- RBCs count in males is 5 million cells/µL and 4 million in females.
- In a liver disease, plasma proteins synthesis is decreased losing the normal oncotic pressure (25-28 mmHg) resulting in edema.
- MCV normal range is 80-90 fL.
- RBCs normal diameter range is 7.5-7.8 µm.
- RBCs normal surface area range is 132-138 μm^2.
- The biconcavity of RBCs increases their surface area by 20-30%.
- If hemoglobin was free in plasma (rather than in RBCs), Plasma oncotic pressure rises from 28 up to 70 mmHg greatly increasing the work performed by the heart leading to death.
- During the second trimester of the embryonic life, hematopoiesis takes place primarily in the liver and to a lesser extent in spleen.
- Some diseases cause the liver and the spleen to produce blood cells after birth.
- 90% of the erythropoietin is produced by the kidneys, the rest 10% is produced by the liver. The amount produced by the liver alone is not sufficient for maintaining normal RBCs count.
- The duration of erythropoietin activity is 3- 7 days.
- The normal percentage of reticulocytes in the blood is 1-2%. They are found in higher amounts in the bone marrow.
- **"**In the bone marrow: number of reticulocytes = number of nucleated cells**"**
- Deficiency in Vitamins B9 or B12 may cause skin pigmentation, especially on the face.
- Daily intake of iron ranges from 15 to 20 mg. Only 4% (0.6 mg) is absorbed.
- Iron in shedding Intestinal epithelial cells is either excreted with feces or recycled.
- 1 gram of hemoglobin binds 1.34 ml of oxygen.
- In the lungs, Po_2 is 100 mmHg and 97% of hemoglobin is saturated.
- In most tissues, Po_2 is 40 mmHg and 75% of hemoglobin is saturated.
- In distant tissues, Po_2 is 26 mmHg and 50% of hemoglobin is saturated.
- As a mammal size increases, the oxygen dissociation curve shifts to the left.
- **"**An MCH lower than 27pg is found in microcytic anemia, and also in hypochromic, normocytic red blood cells. Elevation of MCH occurs in macrocytic anemia and in some cases of spherocytocis in which hyperchromia occurs**".**
- Anemia is defined as any decrease in oxygen transport capacity of the blood. Thrombocytopenia refers to anemia caused by decreased RBCs count; it's a special case of anemia and not a synonym of anemia.

- Normal viscosity of the blood is 3 times that of water. In anemia, this number may decrease to as low as 1.5.
- Erythrocytosis is usually used to indicate a physiological and transient increase in RBCs count while polycythemia refers to a pathological and prolonged increase.
- In ESR, increased size of RBCs decreases the sedimentation rate.
- In osmotic fragility test, increased size of RBCs increases their fragility because of the increased surface area through which water can enter the cells.
- WBCs count increases slightly in the evening and after meals, pregnancy and infections.
- The cytoplasm of lymphocytes is basophilic (blue in color).
- The calculations in page 14 are just to understand and are not required in the exam. The following simple laws are required. HCT=hematocrit.

MCV	(HCT x 10) / RBCs count
MCH	(Hb x 10) / RBCs count
MCHC	(HB x 100) / HCT
Mean cell diameter	Mean diameter of 500 cells in a smear.

Correction

Page	Statement	Correction
14	...29g/cell.	29**p**g/cell
18	A leukocytes count less than 4000 or higher than 11000 is called leukocytosis and leukocytopenia, respectively.	A leukocytes count less than 4000 or higher than **10000** is called **leukocytopenia** and **leukocytosis**, respectively.