



SAFALTA CLASSTM

An Initiative by **अमरउजाला**

Polymerase

• DNA → DNA
↓

Replication

• Transcription:

DNA → RNA

Transcriptase

• RNA → DNA

↓
Reverse Trans.

• RNA → Pro

↓
Translation

BLOOD



BLOOD: रक्त

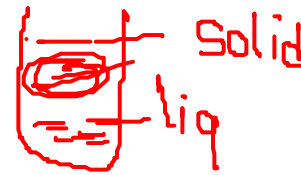
pH: 7.35-7.45

- Blood is a connective tissue. संयोजी ऊतक
- Ph of blood is 7.4 (slightly basic/alkaline in nature)
- Average Volume of blood in an adult: (5-6) ltr (50-70) Kg
- Weight of blood: 7% of our body weight *

COMPOSITION OF BLOOD:

Blood is mainly composed of 2 parts:

1. Plasma (55%): liquid part of blood, yellow in colour
2. Cells/Corpuscles (45%): solid part of blood, red in colour.



50 kg → 3.5 kg
60 kg → 4.2 kg
70 kg → 4.9 kg

65-1.

Size: WBC > RBC > Plat

RBC : WBC : Plat

600 : 1 : 40

WBC: 8000

Plat: 8000 x 40

RBC: 8000 x 600

3.2 lakh

48 lakh → 4.8 mn

नसों : Anti Clotting Agent



Heparin हियरिन → (Carbohydrate)

↳ Liver यकृत

Pigment लक्ष

Que: Yellow → Bilirubin ↑ → Liver

Jaundice →

Composition of Plasma:

1. Water: 92% ✓
2. Plasma Protein: 7%

Plasma protein mainly consists of 4 protein: Albumin, Globulin, Prothrombin, Fibrinogen

3. Salts and Minerals: 1% (Sodium, Calcium, HCO₃⁻)
नमक — खनिज

Note: Yellow colour of plasma is due to a pigments namely Bilirubin, produced by Liver.

FUNCTION OF PLASMA: कार्य

1. Provides fluidity to blood. तरलता
2. Helps in blood clotting. ✓
3. Regulates the Ph of blood. ✓
4. Regulates body temperature.

7.4

Blood Clotting



*

*

Na⁺

Ca⁺

नमक — खनिज

	RBC RED BLOOD CORPUSCLES लाल रुधिर कणिका	WBC WHITE BLOOD CELL श्वेत रुधिर कोशिका	PLATELETS
SCIENTIFIC NAME:	ERYTHROCYTES ↓ ↓ Red Cell (45-55) lakh	LEUKOCYTES ↓ white (transparent)	THROMBOCYTES
NUMBER(/0.001ML):	(4.5- 5.5)MILLION FEMALE: (4.5- 5)MILLION MALE: (5-5.5)MILLION AVERAGE NUMBER :5 MN * Total (5-6) L - (25-30) trillion (10 ¹²)	(4000-11,000)	(1.5- 4.5)LAKHS
DISEASE:	DEFICIENCY: ANAEMIA अशक्तता / रुधिर क्षीणता EXCESS: POLYCYTHEMIA	DEFICIENCY: MANY DISEASE EXCESS: BLOOD CANCER (LEUKEMIA) *	DEFICIENCY: BLEEDING / HAEMMORHAGE EXCESS: THROMBOSIS

RBC (ERYTHROCYTES):

- Red colour of RBC is due to a protein namely Hemoglobin. (12-16) unit (gm/10ml)
- Hemoglobin: It is a protein found in our blood and composed of a metal IRON.
- Function of HB:
 1. Transportation of Oxygen throughout the body that helps in energy formation.
 2. Exhalation of CO₂.

Facts:

