DEPTARTMENT OF PHYSIOLOGY
Academic year:2023-2024

Distribution of Syllabus for HonoursTheory Courses for odd semester(1/3/5)

Name of Teacher	First Semester Major	Third Semester	Fifth Semester
Subhasree Sana	1. Preparationandstainingofbloodfilmwith Leishman's stain. 2. Identificationofthebloodcorpuscles. 3. DifferentialcountofWBC. 4. TotalcountofRBCandWBC. 5. Bleedingtimeandclottingtime. 6. Hemoglobinestimation. 7. Preparationofhaemincrystals. 8. Preparationandstainingofbone marrow. 9. Measurementofdiameterof megakaryocyte. 10. Reticulocytestaining. **11.**Bloodgroupdetermination.	**CC5** **1.** Preparation and staining of blood film with Leishman's stain. **2.** Identification of the blood corpuscles. **3.** Differential count of WBC. **4.** Total count of RBC and WBC. **5.** Bleeding time and clotting time **6.** Hemoglobin estimation **7.** Preparation of haemincrystals . 8. Preparation and staining of bone marrow. **9.** Measurement of diameter of megakaryocyte. **10.** Reticulocyte staining **11. .**Blood group determination	**CC11** 1. Principles of fixation and staining, 2. Staining and identification of fixed endocrine glands and nervous tissue.
ManojKumar Chawdhury	–	–	–
Chandan Banerjee		**CC6** 1. Preparation of Amphibian Ringer solution **2.** Kymographic recording of the movements of perfused heart of toad. **3.** Study of the effects of changes in	

		perfusion fluid pressure, changes in temperature, excess calcium and potassium ion concentration, acetylcholine, adrenaline on the on the movement of heart. **CC7** Experiments on superficial (plantar) and deep (knee jerk) reflex **2.** Measurement of grip strength **3.** Reaction time by stick drop test **4.** Short term memory test (shape, picture word) **5.** Two point discrimination test	
AmaleshMondal	1. Introduction on: Principle, working procedure and function of different components of microscope. 2. Introductiononpermanent slides -Applied value. 3. Studyand identification of stained sections of different mammalian tissues and organs: Bone, cartilage, trachea, lungs, spleen, lymph gland, tongue, oesophagus, stomach, small intestine ,duodenum, jejunum, ileum, large intestine, liver, salivary glands, pancreas, adrenal gland, thyroid gland, kidney, ureter, testes, ovary, uterus, spinal cord, cerebral cortex, cerebellum, skin, cardiac muscle, skeletal muscle, smooth muscle, artery and vein. 4. Examinationand stainingof freshsquamous epitheliumbymethyleneblue stain. 5. Stainingof adiposetissueusingSudanIIIorIV.		**DSE 1B** **1.** Gram staining of bacteria and identification of Gram positive and Gram negative bacteria. **2.** Demonstration: Spore Staining, Radial immune-diffusion.

Distribution of Syllabus for HonoursPractical Courses for odd semester(1/3/5)

