DENTAL SEC B PHYSIOLOGY, 2ND SEMESTER

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Attempt all questions. Every question carry 10 marks.

Q1. Write the functions and composition of blood?

Answer. Blood : A specialized type of connective tissue that consist of liquid portion (plasma) and formed elements. RBC,WBC, platelets etc.( Formed elements: means that substance are having definite shape).

Composition of blood...

Blood is composed of two components (1) plasma (liquid portion of blood) (2) formed elements (RBC,WBC,PLATELETS )

1: plasma:: it is a part of extracellular fluid that contain more protein.

\_ it covers 55%of blood volume.

- so the remaining 45% covered by formed elements.

Composition of plasma..

2 components (1) water content (2) solid particle \_ organic ( protein,fats, enzymes etc),\_ inorganic content (sodium ,pottasium ,calcium,charge particle Na,k+,can++)

Function of plasma...

- it help in exchange transport of material in blood I.e ( o2 and calcium)

- it help in clotting of blood

- store protein (for supplied indeed)

- maintain blood viscosity and blood pressure

- Defensive mechanism "WBC"

##Function of blood##

- nutritive function" protein,glucose etc"

- respiratory function

- clotting

- excretory function"waste product"

## Red blood Cells##

Erythrocyte=red cells , rounded ,bi concave Dix like structure,

Non-nucleated ,, thickness√ thickest part (1.9mm), √ thinnest part (1 micro m).

Volume-83 cubic micro meter

Life span- 120 days

Number , males- 5.2 million per cubic mm in male

- females- 4.7 Million per cubic mm.

RBC formation

Sites of production of RBC

, In early embryonic life= yolk sac

Middle trimester = liver

Last trimester: bone marrow and after birth.

Red blood cells function

Red color because of presence of homoeglobin , oxygen supply, acid base balance , maintenance blood viscosity, providing of iron on destruction of RBC .

##White blood cells##

Mobile unit of protective system of the body

Leukocytes, color less , nucleus presence , irregularly shaped

Larger in size than RBC

2 types

1. Granulocytes

2. Agranulocytes

WBC function

Phagocytosis, monocytes/ neutrocyte they are involved in engolfment of foreign agent.

Eosinophil. Destroy parasite allergic substance

Lymphocytes. Involved in immune system

Plasma. Provide antibodies

Basophils. Secrete - heparin. - present intravascular blood clotting.

3## platelets##

Also called thrombocytes (formation of thrombocytes) megakaryocytes- present in bone marrow- get pinched off from bone marrow- transfer- into , " platelets"

Shape round,oval,- having no nucleus

Smaller in size than RBC

4-10days in blood. Life span

Rate of production 200 billion/days

Function...

Important role in homoestasis , blood clotting...

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

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(2) 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.

(3) erythrocytosis

Erythrocytosis is defined as an increase in red blood cell (RBC) mass, usually absolute, and is also associated with an increased hematocrit (HCT) and hemoglobin concentration. Although some use the term polycythemia interchangeably with erythrocytosis, the two are not synonymous.

(4) erythropenia

the presence of decreased numbers of erythrocytes in the blood, as occurs in some forms of anaemiaAlso called: erythrocytopenia.

Q3. What is platelets and write about clotting mechanism and its all steps?

Platelets...

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Clotting mechanism

Coagulation, also known as clotting, is the process by which blood changes from a liquid to a gel, forming a blood clot. It potentially results in hemostasis, the cessation of blood loss from a damaged vessel, followed by repair. The mechanism of coagulation involves activation, adhesion and aggregation of platelets, as well as deposition and maturation of fibrin.

Disorders of coagulation are disease states which can result in hemorrhage, bruising, or thrombosis.

Injury

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

Vessel constriction

To control blood loss the blood vessel narrows (called constriction), thus limiting blood flow through the vessel.

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.

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.

Q4. Write a note on ABO system?

Answer..

ABO system

Land Steiner (1901) discovered ABO-BG- system

- blood group of individuals depends on presence/absence of specific antigen/antibodies on RBC

- ABO blood group system only 2 antigen determine the blood group.

- person having antigen"A" on RBC , will be represent blood group"A" (and B.antibodies)

- antigen B on RBC system will have antibodies A , will have blood group B

- antigen AB on RBC- no antibodies

- blood group AB - universal acceptor

The person having 0 antigen on RBC will have antibodies both A and B , will have o- blood group- universal donor.

Antigen:. Called agglutinogen

- concerned with blood group.

Determination

- complex of polysaccharide with protein.

Antibodies: - aggludinin , these are protein which appear in plasma or body fluid.,.

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

Answer...

Remove any clothing or debris on the wound. Don't remove large or deeply embedded objects. Don't probe the wound or attempt to clean it yet. Your first job is to stop the bleeding. Wear disposable protective gloves if available.

Stop the bleeding. Place a sterile bandage or clean cloth on the wound. Press the bandage firmly with your palm to control bleeding. Apply constant pressure until the bleeding stops. Maintain pressure by binding the wound with a thick bandage or a piece of clean cloth. Don't put direct pressure on an eye injury or embedded object.

Help the injured person lie down. If possible, place the person on a rug or blanket to prevent loss of body heat. Calmly reassure the injured person.

Don't remove the gauze or bandage. If the bleeding seeps through the gauze or other cloth on the wound, add another bandage on top of it. And keep pressing firmly on the area.

Tourniquets: A tourniquet is effective in controlling life-threatening bleeding from a limb. Apply a tourniquet if you're trained in how to do so. When emergency help arrives, explain how long the tourniquet has been in place.

Immobilize the injured body part as much as possible. Leave the bandages in place and get the injured person to an emergency room as soon as possible.

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

Answer...

Avoid visitors while you have symptoms.

• Household members should stay in a different room or if that is not possible, maintain a distance of at least 1 meter.

• Hand must be cleaned before and after preparing food, before eating, after using the toilet, and whenever hands look dirty.