

TOPICS ON BIOLOGY FOR ADMISSION TEST

1. Basic structure and characteristics of the eukaryotic cell (cellular organelles, structure, function).
2. Basic metabolic pathways: glycolysis, biological oxidation, photosynthesis (the biological role and basic characteristics of enzymes).
3. The DNA and its role in heredity: the structure of DNA, the genetic code, the replication of the genetic material.
4. Cell division I.: Chromatin, chromosomes. The behaviour of chromosomes during mitosis.
5. Cell division II.: Meiosis. The role of meiosis in sexually reproducing organisms.
6. Genetics I.: Genotype, phenotype, genes, alleles. Monohybrid cross, dominant-recessive type of inheritance, co-dominance. The first Mendelian law of inheritance.
7. Genetics II.: X-linked inheritance. Dihybrid cross: the second Mendelian law of inheritance. Genetic linkage, crossing-over.
8. From DNA to protein: Translation, mRNA, rRNA, tRNA, ribosomes.
9. Basic anatomy and physiology of the human respiratory system.
10. Basic anatomy and physiology of the human circulatory system.
11. Basic anatomy and physiology of the human digestive system.
12. Basic anatomy and physiology of the human excretory system.
13. Homeostasis: the basic structure and function of the human nervous system.
14. Homeostasis: hormones, the human endocrine system.
15. Basic structure and function of skeletal muscle cells, locomotion in humans.
16. The basic defense systems against infections: the humoral and cellular immune response in humans.

Textbook: Sadava, Heller, Orians, Purves, Hillis (ed.): *Life. The Science of Biology, 8th. Edition.* Sinauer Associates, INC., VHPS/W.H. Freeman and Co. Gordonsville, VA, U.S.A.