Name of Teacher	First Semester Major	Third Semester	Fifth Semeste
Subhashree Sana	**MAJOR** **CellularBasisofPhysiology** 1. Introduction 2. Contribution of Indian Scientists in the field of Physiology and allied health sciences: Subodh Chandra Mahalanobis, Sacchidananda Banerjee, DilipMahalanabis, Autar Singh Paintal, John Burdon Sanderson Haldane, Ronald Ross, UpendraNathBrahmachari, SubhashMukhopadhyay. 3. Generalconceptofthebasicanatomicalorganizationofhuman body. **MULTI/INTERDISCIPLINARYCOURSE** **NutritionandDietetics** 1. Classificationofnutrients,Carbohydrate,protein,fat,vitamin,mineralandwater. 2. Macroand micro-elements, deficiencysymptoms of vitamins. 3. Composition and nutritional value of common Indian foodstuffs – rice, wheat, pulses, egg,meat, fish and milk. 4. Dietaryfibers. Calorie requirement.Concept of ACU. 5. Principleofbalanceddiet. 6. Dietsurvey. 7. Malnutrition and its causes - PCM, marasmus, kwashiorkortheirprevention. Iron and iodine deficiency. 8. Role of nutrients and food on health management and disease prevention - Hypertension, diabetes, cardiovascular disease, obesity, immunodeficiency disease, anaemia, undernutrition. 9. Conceptof health,food hygiene,foodstyle,lifestylefor diseaseprevention.	**CC7** **Reflexes :** a) Introduction b) Monosynaptic Reflexes: The Stretch Reflex c) Polysynaptic Reflexes: The Withdrawal Reflex d) General Properties of Reflexes **2. Cutaneous, Deep and Visceral Sensation** a) Introduction b) Ascending and descending tracts: origin, courses, termination and functions.Lower and upper motor neurones. Functions of the spinal cord with special reference to functional changes following hemisection and complete section of spinal cord. Brown-Sequard syndrome, Spinal animal. Pain production, perception and regulation. Referred pain. c) Pathways d) Touch e) Proprioception f) Temperature g) Pain h) Other Sensations **3. Arousal Mechanism, Sleep and the Electrical Activity of the Brain** a) Introduction	**CC11** **1. Vision** a.Introdu b. Anatomic Considera c.The Image-Forming Mechanism (accommo visual acuity) d. The Photoreceptor Mechanism: Genesis o Electrical Responses e.Visual Pathways and lesions of these pathwa f. Color Vision g. Other Aspects of Vis Function h. Eye Movements i. Errors in visual proce 2. **Hearing & Equilibr** a.Introduction b. Anatomic considerat c.Hair cells d. Mechanism of hearir e.Vestibular function f. Loss of hearing 3. **Smell & Taste** a.Intr b. Smell c.Receptors& Pathways d. Physiology of Olfact e.Taste i. Receptor Org

		b) The Reticular Formation & the Reticular Activating System c) Reticular formation: organization, connection and functions of ascending and descending reticular formation. Physiological basis of sleep and wakefulness d) The Thalamus & the Cerebral Cortex e) Evoked Cortical Potentials f) The Electroencephalogram g) Physiological Basis of the EEG, Consciousness, & Sleep h) Interpretation of abnormal EEG pattern **4. Control of Posture and Movement** a) Introduction b) General Principles c) Corticospinal&Corticobulbar System d) Anatomy & Function e) Posture and its regulation- Decerebrate rigidity, Decorticate rigidity, Postural reflexes and regulation of Posture f) Basal Ganglia g) Cerebellum h) Movement disorders **5. The Autonomic Nervous System** **a.** Introduction **b.** Anatomic Organization of Autonomic Outflow **c.** Chemical Transmission at autonomic Junctions **d.** Responses of Effector Organs to Autonomic Nerve Impulses	Pathways ii. Physiology of T **DSE 2B: SPORTS AN EXERCISE PHYSIO** 1. Importance of r exercise in heal wellbeing. 2. Basic concept o Bioenergetics, E sources during e (Phosphagen, A system and Aer system). 3. Cardio-respirato responses durin grades of exerci 4. Concept of exce exercise oxyger consumption (E physiological fa recovery. 5. Aerobic work C Measurement, physiological fa applications

		e. Cholinergic and Adrenergic Discharge **6. Central Regulation of Visceral Function** **a.** Introduction **b.** Medulla Oblongata **c.** Hypothalamus i. Anatomic Considerations ii. Hypothalamic Function iii. Relation to Autonomic Function iv. Relation to Sleep v. Relation to Cyclic Phenomena vi. Hunger vii. Thirst viii. Control of Posterior Pituitary Secretion ix. Control of Anterior pituitary Secretion x. Temperature Regulation, fever **7. Neural Basis of Instinctual Behaviour and Emotions** **a.** Introduction **b.** Anatomic Considerations **c.** Limbic Functions **d.** Limbic system: structure, connections and functions. Physiology of emotion. **e.** Sexual Behavior **f.** Fear & Rage **g.** Motivation **8. Higher Functions of the Nervous System** a. Introduction b. Methods c. Learning & Memory d. Higher functions of nervous system: conditioning, learning,	

