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**COURSE: BS RADIOLOGY (2ND SEMESTER ) SEC B**

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1.Write the function and composition of blood.

Ans1.A) **Function 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 cell antibodies and other proteins destroy pathogenic substances platelets factors initiate blood clotting and help minimise blood loss

•**Regulation:**

Blood helps regulate:

pH by interacting with acids and bases water balance by transferring water to and from tissues

**B.Composition of blood:**

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

Plasma, which is a clear extracellular fluid 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.

2.What is erythrocyte, erythropoiesis, erythrocytosis, and erythropenia..

Ans **2. A)** **Erythrocyte:**

A type of blood of blood cell, that is made in bone marrow and found in blood .it is also called red

 Blood cell. Erythrocyte contain a protein called hemoglobin. Which carries oxygen form the lungs to all parts of the body .Checking the number of erythrocyte in the blood is usually part of a complete blood

Cell CBC test. It may be used to look for condition such as anemia ,dehydration ,malnutrition,and leukemia.

**B)Erythropoiesis:**

 Erythropoiesis is the process which produces red blood cells, which is the development from erythropoietic stem cell to mature red blood cell. It is stimulated by decreased O₂ in circulation, which is detected by the kidneys, which then secrete the hormone erythropoietin.

**C)Erythrocytosis:**

 Erythrocytosis is a condition in which our body makes too many red blood cells (erythrocyte).red

 Blood cells carry oxygen to our organ and tissue. Having too many of these cell can make pir blood

 Thicker than normal and lead to blood clots and other complications.

**D)Erythropenia:**

  A reduction in the number of red blood cells (erythrocytes) in the blood. This usually, but not invariably, occurs in anaemia. It is also called erythrocytopenia.

3.What is platelets and write about clotting mechanism and its all step.

Ans3. **Platelets:**

Platelets 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 contain stem cells that develop into red blood cells , and platelets.

 These are formed by fragmentation of megakaryocytes.

•**Mechanism of clotting and its step:**

1)Prothrombin activated is formed in response to damage to vessels or damage to blood.

2)Prothrombin activated catalyzes conversion of prothrombin to thrombin.

3)Thrombin catalyzes conversion of fibrinogen to fibrin threads that enmashed platelets ,blood cells

 And plasma to form clot.

**1)Extrinsic pathway:**

 Begin with trauma to vascular wall or extra vascular tissue.

1)Traumatized vascular wall or extra vascular tissue release tissue thromboplastin(factor 3) consisting

 Of phospholipids and lipoproteins (protcolytic enzyme)

2)Tissue thromboplastin with factor 7 act on factor 10 to form activated factor 10.

3)Activated factor 10 complexes with phospholipid (factor 3)and factor 5 to form prothrombin activator.

**2)Intrinsic pathway:**

Begin with trauma to blood or coming of blood in contact with collagen or wettable surface such as

 Glass and negatively charged surface.

1)Trauma to blood damages platelets due to adherence to collagen or wettable surface ,this releases

 Platelet phospholipids. Also trauma to blood activates factor 12 due to coming in contact with collagen

 Or wettable surface .

2)Activated factor 12 activates factor 11 in presence or HMW kininogen and prekallikrein.

3)Activated factor 11 activates factor 9.

4)Activated factor 9 in combination with factor 8 and platelet phospholipid activates factor 10 .

5)Activated factor 10 complexes with phospholipid (of platelet)and factor 5 to form prothrombin

 Activator.

4.Write a detail note on ABO system.

**Ans4. ABO Blood group system:**

ABO blood group system ,the classification of human blood based on the inherited properties of

 Red blood cells (erythrocyte) as determined by the presence or absent of the antigens A and B, which

 Are carried on the surface of the red cell .

 **ABO System classification:**

There are four type of blood group according to ABO system.

 1)Blood group A

 2)Blood group B

 3)Blood group O

 4)Blood Group AB

 **1)Blood group A:**

 • A type antigen is present in A blood group.

 • It receive blood from A group and O.

 • Anti B agglutinin is present in blood group A.

 • if B group blood is given to A group then Anti B agglutinin react against B group blood.

 **2)Blood group B:**

 • B antigen is surface of erythrocyte.

 • It receive blood from B group and O.

 • anti A agglutinin is present in this group.

 • If A group is given to B group anti A agglutinin react against A blood of group.

 **3)Blood group O:**

 • There is no antigens is present in blood group O.

 • In this blood group both agglutinin anti A and B are present.

 • It is also called universal donor.

 • Because there is no antigen present in this blood group.

 **4)Blood group AB:**

• In this blood group, both antigens A and B are present.

 • Agglutinin are not present in this blood group.

 • This blood group also called universal recipient.

 • Because there is no agglutinin in this blood group.

5**. Part A:** A person fell down from a tree and become unconscious, with bleeding from head ,what will

 You do as a first aid?

Ans5 .**part A:**

 **•Maintain airway:** check oral cavity that person airway is not compromised.

 •**Breathing:** Make sure that person breathing is clear.

 •**Try to stop bleeding:** Apply bandage or cotton etc generally on wound side to stop bleeding .

 •**Head+cervical spine protection:** keep head in slight raised position.Do not move head forcefully

 To either sides.

 •**Check up of body:** Also examine other part of body if there is associated injury.

 •**Call the emergency(1122):**Call the emergency quickly for delivery of patient to the hospital.

 **Part B:**You have to meet with your friend and you came to know he is covid positive what

 Precautionar measure will you take?

 **•Self isolation:** When meet with covid positive person first go to isolation for 14 days.

 •**Use personal things at home:** Use the personal things like utensils,soaps,towel etc at home.

 •**Social distancing:**Keep social distancing at least 6 feet in case of talking to anyone.

 •**Use of Mask** : using of mask and gloves were necessary to stop spread of virus .

 •**Use of sanitizer+soaps:** Wash hand with sanitizer and soap for 20 second after every 2 hour.

 •**Arrange medical equipment:** arrange medical equipment like thermometer and pulse oximeter

 Etc

 •**Medication:** Also arrange necessary basic medication for fever , body aching ,if symptoms

 Appear.

 •**Test:** If symptoms appear Go for PCR test and also consult doctor.