**BSC 2085L**

**“Need to Know” Sheet**

**Unit 1**

***MEMORIZE*** the following topics below. Word banks will not be provided.

**QUIZ 1 MATERIAL – Anatomical Terminology**

Section 1.6 (p. 23-29)

* Describe the anatomical position
  + Figure 1.12
* Surface regions of the human body
  + Figure 1.12 (memorize all labeled terms **in parentheses** – if labeled term has no parenthesis, memorize label in **bold**)
* Directional terms applied to the human body
  + Figure 1.13 (memorize all labeled terms and be able to use them in context in a sentence – practice example sentences are in the OpenStax text on pages 24-25)
* Planes of the body
  + Figure 1.14 (memorize all labeled terms)
* Dorsal and ventral body cavities
  + Figure 1.15 (memorize all labeled terms)
* Abdominal regions and quadrants
  + Figure 1.16 (memorize all labeled terms – do not use acronyms)
* Serous membranes: be able to distinguish between the terms pleura, pericardium & peritoneum
  + Figure 1.17 (memorize all labeled terms)

**PRACTICAL 1 MATERIAL (the remainder of this document)**

**Cell Organelles:**

Sections 3.2 & 3.3 (p. 97-102, 104-107)

* Identify the cell structures/organelles below from a picture, model, diagram or figure and describe their basic functions
  + Figure 3.13
  + nucleus
    - contains chromatin and nucleolus
  + nucleolus
    - assembles ribosomes
  + chromatin (called chromosomes during cell division)
    - location of DNA (genes); provides genetic regulation of the cell
  + nuclear membrane
    - double layer membrane; outer boundary of nucleus
  + nuclear pore
    - allows materials to move between nucleus and cytoplasm
  + cell membrane (plasma membrane)
    - regulates passage of materials into and out of the cell (selectively permeable)
  + rough endoplasmic reticulum
    - synthesis, transport and packaging of proteins
  + smooth endoplasmic reticulum
    - synthesis, transport and packaging of carbohydrates and lipids
  + ribosome
    - site of protein synthesis
  + centriole
    - cylindrical organelle that occurs in pairs; involved in the development of spindle fibers
  + centrosome
    - contains centrioles
  + Golgi body (apparatus)
    - final assembly, transport and packaging of materials, mostly for secretion from cell
  + secretory vesicles
    - export materials via exocytosis
  + lysosome
    - digestion within the cell of large molecules into their simpler components
  + peroxisome
    - detoxify harmful toxins like alcohols and hydrogen peroxide
  + mitochondrion
    - site of aerobic (oxygen requiring) steps of cellular respiration, where most ATP is produced
  + cytoplasm
    - all material inside the cell except the nucleus
  + cytosol
    - aqueous part of cytoplasm

**Cell Growth & Division:**

Section 3.5 (p. 115-119)

* Identify the phases of cell division and mitosis from a picture, model, diagram or figure
* Describe the following events that occur in each phase of the cell cycle (Figure 3.32):
  + Interphase
    - non-dividing cell
    - general cell growth
    - DNA replication
  + Mitosis
    - Prophase
      * cell division
      * nuclear membrane disappears
      * nucleolus disappears
      * chromatin condenses into chromosomes
      * spindle apparatus forms
    - Metaphase
      * chromosomes line up along metaphase plate
    - Anaphase
      * separation of genetic material
      * sister chromatids (chromosomes) pulled to opposite poles by spindle apparatus
    - Telophase
      * chromosomes reach the opposite poles and clump
      * events of prophase are reversed
      * chromosomes convert to chromatin
      * nucleolus and nuclear membrane reform
      * spindle apparatus dismantled
  + Cytokinesis (occurs simultaneously with telophase)
    - division of the cytoplasm into 2 cells
* Identify the following structures from a picture, model, diagram or figure:
  + chromatin
  + chromosome
  + chromatid
  + centromere
  + spindle apparatus (centrosome) and its parts:
    - spindle fibers
    - pole (centrioles)
    - aster
    - cleavage furrow

**Tissues:**

Section 4.1 (p. 136-137)

* Define the term “tissue” and explain how tissues fit into the levels of biological organization (chemical, organelle, cell, tissue, organ, organ system, organism)
* Know the typical characteristics of the 4 tissue types (Figure 4.2):
  + epithelial
  + connective
  + muscular
  + nervous

For **ALL** the tissues below, be able to:

1. identify the type of tissue from an image
2. provide one function of the tissue
3. provide one location in the body where the tissue occurs.

Section 4.2 (p. 140-146)

* Epithelial Tissues (Figures 4.6, 4.8)
  + simple squamous epithelium
  + simple cuboidal epithelium
  + simple columnar epithelium
  + pseudostratified ciliated columnar epithelium
  + stratified squamous epithelium
  + transitional epithelium

Section 4.3 (p. 150-159)

* Connective Tissues
  + areolar tissue
  + adipose tissue (Figure 4.13)
  + cartilages (Figure 4.16)
    - hyaline cartilage
    - elastic cartilage
    - fibrocartilage
  + compact bone tissue
  + blood tissue (Figure 4.17)
    - red blood cell (erythrocyte)
    - white blood cell (lymphocyte)
    - platelet

Section 4.4 (p. 160-162)

* Muscle Tissues (Table 4.2, Figure 4.18)
  + skeletal muscle
  + cardiac muscle
  + smooth muscle

Section 4.5 (p. 162-163)

* Nervous Tissue (Figure 4.20)
  + neuron (Figure 4.19)

**Skin (the Integument):**

Section 5.3 (p. 196-200)

* Know the basic functions of the integumentary system as described in the OpenStax text.

Sections 5.1 & 5.2 (p. 180-196)

* Identify the following structures on a picture, model, diagram or figure (Figures: 5.2, 5.3, 5.4, 5.5, 5.7, 5.11, 5.12, 5.14, 5.15)
  + epidermis
    - Identify the following *sub*layers of the epidermis on a picture, model, diagram or figure:
      * stratum corneum
      * stratum lucidum
      * stratum granulosum
      * stratum spinosum
      * stratum basale (germinativum)
  + dermis
    - dermal papillae
    - papillary layer
    - reticular layer
  + hypodermis
  + eccrine (sweat) gland
    - duct goes to skin surface
  + apocrine (sweat) gland
    - duct goes to hair shaft
  + sebaceous gland
  + arrector pili muscle
  + hair shaft
  + hair root
  + hair follicle
  + hair bulb
  + hair medulla
  + Meissner’s corpuscle
  + Pacinian corpuscle
  + free nerve ending
  + adipose tissue
  + arrector pili muscle
* Know what substance is secreted by the different kinds of skin glands (eccrine, apocrine, sebaceous)
* Know the function of keratinocytes and melanocytes
* Characteristics of 1st, 2nd and 3rd degree burns as described in the OpenStax text (p. 205) and illustrated on a picture, model, diagram or figure