		short-term and long- term memory. Speech and Aphasia. Asymmetrical organization of certain cognitive functions-split brain e. Functions of the Neocortex f. Electrophysiology of brain: spontaneous electrical activity of brain, EEG and ECoG, evoked potential, DC potential. Isolated cortex. Disorders relating learning and memory	
ManojKumar Chawdhury			
Chandan Banerjee	9. ApoptosisandNecrosis -Basic concept andmechanism **10.**Aging–Etiology,theoriesofaging,metabolicchangesandmanagement.	**CC6** **1. Origin of the Heartbeat & the Electrical Activity of the heart a.** Introduction **b.** Origin & Spread Of Cardiac Excitation Cardiac action potential. Origin and propagation of cardiac impulse. **c.** The Electrocardiogram Electrocardiography –the normal electrocardiogram, electrocardiographic leads,vectorial analysis, the vectorcardiogram, the mean electrical axis of heart. The His bundle electrogram. **d.** Cardiac Arrhythmias Cardiac Arrhythmias – Normal cardiac rate. Myocardial Infarctions.	**CC12** **The Thyroid Gland** a. Introduction b. Anatomic Consider c. Formation & Secret Thyroid Hormones d. Transport of Thyroi Hormones e. Effects of Thyroid f. Regulation of Thyr Secretion g. Clinical Correlates 2. **Endocrine Functio Pancreas & the Regul Carbohydrate Metab** a. Introduction

		Cardioplegic solutions. **e.** Electrocardiographic Findings in Other Cardiac & Systemic Diseases, hypertrophy and cardiac myopathy 19 **2. The Heart as a Pump a.** Introduction Anatomy of the heart. Properties of cardiac muscle. Cardiac Innervation. Stannius ligature. **b.** Mechanical Events of the Cardiac Cycle The cardiac cycle- pressure and volume changes. Heart sounds. Murmurs. **c.** Cardiac Output Cardiac output– measurement by application of Fick's principle and dye dilution method, factors affecting. Starling's law of heart. **3. Dynamics of Blood & Lymph Flow** **a.** Introduction **b.** Anatomic Considerations Functional morphology of arteries, arterioles, capillaries, venules and veins, sinusoids. General pattern of circulation and significance of branching of blood vessels. **c.** Biophysical Considerations Hemodynamics of blood flow. **d.** Arterial & Arteriolar Circulation	b. Islet Cell Struct c. Structure, Biosy & Secretion of I d. Effects of Insuli e. Mechanism of a f. Insulin Excess g. Regulation of In Secretion h. Glucagon i. Other Islet Cell Hormones j. Hypoglycemia a Diabetes Mellitu Humans 3. **The Adrenal Medul** **Adrenal Cortex** a. Introduction b. Adrenal Morph c. Adrenal Medull i. Structure & of Medullar Hormones ii. Regulation o Medullary S d. Adrenal Cortex i. Structure & Biosynthesi Adrenocorti Hormones ii. Effects of A Androgens a Estrogens iii. Physiologic Glucocortic iv. Pharmacolo

