caused by oxygen deprivation, which can result for example

Smoking
severe lung diseases
such as COPD

Both defects of the heart
carbon monoxide poisoning
High altitude.

Treatment:

Treatment with male hormones such as testosterone.

Kidney problem including tumors, cysts, and narrowing of the arteries that go to the kidneys, tumor of liver and brain.

Tumor associated with erythrocytosis can occur when

certain tumor such as kidneys, liver, brain or uterus secrete erythropoietin.

Q) Erythropenia:

The presence of decreased number of erythrocytes in the blood as occur in some forms of anaemia.

If erythrocyte count is less than normal such as state is called erythropenia.

A deficiency in number of RBC known as anaemia.

Erythropenia may be because of problem in production. Blood loss.

Q5: A person fell down from a tree and become unconscious with bleeding from head what will be first aid?

Q6) you have to meet with a friend and you come to know he is Covid positive

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what precautionary measure will you take?

a) First his head should be dressed and should be taken to hospital immediately. I will ask him about pain set him in a better position if bleeding then will use bandages and let him to the hospital.

b) if your friend has Covid-19. you wait till the symptoms of Covid-19 and isolate your self for almost 14 days. I will do the test and use mask and isolate myself.

"The End"