**Y E A R : S E C O N D**

S U B J E C T : P H Y S I O L O G Yفسلجة

**Theoretical hours: 4**

**Practical hours: 3**

**Units: 10**

**FIRST & SECOND SEMESTERS**

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| **PHYSIOLOGY : THEORETICAL SUBJECTS** | **HOURS** |
| Introduction to Physiology | **1** |
| The cell and its functions(Organization of the cell, membranous  structures of the cell, cytoplasm and its organelles functional systems of the cell,Transport of substances through the cell membrane, radiation and metabolism of energy) | **5** |
| Nerve(structure of the nerve cell, membrane potentials and  action potentials, origin of the normal resting membrane potential, nerve action potential,initiation of the action potential, special characteristics of signal transmission in nerve trunks,  synapses, neurotransmitters and the neuromuscular junction. | **5** |
| Muscle(types of muscles and structures, General mechanism of  muscle contraction, molecular mechanism of muscle contraction, molecular characteristics of the contractile filaments, energetics of muscle contraction, characteristics of whole muscle contraction, mechanics of skeletal muscle contraction, rigor mortis and physiology of cardiac muscle). | **5** |
| The Autonomic nervous system (General organization of the  autonomic nervous system, physiologic anatomy of the sympathetic nervous system, physiologic anatomy of the  parasympathetic nervous system, chemical transmission at  autonomic junctions, basic characteristics of sympathetic and parasympathetic function, receptors on the effector organs, effects of sympathetic and parasympathetic stimulation on | **3** |

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| **PHYSIOLOGY : THEORETICAL SUBJECTS** | **HOURS** |
| specific organs, “Alarm” or “Stress” response of the sympathetic  nervous system and control of the autonomic nervous system). |  |
| Blood (formed elements, functions of the blood, erythrocytes,  erythropoiesis, hemoglobin, reactions of hemoglobin, white blood cells, chemotaxis, platelets, plasma proteins, blood  coagulation, blood groups, immunity | **9** |
| Lymp: composition and function | **1** |
| Cerebrospinal fluid: composition and function | **1** |
| Cardiovascular system(Structure of the heart, and course of blood  flow through the heart chambers and heart valves, cardiac cycle, heart sounds, the electrocardiogram cardiac out put, blood flow in vessels, blood pressure, capillary circulation, venous  circulation, cardiovascular regulatory mechanisms, innervation of the blood vessels, cardiac innervation, vasomotor center, baroreceptors and blood \_brain barrier) | **10** |
| Respiration (functional structures, mechanics of pulmonary  ventilation, partial pressure of gases in alveolar and blood, surfactant, surface tension, and collapse of the alveoli, pulmonary volumes,, pulmonary capacities, alveolar ventilation, dead space and its effect on alveolar ventilation, functions of the respiratory. Passageways,mechanics of respiration, transport of gases in the blood and regulation of respiration) | **6** |
| Kidney: nephron structure and blood supply, plasma volume,total  blood volume, glomerular filtration, factors affecting the GFR, tubular function, tubular secretion, water excretion, osmotic diuresis, diuretics, factors affecting sodium excretion, regulation of potassium excretion,functions of ureter and urinary bladder. | **10** |
| Acid \_base balance: chemical buffer, regulation of CO2  concentration by the respiratory system, regulation of plasma  HCO3- concentration by the kidney, fate of H+ in the urine and  body fluids. | **4** |
| Digestive system: salivary glands and saliva, structures of  digestive system, gastric secretion, regulation of gastric secretion, exocrine portion of the pancreas, liver and biliary system, small  intestine, intestinal secretion, intestinal motility, large intestine, defecation, absorption, rumination, microbiology of the rumen. | **14** |

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| **PHYSIOLOGY : THEORETICAL SUBJECTS** | **HOURS** |
| Central Nervous system: brain, brain stem,medulla oblongata,  reticular formation of the brain stem, thalamus, hypothalamus, temperature regulation,sensory system, motor system (spinal cord and reflexes), learning and memory and limbic system. | **12** |
| Endocrine system: the relationship between nervous system and  endocrine glands, hormones, types of hormones, mechanisms of hormone action, pituitary gland, thyroid gland,hormonal control of calcium metabolism, parathyroid glands, adrenal gland, pancreatic hormones,prostagandins, atrial natriuretic peptide, pineal gland and thymus gland. | **20** |
| Male and female reproductive system: structures,  spermatogenesis, structure of mature spermatozoon, endocrine function of the testes and control of testicular function.Structures of female reproductive system, types of follicles, estrous cycle, menstrual cycle, ovarian cycle, uterine cycle, vaginal cycle, puberty, ovarian hormones, abnormalities of ovarian functions. Pregnancy, placental hormones, parturition and lactation. | **14** |
| **Total** | **120** |

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| **PHYSIOLOGY: PRACTICAL SUBJECTS** | **HOURS** |
| Introduction to apparatus and instruments | **3** |
| Frog sciatic nerve and gastrocnemius muscle preparation. | **3** |
| The simple muscle twitch. | **3** |
| The effect of temperature on muscle contraction. | **3** |
| Effect of stimulus strength on muscle contraction and fatigue. | **3** |
| Summation of two stimuli and tetanus. | **3** |
| Frog`s heart(sequence of the heart beat and effect of  acetylcholine on the heart) | **3** |
| Extrasystole and compensatory pause and Stannius ligatures. | **3** |
| Blood pressure in man. | **3** |
| Effect of exercise and gravity on blood pressure and venous  pressure. | **3** |

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| **PHYSIOLOGY: PRACTICAL SUBJECTS** | **HOURS** |
| Exam | **3** |
| Reactive hyperemia, reaction to venous congestion and cold  pressor test. | **3** |
| Red blood cell count. | **3** |
| White blood cell count. | **3** |
| Estimation of hemoglobin, packed cell volume and erythrocyte  sedimentation rate. | **3** |
| The Wintrobe erythrocyte indexes. | **3** |
| Review | **3** |
| Blood groups and coagulation time. | **3** |
| Lung volumes (measurement of respiratory volume spirometry) | **3** |
| Measurement of pulmonary ventilation and respiratory  movements. | **3** |
| Salivary digestion. | **3** |
| Nervous system: reflex action in man (cutaneous and deep  reflexes) | **3** |
| Eye reflexes and response time | **3** |
| Sensory physiology | **3** |
| Vision and taste. | **3** |
| Hearing | **3** |
| Evaluation of seminal quality. | **3** |
| Estrous cycle of the rat. | **3** |
| Ovariectomy in rat. | **3** |
| Review | **3** |
| **Total** | **90** |