		e. Capillary Circulation **f.** Lymphatic Circulation & Interstitial Fluid Volume **g.** Venous Circulation **4. Cardiovascular regulatory Mechanisms** **a.** Introduction **b.** Local Regulatory Mechanisms Cardiac and vasomotor centers, baroreceptors and chemoreceptors, cardiac and vasomotor reflexes. **c.** Substances Secreted by the Endothelium **d.** Systemic Regulation by Hormones **e.** Systemic Regulation by the Nervous System Cardiovascular homeostasis–neural and chemical control of cardiac functions and blood vessels. **5. Circulation Through special Regions** **a.** Introduction **b.** Cerebral Circulation **i.** Anatomic Considerations **ii.** Cerebrospinal Fluid **iii.** Cerebrospinal Fluid **iv.** The Blood-Brain barrier **v.** Cerebral Blood Flow **vi.** Regulation of Cerebral Circulation 20 **vii.** Brain Metabolism & Oxygen Requirements	Pathologic H Glucocortic v. Regulation Glucocortic Secretion vi. Effects of Mineralocor vii. Regulation Aldosterone 4. **Hormonal Control** **Calcium Metabolism** **Physiology of Bone** a. Introduction b. Calcium & Phosphat Metabolism c. Bone Physiology d. Vitamin D & the Hydroxycholecalcifero e. The Parathyroid Gla f. Calcitonin g. Effects of Other Hor &Humoral Agents on C Metabolism 5. **The Pituitary Glan** Introduction . Morphology c. Posterior pituitary ho d. Growth Hormone e. Physiology of Growt f. Pituitary Insufficienc g. Pituitary Hyperfunct Humans 6. **Endocrine Functio** **Kidneys, Heart, & Pi** **Gland** a. Introduction

		c. Coronary Circulation **d.** Splanchnic Circulation **e.** Circulation of the skin **f.** Placental & Fetal Circulation **4. Cardiovascular Homeostasis in Health & Disease** a. Introduction b. Compensation for Gravitational Effects c. Exercise d. Inflammation & Wound Healing e. Shock Cardiovascular adjustment after haemorrhage. Hypovolemic and hypervolemic shock. RTI and atherosclerosis. f. Hypertension The pulse – arterial and venous. Blood pressure– its measurement and factors affecting. g. Heart Failure, stroke	b. The Renin-Angioten System c. Erythropoietin d. The Endocrine Funct Heart: Atrial Natriureti e. Pineal Gland f. Human chronobiology, rhythms; basic concepts a implications. **DSE 2B: SPORTS AN EXERCISE PHYSIO** 1. Training: Princi physical trainin Training to imp aerobic and ana power. Effect o overtraining an detraining. 2. Nutritional supp and ergogenic a 3. Sports injury an management. 4. Basic idea sport rehabilitation ar medicine.
AmaleshMondal	4. Structure and Function of Cell Organelle – Plasma membrane, nucleus, mitochondria, ribosome, lysosome, Golgi body, endoplasmic reticulum, peroxisomes, cytoskeletal elements and centrosomes. 5. Transport Across Cell Membranes –Passive, active, carrier mediated,uniport, symport and antiport. 6. Intercellular Communication – Gap junction, tight junction, intercalated disc, desmosomes and cell adhesion molecules. Extracellular matrix components.	**CC5** **a) Introduction** **b) Blood** Formed elements of blood– origin, formation, functions and fate. Blood volume –normal values, regulation and determination by dye and	**DSE 1B** 1. **Bacteria** a. Structure morphological classific b. Gram positive, gram pathogenic & nonpatho bacteria. Sterilization, pasteurization, brief ide

