Biology 11A Study Guide – Test 3
(Parts of Chapter 20-24, 27, presentations)

Chapter 20 – Human Body and Organization
- Organization (cells, tissues organs, organ systems)
- Homeostasis: Negative feedback loop (sensor, control center, effector, response) and stimulus
- Organ Systems: Digestive (take in nutrients, get rid of wastes), Respiratory (exchange gases), Circulatory (transport), Lymphatic/immune (immunity), Excretory (ridds liquid wastes), Endocrine (hormone regulation), Reproductive (produce offspring), Nervous (communication), Muscular (movement), Skeletal (support and movement), Integumentary (protection).

Problems: 2, 4, 5, 16

Chapter 21 – Digestion
Digestive System
- Functions: ingestion, digestion, absorption, elimination
- Mouth ➔ pharynx ➔ esophagus ➔ stomach ➔ small intestine ➔ large intestine
- Accessory organs: liver, gall bladder, pancreas

Nutrition
- Macronutrients (carbohydrates, lipids, proteins) and micronutrients (vitamins, minerals)
- Body mass index (BMI)

Problems: 1, 7-13

Chapter 22 – Respiration
- Gas exchange
- Nasal cavity ➔ pharynx ➔ larynx ➔ trachea ➔ bronchii ➔ alveoli
- Breathing: diaphragm, pleural membrane, voluntary and involuntary

Problems: 2, 3, 15, 11-13

Chapter 23 – Circulation
- Pulmonary and systemic circuits
- Vessels: arteries, capillaries, veins (relative blood pressure and velocities), exchange at tissues
- Heart: cardiac cycle, coordination through pacemaker and fibers
- Blood: plasma and cells (red, white, platelets)

Problems: 2, 3, 5-7, 9-15

Chapter 24 – Immunity
• Innate Immunity: barriers (skin, membranes, mucus), white blood cells (phagocytes, natural killer cells), inflammatory response (histamine action), fever (inhibits pathogen growth, stimulates phagocytes and interferon)
• Adaptive Immunity: goals (recognize, destroy, remember), antigens.
  o Humoral: B cells, antibodies, clonal selection (production of plasma and memory B cells)
  o Cell-mediated: T cells, T cell receptors
  o Vaccinations
• Immune dysfunction: overactive (allergies, autoimmune diseases), underactive
• HIV and AIDS
  o HIV: life cycle and attack of CD4 Helper T Cells
  o Phases: acute, asymptomatic, AIDS
  o Therapies: targets virus life cycle

*Problems: all!*

**Chapter 26 – Hormones**
• Endocrine System (Hypothalamus, Pituitary, membrane receptor signaling and intracellular receptor signaling)
• Thyroid function: TRH $\rightarrow$ TSH $\rightarrow$ T3 + T4, hyperthyroidism, hypothyroidism, goiter
• Adrenal: medulla and cortex in short and long term stress
• Glucose regulation: pancreas (insulin, glucagon), liver, diabetes

*Problems: 1, 3, 4, 9, 10, 12, 14-16*

**Chapter 27 – Reproduction**
**Male reproductive system**
• Testis $\rightarrow$ epididymis $\rightarrow$ vas deferens $\rightarrow$ urethra
• Semen: seminal vesicles, prostate, bulbourethral glands
• Spermatogenesis and sperm (head, acrosome, midpiece, tail)
• Hormone regulation: GnRH, LH, FSH

**Female Reproductive system**
• Ovary $\rightarrow$ uterine tube $\rightarrow$ uterus $\rightarrow$ vagina
• Oogenesis and ovary (follicle, oocyte, corpus luteum)
• Hormone regulation: GnRH, FSH, LH, HCG, estrogen, progesterone cycles

**Reproduction**
• Copulation: male (erection, ejaculation, orgasm) and female (orgasm)
• Fertilization: egg and sperm
• Embryo development: placenta, childbirth
• Birth Control: surgery (vasectomy, tubal ligation), barriers (e.g. condoms), hormone regulation (pill, RU486)

*Problems: 1, 2, 5-14, 18*
Presentations – Diseases
For each disease, know the general causes, system affected, symptoms, demographics, and common methods for treatment. Practice by writing out a short paragraph for each disease covering the items above.