Syllabus of entrance examination in Biology

1. The cell – basic structural and functional unit
    - proteins and nucleic acids – structure, enzymes, replication. transcription. translation
    - viruses – structure and importance
    - prokaryotic cell – structure and functions
    - eukaryotic cell - plasma membrane, membrane bound organelles, nucleus – structure of chromosomes
    - cell division – mitosis and meiosis
    - providing the cell with energy - biological oxidation, role of ATP, oxidative phosphorylation, glycolysis. Krebs cycle
2. Genetics
    - monohybrid cross, dihybrid cross, Mendel's laws
    - interactions of genes and alleles
    - genetics of sex, linked inheritance and crossing over
    - mutational variability - classification of mutations, gene, chromosomal and genomic mutations
    - inherited diseases in humans
3. Individual development in animals and humans.
    - gametogenesis
    - fertilization.
    - homeostasis. immunological mechanisms of homeostasis
4. Human body
    - tissues - epithelial. connective, muscle, nerve
    - the locomotive system - bones, scull, vertebral column, thorax and limbs, muscles – shape, action, types, physiology,
    - the cardiovascular system - body fluids, blood plasma, blood cells, heart and vessels, blood and lymph circulation
    - the respiratory system - nose, pharynx, trachea, bronchi, lungs, inhalation, exhalation, gas exchange,
    - the digestive system - nutrition, digestion in mouth, stomach and intestines
    - the skin – layers, glands, appendages, functions
    - human reproduction - male reproductive system, female reproductive system
    - the nervous system - spinal cord, brain, autonomic nervous system
    - the endocrine system - glands, pancreas, testes and ovaries
    - the sensory system - sight, hearing
5. Evolution
    - palaeontological history of man, anthropogenesis.
    - comparative anatomical, physiological, embryological and paleontological evidences for evolution
6. Organism and environment