	7. Tissue, Organ and Systems – General classification, special emphasis on connective tissue and epithelial tissue. Brief idea on organs and systems. 8. Cell Cycle – Definition, different phases of cell cycles, regulation and check points of cell cycle. 9. Celldivision a. Mitosis –Phasesand significance. b. Meiosis–Phasesandsignificance. **c.** Special emphasis on homologous, heterologous, chiasma formation, crossing over,recombinationand disjunctionof chromosome.	radioisotope methods. **c) Bone Marrow** **d) White Blood Cells** **e) Immune Mechanisms** **f) Platelets** **g) Red Blood Cells** Haemoglobin– Structure, reactions, biosynthesis and catabolism. Foetalhaemoglobin. Abnormal haemoglobins- Sickle-cell anemia and Thalassemia. Different types of anaemia and their causes. **h) Blood Types** i) **Blood group** – ABO and Rh. Erythroblastosisfoetalis. Blood transfusion and its hazards. **j) Plasma, Hemostasis** k) **Plasmaproteins**– normal values, origin and functions. Hemostasis– factors, mechanism, anticoagulants, procoagulants. Disorders of hemostasis. Hemophilia, thrombosis and embolism **l) Lymph** m) **Lymph and tissue fluids**– formation, circulation, functions and fate. Lymphatic organs- histological structures and functions of lymph gland and spleen.	antibiotics c. Bacterial growth cur d. Elementary idea of bacteriostatic and bacte agents, bacterial genetic e. Viruses- Structure an Lytic and lysogenic cyc – basic ideas and prion 2. **Overview of Immu** a. Idea about innate and immunity. Immuno-cor Cells. b. Humoral and cell me immunity. c. Antigen-antibody int d. Immunoglobulin - classification, basic stru function. 40 e. Antigen presentation Histocompatibility Cor (MHC). f. Cytokines. Complem system. g. Vaccination - princip importance of immuniz h. Basic principles of immunological detectio pregnancy. i. Immunization progra

		n) **Clinical implications**.	immunization against P Hepatitis-B, Tetanus, Measles,Whooping cou Tuberculosis, Rabbies t vaccine, AIDS- causati mode of transmission, e human body, preventiv measures, principles of diagnostic test for AID (ELISA). j. Immunopathology principles of autoimmu and transplantation imn

Distribution of Syllabus of Honours Practical Courses for even semester(2/4/6)

Name of Teacher	Second Semester	Fourth Semester	Sixth Semester
Subhasree Sana	**MJC** i. Preparation and staining of blood film with Leishman'sstainand identification of blood cells. ii. DifferentialcountofWBC. iii. TotalcountofRBCandWBC. iv. Bleedingtimeandclottingtime. v. HemoglobinestimationbySahli'smethod. vi. Preparationofhaemincrystal. vii. Blood groupdeterminationandRhtyping. viii. ESRmeasurementbyWintrobe'sor Westerngreen method. ix. Determinationofhaematocrit,MCV,MCH,MCHC,bleedingtimeandclottingtime.	**CC-8** **1.** Quantitativeestimationofaminonitrogen(Sorensen'sformoltitrationmethod [percentage as well as total quantity to be done]). **2.** Quantitativeestimationofglucoseandsucrosebyenedict'smethod. **3.** Estimationofpercentagequantityoflactoseinmilk byBenedict's method.	**CC-14** **1.** Identificationofnormalandabnormalconstituentsof urine. **DSE-3A** **1.** Dietsurveyreport(hand-written)ofafamily(asperICMRspecification):Eachstudent has to submit a report on his/her own family.
Dr. AninditaSingha Roy	**SECP-2** 1. DiscussiononPrincipleandapplicationofcolorimeterandspectrophotometer. 2. DiscussiononPathophysiologicalsignificanceofbloodparameters– Glucose,serumprotein, albumin, urea, creatinine, uric acid, bilirubin and ketone bodies. 3. DiscussiononAlterationoflipidand thyroidprofileinhealthand disease. 4. Discussion and Demonstration on Strength of solution: Normality and	**CC-10** **1.** Measurementofpeakexpiratoryflowrate **2.** Measurementofoxygen saturationbypulseoxymeterbefore andafter exercise **3.** Measurementofforcedexpiratoryvolume(FEV)	**CC-13** **a)** Studyof estrouscycle **b)** Stainingandidentificationofkidneyandureters,Estimationofestrogenby spectrophotometric method **c)** Pregnancytest from human urinebykit method. **DSE-3A** **2.** Areport(hand-written)onthebasis offield surveyfromONEofthefollowings: **i.** Physiologicalparameters ofhuman(atleastthreeparameters). **ii.** Anthropometricmeasurementsonhuman(atleast three parameters). **iii.** Epidemiologicalstudieson human.