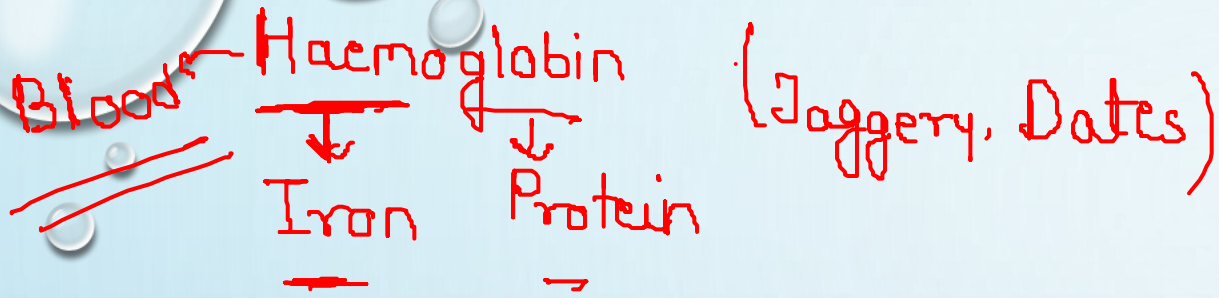
Shape: Biconcave

Nucleus: No nucleus, No Mitochondria

Life span: 120 days

Origin: Red Bone Marrow

Graveyard: Spleen and Liver



Que: Central Metal: Iron

Que: 2 Max reactivity



Haematology 300X

Haemocytometer

Blood Cell

RBC

Prophyrin

O_2 ring

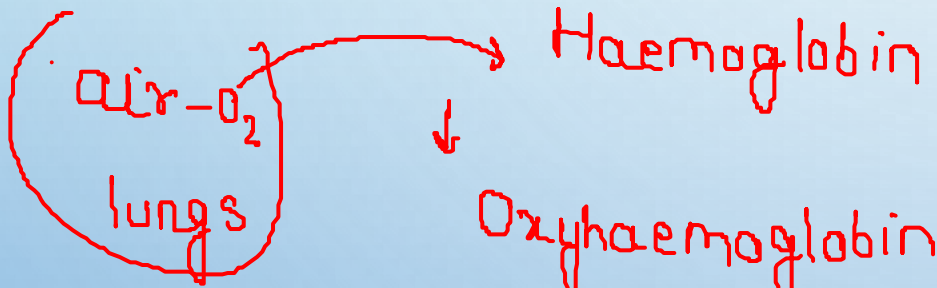
Fe

O_2

O_2

Molecules: $4O_2$

Que:



Oxyhaemoglobin

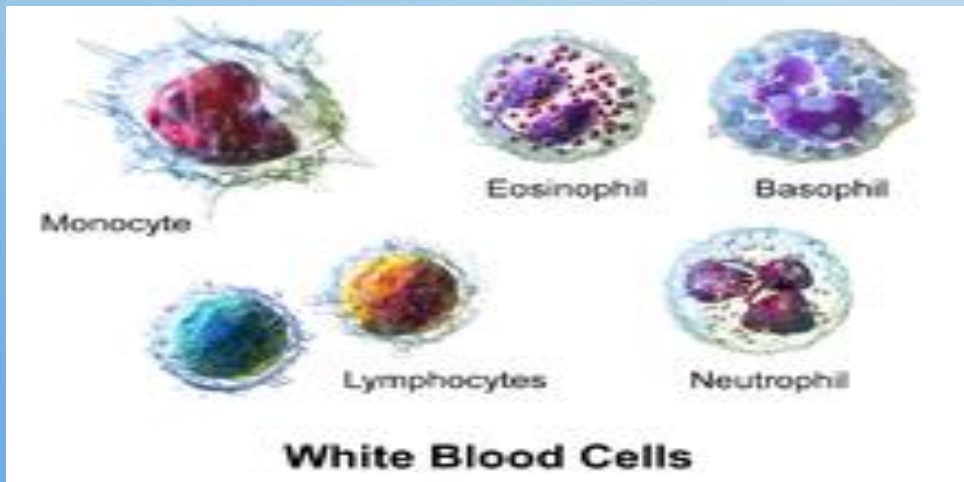



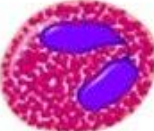
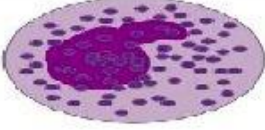

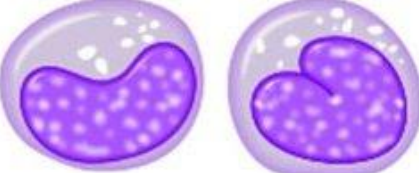
Atoms: 8.0

Eg: 15HB → 120.0 → 120 Energy
8HB → 64.0 → 64 En

WBC (LEUKOCYTES):

- Also known as “Soldier of body”/ “bodyguard of body”
- Function: To fight against disease i.e. to provide immunity
- **Facts:**
- Shape: Irregular/amoeba shape
- Nucleus: Nucleated
- Life span: (2-5)days/ up to 21 days
- Origin: Bone Marrow
- Graveyard: Liver/ in the blood



Subtype	Nucleus	Function	Example
Neutrophil	Multi-Lobed	Bacterial or fungal infection. These are the most common first responders to microbial infection.	
Eosinophil	Bi-Lobed	Parasitic infections and allergic reactions (inflammatory).	
Basophil	Bi/Tri-Lobed	Allergic and antigen response (releases histamine causing vasodilation).	
Lymphocyte	Deep Staining, Eccentric	Include B cells, CD4+ helper T cells, and CD8+ cytotoxic T cells. Operate primarily in the lymphatic system.	
Monocyte	Kidney Shaped	Phagocytosis of pathogens. Presentation of antigens to T cells. Eventually, they become tissue macrophages, which remove dead cell debris and attack microorganisms.	

PLATELETS (THROMBOCYTES):

- Smallest blood corpuscles.
- Function: Helps in blood clotting
- **Facts:**
- Shape: Irregular (amoeba shape)
- Nucleus: No Nucleus
- Life span: 7 days
- Origin: Bone marrow
- Graveyard: Spleen

PROCESS OF BLOOD CLOTTING:

