LIFE SCIENCE II  
KEY WORDS/CONCEPTS  
EXAM #2

BODY CHEMISTRY: ATOMS, PROTONS, ELECTRONS, NEUTRONS, ISOTOPES, CARBON KEY TO LIFE, CHEMICAL BONDS: TRANSFER OR SHARE ELECTRONS, IONS, OXIDATION, OXIDATIVE STRESS, FREE RADICALS, DNA/CELL MEMBRANE DAMAGE, ANTIOXIDANTS (VITAMIN C, E, SELENIUM), MEDITERRANEAN DIET, MONOUNSATURATED FAT (OLIVE OIL), DISEASE PROTECTION (HEART, CANCER, ALZHEIMER’S), CARBOHYDRATES = MAIN ENERGY SOURCE, CALORIE CONTENT: FAT, CARBOHYDRATES, PROTEIN, ALCOHOL, CARBOHYDRATES FROM PHOTOSYNTHESIS, SIMPLE SUGARS, COMPLEX CARBOHYDRATES: STARCH–PLANTS, GLYCOCEN–ANIMALS, FIBER (CELLULOSE)–PLANTS, MONOSACCHARIDES (GLUCOSE), DISACCHARIDES (LACTOSE, SUCROSE, MALTOSE), STARCH → GLUCOSE → GLYCOGEN (LIVER), BENEFITS OF DIETARY FIBER (BLOOD GLUCOSE, CHOLESTEROL, COLON CANCER, REDUCES HUNGER, PREVENTS CONSTIPATION), FATTY ACIDS: SATURATED, MONOUNSATURATED, POLYUNSATURATED, AND HEART DISEASE RISK, CELL MEMBRANES: FLUIDITY, OMEGA 3 FATS, FISH = HEALTH BENEFITS: BRAIN DEVELOPMENT BABIES, ALZHEIMER’S RISK, HEART DISEASE, STROKE, TRIGLYCERIDE, ADIPOSE TISSUE, STEROLS, CHOLESTEROL, PHYTOSTEROLS, CHOLESTEROL → VITAMIN D, BILE ACIDS, SEX HORMONES, CORTISONE, PHOSPHOLIPIDS–EMULSIFICATION, LEICITHIN, TRANS FAT AND HEART DISEASE, PARTIALLY HYDROGENATED FAT, GOOD VS. BAD FATS, LIPOPROTEINS: CHYLOMICRONS, LDL, HDL, FAT DEPOSITION VS. FAT MOBILIZATION, FAT FUNCTIONS: ENERGY, INSULATION, CUSHIONING, CELL MEMBRANE STRUCTURE, LUBRICATION, TASTE/AROMA OF FOOD, SATIATION (FULLNESS AFTER MEAL), DISSOLVES FAT SOLUBLE VITAMINS (A,D,E,K), PROTEINS, POLYPEPTIDES, AMINO ACIDS, ESSENTIAL VS. NONESSENTIAL AMINO ACIDS, PROTEIN–CALORIE MALNUTRITION–GROWTH RETARDATION IN CHILDREN, SICKLE CELL ANEMIA (AMINO ACID ARRANGEMENT IN HEMOGLOBIN), PROTEIN FUNCTIONS: ENZYMES, TISSUE GROWTH, MOVEMENT, HORMONES, ANTIBODIES (ANTIGENS), TRANSPORT/SHUTTLE MOLECULES, FLUID BALANCE (EDEMA), PH BALANCE/BUFFERS, CELL MEMBRANE RECEPTORS, NUCLEIC ACIDS: DNA, RNA, METABOLISM, ANABOLISM, CATABOLISM, CELL RESPIRATION EQUATION, FORMATION OF ATP FROM ENERGY, P, ADP, CELL RESPIRATION 3 STEPS: GLYCOLYSIS, KREBS CYCLE, ELECTRON TRANSPORT CHAIN, METABOLIC POISONS, CARBOHYDRATE/FAT/PROTEIN METABOLISM: ALL INTERCONNECTED. DIGESTION: DIGESTION, ABSORPTION (DEFINITIONS), FINAL PRODUCTS OF DIGESTION ABSORBED: SUGARS (GLUCOSE), AMINO ACIDS, FATTY ACIDS, WATER, VITAMINS, MINERALS. ANATOMY:
MOUTH, PHARYNX, ESOPHAGUS, STOMACH, SMALL INTESTINE, LARGE INTESTINE (COLON), RECTUM, ANUS, TRANSIT TIME, DIGESTION BEGINS IN THE MOUTH, NERVOUS CONTROL, CHEMICAL VS. MECHANICAL, DIGESTION, EPIGLOTTIS, HEIMLICH TECHNIQUE, PERISTALSIS, SPHINCTER, VOMITING, GERD, GASTRIC BYPASS, STAPLING, BANDING, PEPSIN, GASTRIN, GASTRIC JUICE, CHYME, STOMACH EMPTYING (CARBOHYDRATES > PROTEIN > FAT), ULCERS, BACTERIA, INTESTINAL JUICE (ENZYMES), PANCREAS: ENDOCRINE & EXOCRINE GLAND, GALLBLADDER, BILE, FAT EMULSIFICATION, SURFACE AREA, BILE COMPOSITION, GALLSTONES, OBSTRUCTIVE JAUNDICE, FAT MALABSORPTION, LIVER FUNCTIONS: MAKE BILE, GLUCOSTAT, UREA FORMATION, SYNTHESIS/BREAKDOWN PROTEINS, DETOXIFICATION, VITAMIN AND IRON STORAGE, DESTROYS OLD RED BLOOD CELLS, SMALL INTESTINE- MAJOR SITE FOR NUTRIENT ABSORPTION, VILLI AND MICROVILLI, CAPILLARIES- ABSORPTION: GLUCOSE, WATER, AMINO ACIDS, WATER SOLUBLE VITAMINS, MINERALS; CAPILLARIES → VEIN → LIVER → GENERAL CIRCULATION; GLUCOSE: ENERGY OR STORED AS GLYCOGEN OR FAT (ADIPOSE TISSUE); CARBOHYDRATE LOADING; EXCESS AMINO ACIDS: GLUCOSE, FAT, UREA; FATTY ACID ABSORPTION; TRIGLYCERIDE + FAT SOLUBLE VITAMINS (A,D,E,K), CHYLOMICRONS, LACTEAL → LYMPHATIC VESSELS → VEIN (GENERAL CIRCULATION); LYMPH, LYMPH NODES, COLON FUNCTIONS: ABSORB WATER, CHYME → FECES, HOME FOR BACTERIA; FIBER BREAKDOWN, ABSORB MINERALS/VITAMINS; FIBER + WATER: REDUCES CONSTIPATION; RECTUM, DEFEcation, COlonoScoPy, PoLyPs, PRObIoTICS, DIVERTICULITIS, FIBER. SKIN: SKIN FUNCTIONS: COVERS/SEALS, PROTECTS, BODY TEMPERATURE REGULATION, FAT STORAGE, MAKES VITAMIN D, GLANDS (OIL, SWEAT), NERVE ENDINGS (SENSATIONS), EPIDERMIS, CELL DIVISION, KERATIN, MELANIN, MELANOCYTES, UV PROTECTION, DERMIS: CONNECTIVE TISSUE, STRENGTH, NERVES, ELASTIC TISSUE, STRENGTH, BLOOD SUPPLY, VASODILATION/VASOCONSTRICTION: CONTROLS BODY TEMPERATURE; HYPODERMIS: FAT STORAGE, WARMTH, INSULATION, INJECTION OF DRUGS, HAIR SHAFT; HAIR: KERATIN + MELANIN, PILOERECTION, GLANDS (DUCTS): SEBACEOUS (OIL) ATTACHED TO HAIR FOLLICLE, EXCESS OIL + BACTERIA: ACNE; SWEAT GLANDS: PORES: SALTY WATER, COOLS