	molarity with calculation. 5. Discussion on Pathological significance of some enzymes and proteins: Lactate dehydrogenase, glucose-6-phosphate dehydrogenase, creatin kinase, amylase, ACP, ALP, Beta-glucuronidase,ALT,AST,Lipase,Gamma-glutamyltranspeptidase,cardiactroponins and CRP.		
ManojKumar Chawdhury	–	–	–
Chandan Banerjee		**CC-9** 1 Kymographicrecordingofnormalmovementsofrat'sintestineinDale'sapparatus. 2 Effectsofhypoxia,acetylcholineandadrenalineonnormalintestinalmovements	**DSE-4** **Physiological(experimental)Experiments** Kymographicrecordind of the effects of Hg, Pb and As compounds on: the contractionofperfusedheartoftoad,theintestinalmovementsofratsinDale's bath. **Histo-chemicalExperiments** Histochemicalstudies:chroniceffectsoffoodadditivesandarseniccompounds on liver, kidney, intestine, brain, muscle and lung tissues in rat.
AmaleshMondal	**SECP-2** **3.** Estimation of **4.** BloodglucosebyGOD-POD method. **5.** Serumcholesterol. **6.** SGPT, SGOT. **7.** Serumalkaline phosphatasebystandard biochemical kit.		

Distribution of Syllabus of Honours Practical Courses for even semester(2/4/6)

Name of		Fourth Semester	Sixth Semester

Teacher			
Subhasree Sana	**MD** **1.** Basic concept of environment and its components. Interrelationship of different components of an environment. **2.** Pollutants:Definitionand types. **3.** Air pollution: Definition, source, effects of air pollutant (SO_X, NO_X, CO_X and particulate matter) on human health and their control in brief. **4.** Water Pollution: Definition, types, water pollutants-sources,healthhazards,preventive measures.Biological Oxygen Demand(BOD),conceptofsafedrinking water standards. **5.** Pesticides,fungicidesandherbicidesandhumanhealth. **6.** Heavymetals(arsenic,fluoride,mercuryandlead)andhalide(fluoride)pollutionand effect on human health.	**CC-8** Introduction Energymetabolism Carbohydratemetabolism Glycolysis, R-L cycle Detail, TCAcycle. GluconeogenesisCori cycle, GlucoseAlaninecycle.Anaplerotic reactionsand AmphibolicnatureofTCA cycle.Pentose Phosphate Pathway.GlycogenesisandGlycogenolysis. (*Hormonalregulationoftheabovementionedbiochemicalpathways/cyclesnot required.)* Protein metabolism AminoacidsAmino acid pool.Deamination,transamination,aminationand decarboxylation.SynthesisofUreaandNitricoxide. Basicideaofglucogenic andketogenicaminoacids.Metabolismofglycine,sulfur-containingamino acids, tryptophan and phenylalanine. (*Hormonalregulationoftheabovementionedbiochemicalpathways/cyclesnot required.)* Fatandcholesterol metabolism ß-oxidation and biosynthesis of saturated and monounsaturated fatty acids. Carnitine shuttle. Metabolism of Triglycerides. Biosythesis of Lecithin, CephalinandCholesterol.MetabolismofAdiposeTissue.Roleoflipoproteins in transport and storage of lipids. Formation of Reactive Oxygen Species (ROSs) and the role of Catalase, Superoxide Dismutase, Glutathione Peroxidase and Glutathione Reductase in combatingoxidative stress– role of vitamins. *(Hormonalregulationoftheabovementionedbiochemicalpathways/cyclenot required).* Integration of carbohydrate, fatand proteinmetabolism Biologicaloxidation– RedoxPotential.MitochondrialElectronTransport	**DSE-3A** Constituentsoffoodandtheirsignificance. Basalmetabolicrate-factors,determinationbyBenedict-Rothapparatus. Respiratoryquotient. Specificdynamicaction. Basic conceptof energyand units. Calorificvalueof foods. Bodycalorierequirements –adult consumption unit Dietaryrequirementsof carbohydrate,protein,lipidandother nutrients. Balanceddietandprinciplesofformulationofbalanceddietsforgrowingchild, adult man and woman, pregnant woman and lactating woman. Nitrogenbalance,essentialaminoacids,biologicalvalueof proteins. Supplementaryvalueofprotein. Proteinefficiencyratioand netprotein utilizationofdietaryproteins. Dietaryfibres. Vitamins. Principleofdietsurvey. Compositionandnutritionalvalueofcommonfoodstuffs. Physiologyofstarvationand obesity. Sourcesandphysiologicalsignificancesofvitaminsand minerals. Spacenutrition.

