RADIOLOGY SEC B PHYSIOLOGY, 2ND SEMESTER

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Attempt all questions. Every question carry 10 marks.

Q**3. What is platelets and write about clotting mechanism and its all steps?**

* ***Platelets :***

***P***latelets, or thrombocytes, are small, colorless cell fragments in our blood that form clots and stop or prevent bleeding. Platelets are made in our bone marrow, the sponge-like tissue inside our bones. Bone marrow contains stem cells that develop into red blood cells, white blood cells, and platelets.

***How a blood clot is made***:

The coagulation cascade is a complex chemical process that uses as many as 10 different proteins (called blood clotting factors or coagulation factors) found in plasma in the blood. Put simply, the clotting process changes blood from a liquid to a solid at the site of an injury. Here’s how the process works:

1. ***Injury***:

A small tear in a blood vessel wall (for example, from a cut on the skin or an internal injury) causes bleeding.

1. ***Vessel constriction:***  
   To control blood loss the blood vessel narrows (called constriction), thus limiting blood flow through the vessel.
2. ***Platelet plug***:  
   In response to the injury, tiny cells in the blood called platelets are activated. The platelets stick to one another and to the wound site to form a plug. The protein von Willebrand factor (VWF) helps the platelets stick to each other and to the blood vessel wall.
3. ***Fibrin clot***  
   Next, clotting factor proteins trigger production of fibrin, a strong, strand-like substance that forms a fibrin clot, a mesh-like net that keeps the plug firm and stable. Over the next several days to weeks, the clot strengthens and then dissolves as the wounded blood vessel wall heals.

**Q2. What is erythrocyte,** **erythropoiesis,** **erythrocytosis and erythropenia?**

***Erythrocyte:***

Red blood cells also referred to as red cells. Red blood corpuscles haemits, erythyoid, cells are the most common type of blood cell and the vertebrate’s principal means of delivering oxygen to the body tissues, via blood flow through the circulatory system. RBCS take up oxygen in the lungs, or gills of release it into tissues while squeezing through the body’s capillaries.

*Erythropoiesis*

*Ethropoiesis is the process which is produce red blood cell . Which is the develoment from erythropoetuc stem cell to muture red blood cell*

erythropoeises takes place in the yplk sac, spleen, and liver. After brth all erythropoiesis accurs in the bone marrow.

* **Erythrocytopenia*:***

The pesence of decreased numbers of the erythrocytes in the blood as occurs in some form of the anemia : also called erythropenia

***Write a note on ABO system ?***

* ***ABO blood group system***:

the classification of human [blood](https://www.britannica.com/science/blood-biochemistry) based on the inherited properties of red blood cells ([erythrocytes](https://www.britannica.com/science/red-blood-cell)) as determined by the presence or absence of the [antigens](https://www.britannica.com/science/antigen) A and B, which are carried on the surface of the red cells. Persons may thus have [type A](https://www.britannica.com/science/type-A-blood), [type B](https://www.britannica.com/science/type-B-blood), [type O](https://www.britannica.com/science/type-O-blood), or [type AB](https://www.britannica.com/science/type-AB-blood) blood. The A, B, and O blood groups were first identified by Austrian immunologist

Blood containing red cells with type A [antigen](https://www.britannica.com/science/antigen) on their surface has in its [serum](https://www.britannica.com/science/serum) (fluid) [antibodies](https://www.britannica.com/science/antibody) against type B red cells. If, in [transfusion](https://www.britannica.com/science/blood-transfusion), type B blood is injected into persons with type A blood, the red cells in the injected blood will be destroyed by the antibodies in the recipient’s blood. In the same way, type A red cells will be destroyed by anti-A antibodies in type B blood. Type O blood can be injected into persons with type A, B, or O blood unless there is incompatibility with respect to some other blood group system also present. Persons with type AB blood can receive type A, B, or O blood.

| **system** | **recipient type** | **donor red cell type** | **donor plasma type** |
| --- | --- | --- | --- |
| **ABO** | A | A\* or O | A or AB |
| **ABO** | B | B or O | B or AB |
| **ABO** | O | O only | O, A, B, or AB |
| **ABO** | AB | AB\*, A\*, B, or O | AB |
| **Rh** | positive | positive or negative | positive or negative |
| **Rh** | negative | negative or positive\*\*, \*\*\* | negative or positive\*\* |

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: when*** *a person sundenly fall fell down from the free the first that we beed to is to stop the person bleeding and if we have to put a sprite on his wound and tha we will hold the wound place tighly to stop the bleeding. Than cover than wound place with a bandage . If a person feel too much pain than there also orine imjection present in the first aid box than this injection is for to reduce tha pain of the person . Than call ro ambulance to get that person to hospital .*

(ii) you have to meet with your friend and you came to know he is covid positive, what precautionary measures will you take?

ANS: If we have to meet with our friend and we come to know that he is covid position the first thing that we have to do that we willl cover our mouth and nose but I new invention about covid 19 is that the corona can also get inside from the eyes so we will also cover our eyes as well will saty away from that person is about 6 or 8 fit . We do not will shakes hand .the gloves are also most. time by time senitizer our hand .after meeting that positive person the changing of clothes and gloves also mask etc are most because after meeting a person these are important to remove

**Q1. Write the functions and composition of blood?.**

***Functions of blood\_***

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

***Transport***

Blood transports the following substances:

* Gases, namely oxygen (O2) and carbon dioxide (CO2), between the lungs and rest of the body
* Nutrients from the digestive tract and storage sites to the rest of the body
* Waste products to be detoxified or removed by the liver and kidneys
* Hormones from the glands 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, or white blood cells, destroy invading microorganisms and cancer cells
* Antibodies and other proteins destroy pathogenic substances
* Platelet factors initiate blood clotting and help minimise blood loss

***Composition of blood***

Blood is classified as a connective tissue and consists of two main components:

1. Plasma, which is a clear extracellular fluid
2. Formed elements, which are made up of the blood cells and platelets

The formed elements are so named because they are enclosed in a plasma membrane and have a definite structure and shape. All formed elements are cells except for the platelets, which are tiny fragments of bone marrow cells.

Formed elements are:

* Erythrocytes, also known as red blood cells (RBCs)
* Leukocytes, also known as white blood cells (WBCs)
* Platelets
* Leukocytes are further classified into two subcategories called granulocytes which consist of neutrophils, eosinophils and basophils; and agranulocytes which consist of lymphocytes and monocytes.
* The formed elements can be separated from plasma by centrifuge, where a blood sample is spun for a few minutes in a tube to separate its components according to their densities. RBCs are denser than plasma, and so become packed into the bottom of the tube to make up 45% of total volume. This volume is known as the haematocrit. WBCs and platelets form a narrow cream-coloured coat known as the buffy coat immediately above the RBCs. Finally, the plasma makes up the top of the tube, which is a pale yellow colour and contains just under 55% of the total volume.