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.***

* Function of blood

Blood is a type of liquid connective tissue. The major function of blood is transport.

* Blood composition

The blood is consist of

Liquid plasma

Volume -55 – 60%

Formed element, cells

Volume 40­-45%

* Plasma

The plasma is the liquid part of blood. It is made up of

92% water, mineral ion, glucose, hormones, co2, protein.

Cells, formed Element

RBC

RBC is bicancave in shape

Diameter is 7.8 micrometer

Thickness is 2.5 micrometer

WBC

It is 7000 per microliter of blood.

Platelets

Platelets consist of 92% of water and remaining 8% is glucose, protein, amino acid, hormone and oxygen.

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

***Answer.***

**Erythrocytes**

The red blood cells are the most abundant type of blood cells.

Approximately 2.4 new RBC are produced per second.

Approximately a quarter of the cells in the human body are red blood cells.

**Erythropoiesis**

Erythropoiesis is the process by which red blood cells are produced. It is stimulated by decreased o2 in circulation which is detected by the kidney which then secrete the hormone erythropoietin. The whole process lasts about 7 days. Through this process erythrocytes are continuously produced in the red bone marrow of large bones at a rate of about 2 million per second in a healthy adult.

**Erythrocytosis**

Also called polythemia

If the erythrocyte count is more than normal such state is called erythrocytosis.

**Erythrocytosis**

* Physiological

Absoiute – in high altitude

Relative - exercises

* Pathological

Primary – bone marrow disorder.

Secondary – due to any respiratory disease.

**Erythropenia**

* Physiological

Absolute – deficiency of production

Relative - pregnancy

* Pathological

Primary – bone marrow disorder.

Secondary – due to any kidney disease.

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

***Answer.***

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 contains stem cells that develop into red blood cells, white blood cells, and platelets. The life spam of platelets is 10 days.

Clotting mechanism

Coagulation, also known as clotting, is the process by which blood changes from a liquid to a gel forming a blood clot.

Clotting mechanism and its all steps

* Adhesion
* Activation
* Aggregation
* Fibrin deposition

Adhesion - Injury to the blood vessel .Endothelium lining the vessel damaged. Blood comes into space under endothelium. Underlying collagen exposed to circulating platelets. Platelets bind with surface receptors of collagen and adhere tightly. This is adhesion

Activation - Platelets change shape. Turn on receptors and secrete chemical messengers to activate and invite additional platelets. Activated platelets adhere tightly at injury site.

Aggregation - Platelets connect to each other through receptor bridges. Platelet plug formed at injury site unless the interruption is physically too large.

Fibrin deposition - Formation of platelet plug will ensure primary hemostasis and fibrin deposition start and thus started secondary hemostasis. Thus fibrin clot formed. Then clot retraction and platelet inhibition.

Q4. Write a note on ABO system?

***Answer.***

A blood type is a classification of blood based on the presence or absence of inherited antigenic substances (proteins) on the surface of red blood cells (RBCs)

Blood types are [inherited](http://en.wikipedia.org/wiki/Biological_inheritance) and represent contributions from both parents

The two most important ones are [ABO](http://en.wikipedia.org/wiki/ABO_blood_group_system) and the Rh antigen system, they determine someone's blood type (A, B, AB and O, with +, − or Null denoting Rhd status.Rhesus (Rh) factor is an inherited protein found on the surface of red blood cells. If your blood has the protein, you're Rh positive. If your blood lacks the protein, you're Rh negative

ABO system

It was discovered on the base of research

O 47%

A 41%

B 9%

AB 3%

First time it was introduce By Dr. Karl Landsteiner 1900 It is Inherited from parents Based on A and B antigens- Agglutinogens on RBC surface

May have,

Neither of them

One of them

Both of them

Agglutinogens and agglutinins

Agglutinogens on surface of RBC

Agglutinins in blood plasma

Can cause blood transfusion reactions

If we are donating the blood to a person we must have to find that what is the group of the patient A, B, O or AB we must have to care of this if patient is A blood group we have to donate him/her blood group A. if we didn’t donate blood group A the patient will be die.

Role of blood groups in blood transfusion

If mismatched then hemolysis

Blood typing is mandatory

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.***

A person fell down from a tree and become unconscious, with bleeding from head we have to;

* Can him/her responsive if not responsive we have to check breathing.
* If breathing, look closely how they have fallen and carefully put them into the recovery position to keep their airway clear.
* If not breathing: start CPR immediately and act according to your organization’s emergency policy. Request a defibrillator immediately if there is one available.
* If the person is responsive Talk to them.
* Try and work out where it hurts most and look at them closely to see if there is any obvious bleeding, bruising or a particular injury.
* If conscious and you think it may have fallen from a height and have injured their neck or spine – Do not move them. Try and keep them as still as possible and discourage them from twisting.
* Phone an ambulance and calmly keep reassuring them until paramedics arrive.
* If you are aware of any bleeding apply firm pressure with a clean pad whilst awaiting the First Aid kit.
* If start to show signs of clinical shock – lie them back and raise their legs and get medical help.
* If there is no obvious injury Carefully and very slowly help them into a sitting position – watch them carefully
* With help, carefully assist them into a chair, or back to bed.
* Very carefully check over completely to ensure that there is no unseen injury – this is particularly important with diabetics when they may not feel where they have hurt themselves.
* Monitor them carefully for the next 24 hours, inform their next of kin and fill in an accident form.

(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 from close contact with one another.
* Contact within about 6 feet.
* Through respiratory droplets produced when an infected person coughs, sneezes or talks.
* Wash your hands often outing.
* Avoid close contact.
* Cover your mouth and nose with Mask cloth face cover.
* Cover coughs and sneezes.
* Do not go out from home.
* Do not go to that places where is rush.