		Chain.Oxidative Phosphorylation–Inhibitors and uncouplers. Nutrition– BMR,RQ,RDA,SDA,NPU,Biologicalvalueofproteins, vitamins and minerals Basal metabolic rate-factors, determination by Benedict-Roth apparatus. biologicalvalueofproteins–measurementandfactorsaffecting.Proteins sparers. Supplementary value of protein. Protein efficiencyratio and net protein utilization of dietary proteins. Dietary fibres	
Dr. AninditaSingha Roy	**MJC** **1.** Blood–Componentsand generalfunction. **2.** Plasma-Compositionand function. **3.** Plasmaproteins-Origin,synthesis,classificationandfunction. **4.** Bloodvolumeandmeasurementofbloodvolume. **5.** BoneMarrow–Redandyellow. **6.** BloodCells-theirmorphologyandfunctions. **7.** RedBloodCells–Erythropoiesis;hemoglobin-types,synthesisand fate. **8.** BriefideaonAnaemia,polycythemiaandhemoglobinopathiesandThalassemia. **9.** BriefideaonMCV, MCH. MCHCand colourindex.	**SEC-2** **1.** Preparationofbloodsmearandidentificationofbloodcells. **2.** Determinationofhaematocrit,MCV,MCH,MCHC,bleedingtime,clottingtime etc. **3.** Measurementofhaemoglobininblood.Preparationofserum,Estimationof SGOT and SGPT.	**CC-13** Introduction Primaryandaccessorysexorgansandsecondarysexcharacters,Physiologyof puberty. SexDifferentiation&Development Chromosomal Sex Embryologyof the HumanReproductive System Aberrant SexualDifferentiation Puberty Precocious&Delayed Puberty Menopause PituitaryGonadotropins&Prolactin Themale reproductive System Structure Histologyoftestis Gametogenesis &Ejaculation EndocrineFunctionof theTestes Control ofTesticular Function AbnormalitiesofTesticular Function TheFemaleReproductive system TheMenstrualCycle Histology of ovary,Oogenesis, folliculogenesis and ovulation. Formation, functionsofcorpusluteumandleuteolysis,Menstrualcycleanditsregulation OvarianHormones ControlofOvarianFunction AbnormalitiesofOvarianFunction Abnormalitiesinmenstrualcycle.Onsetofmenopausean