BODY; NAILS: KERATIN; SUN EXPOSURE: SKIN CANCER, UVA AND UVB PROTECTION, FITZPATRICK SKIN COLOR CLASSIFICATION: #1-6: THE DARKER THE SKIN, MORE MELANIN: LOWER RISK SKIN DAMAGE, PHOTOAGING, SKIN CANCER. BONES: A CONNECTIVE TISSUE; CARTILAGE: PADDING BETWEEN BONES (COLLAGEN), WINDPIPE, TRACHEOTOMY; LIGAMENTS: BONE TO BONE, TENDONS: BONE TO MUSCLE, ACHILLES TENDON; BONE FUNCTIONS; SUPPORT, MAKE RED/WHITE CELLS, PLATELETS, MOVEMENT, STORAGE (FAT, YELLOW MARROW, CALCIUM PHOSPHATE); BONE
STRUCTURE: CELLS SURROUNDED BY GROUND SUBSTANCE (CALCium PHOSPHATE), COMPACT BONE VS. SPONGY BONE (RED, YELLOW), LEUKEMIA; BONE CELL TYPES: OSTEOBLASTS- BUILDING, OSTEOCYTES- MAINTAINING; OSTEOCLASTS- BREAKING DOWN (REMODELING); ELONGATION OF BONE: GROWTH PLATES: CARTILAGE → BONE (ADULT HEIGHT); GROWTH HORMONE, SEX HORMONES; CIRCUMFERENCE- GROWTH OF BONES; BONE DENSITY: PEAK BONE MASS (AGES 16-30); BONE DENSITY: AFRICAN AMERICANS, CAUCASIANS, MEN, WOMEN, SMOKING, CALCIUM INTAKE, WEIGHT BEARING EXERCISES; RESISTANCE TRAINING (WEIGHTS), DIET: CALCIUM, VITAMIN D, LACTOSE INTOLERANCE, OSTEOPOROSIS, JOINTS (HINGE, BALL & SOCKET), CARTILAGE, FAT, PADDING, OSTEOPOROSIS, TOTAL KNEE REPLACEMENT, HIP IMPLANT, SPINE DISORDERS SLIPPED (HERNIATED) DISK, PINCHED NERVE, ROTATOR CUFF; UPPER ARM-SHOULDER BLADE, TENDONITIS, TEARS. MUSCLES SKELETAL: MAJOR MUSCLE TYPE, MYOGLOBIN IN MUSCLE (HOLDS OXYGEN); MUSCLE CELL= MUSCLE FIBER, SMALLER: MYOFIBRILS: THICK (MYOSIN) & THIN (ACTIN) FILAMENTS (PROTEINS), SARCOMERE: UNIT OF MUSCLE CONTRACTION; MUSCLE AT REST VS. CONTRACTED (SLIDING FILAMENTS), NERVE IMPULSE, NEUROTRANSMITTER (ACeTYLCHOLINE), ACTIVATES FILAMENTS: SLIDING + HOOKS (CROSS-BRIDGES), ANTAGONISTIC MUSCLES: PULL (NOT PUSH) BONE; BICEPS VS. TRICEPS, MUSCULAR DYSTROPHY; BOTULISM/TETANUS (CLOSTRIDIUM); MUSCLE CRAMPS; “CHARLIE HORSE”, MUSCLE ATROPHY, BOTOX (BOTULISM TOXIN); EXERCISE BENEFITS; HEART DISEASE, STROKE, HIGH BLOOD PRESSURE, DIABETES, HDL, OSTEOPOROSIS, CANCER, OBESITY, LEAN VS. FAT TISSUE, ENERGY LEVEL, SELF-ESTEEM, ENDORPHINS; RECOMMENDATION 30-60 MINUTES/DAY; EXERCISE TYPES: AEROBIC, RESISTANCE, WEIGHT BEARING, STRETCHING, SARCOPENIA WITH AGE, MUSCLE STRENGTH VS. ENDURANCE, DIETARY PROTEIN (GRAMS): 0.36 X BODY WEIGHT, RDA.