			dpost-menopausal changes, Postmenopausal syndromes. Pregnancy Fertilization, Preliminary ideas of implantation. Structure and functions of placenta. Maintenanceofpregnancyandthebodilychangesdurin gpregnancy.Pregnancytests. Parturition. Lactation Mammogenesis,Galactopoesis:Hormonalcontrol. Physiologicalconcepts for aplannedfamily
Manoj Kumar Chawdhury	–	–	–
Chandan Banerjee	**MD** **7.** Sound Pollution: Definition,concept **8.** Of noise, source of sound pollution, effects on human health,preventive measures of sound pollution,noise index and noise standards. **9.** Soil Pollution:Causes,healthhazards,control ofsoilpollution, solid wastemanagement- Bioremediation and Phytoremediation. **10.** Radioactive Pollution:Ionizingradiation, effects of ionizing radiation on human health, permissible doses and controlling measure.	**CC-9** Digestion&Absorption Introduction Anatomyandhistologyofalimentarycanal,Deglutit ionandMovementsof alimentary canal and their regulations. Carbohydrates Proteins&NucleicAcids Lipids AbsorptionofWater& Electrolytes AbsorptionofVitamins& Minerals RegulationofGastrointestinalFunction Introduction Digestiveglands– histologicalstructuresofsalivaryglands,pancreasa ndliver. GeneralConsiderations Composition, functions and regulation of the secretion of salivary, gastric, pancreaticandintestinaljuicesandbile.Synthesisof Bileacids.Enterohepatic circulation,Feces and defecation.GALT, MALT. Basic concepts of Peptic Ulcer, Jaundice and Gall-stones Cholelithiasis. Gastrointestinalhormones	**DSE-4A** Toxins and Toxicology Factors Affectingtoxicity LD50, LOD50,ED50,NOEL,LOEL Concept of Acute andChronic Effects Birth defects and Teratogens Concepts ofBiomagnification and Bioconcentration PopularFood Additivesand FoodAdulterants Prevention ofFood Adulteration Act,1954 OtherFoodToxicants:BPA,BPS,Pesticides,PAH,Dio xin,PCB,HeavyMetals:Pb,Hg, Cd,Asetc

		Mouth & Esophagus Stomach ExocrinePortion ofthePancreas Liver& BiliarySystem SmallIntestine Colon	
Amalesh Mondal	**MJC** **10.** White Blood Cells – Morphology, classification, life cycles, functions, Human leucocyteantigen (HLA).Leucopoiesis, Arneth index. **11.** Platelets - Formation andfate. **12.** Hemostasis– Definition,factors,modernconceptandabnormalitiesinhemostasis.Anticoagulants used in different purposes. **13.** Blood Grouping- ABOand Rh typing.Cross matching (Major and minor cross matching),blood transfusion and transfusion related hazards. **14.** Lymph – Formation, circulation andfunction. **15.** Separationof differentcomponents ofbloodin bloodbankand their clinical importance.	**CC-10** PulmonaryFunction Introduction Propertiesof Gases Anatomyof theLungs Mechanicsofbreathing GasExchangeinthelungs PulmonaryCirculation OtherFunctions oftheRespiratorySystem GasTransportBetweentheLungs&the Tissues Introduction OxygenTransport CarbonDioxideTransport Respiratoryacidosisandalkalosis Regulationof Respiration Introduction Neuralcontrolof Breathing ChemicalControlof Breathing NonchemicalInfluenceson Respiration RespiratoryAdjustmentsinHealth& Disease Introduction EffectsofExercise OtherFormsof Hypoxia Oxygen Treatment e.Hypercapnia&Hypocapnia OtherRespiratoryAbnormalities Effectsof IncreasedBarometricPressure ArtificialRespiration	**CC-14** RenalFunctionsand Malnutrition: Introduction Anatomyofkidney.HistologyofNephron. FunctionofMalpighiancorpusclesandrenaltubule,counter-currentmechanism Formationofurine–glomerularfunctionandtubularfunctions.Counter-current multiplier and exchanger. Formation of hypertonic urine. Water Excretion Renalregulationofosmolarityandvolumeofbloodfluids AcidificationoftheUrine&Bicarbonate Excretion Renalregulationofacid-basebalance,acidificationofurine. RegulationofNa+&Cl- Excretion Renal Circulation peculiaritiesandautoregulation Diuretics DisordersofRenalFunctions Diabetesinsipidus.Renal functiontests–creatinine, inulin,ureaandPAHclearance tests. Abnormal constituents of urine, their detection and significance. Renal dialysis. ArtificialKidney. Filling of the Bladder Physiologyofurinarybladder EmptyingoftheBladder micturition. Non-excretoryfunction ofkidney