**Mid-Term Assignment**

**Course Title: Human Physiology I**

**DT plus Rad1st semester**

**Instructor: Dr. M.Shahzeb khan (PT)**

**Marks: 30**

**Note:**

* **Attempt all questions, all questions carry equal marks.**
* **Answer Briefly and to the point, avoid un-necessary details**

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**Q1:** (A) Write down six level of organization in detail.

* Ans: **CHEMICAL LEVEL**
  + Basic level
    - **Atoms** the smallest unit of matter
      * Essential atoms for life include carbon (C), hydrogen (H), oxygen (O), nitrogen (N), phosphorus (P), calcium (Ca), and sulfur
    - **Molecules** two or more atoms joined together
      * Deoxyribonucleic acid (DNA)
      * Glucose
* **CELLULAR LEVEL**
  + Molecules combine to form cells
    - **Cells** are thebasic structural and functional units of an organism
    - Many kinds of cells in the body
    - Muscle cells, nerve cells, epithelial cells, etc
* **TISSUE LEVEL**
  + **Tissues** are groups of cells and materials surrounding them
    - Four basic types of tissues:
      * Epithelial
      * Connective
      * Muscular
      * Nervous
* **ORGAN LEVEL**
  + Tissues are joined together to form organs
    - **Organs** are structures that are composed of two or more different types of tissues
    - Specific functions and recognizable shapes
      * Examples:
      * Heart, lungs, kidneys
      * Stomach is made of several tissues
      * Serous membrane, smooth muscle and epithelial layers for digestion
* **SYSTEM LEVEL**
  + **A system** consists of related organs with a common function
  + Organ-system level
    - Digestive system breaks down and absorbs food
    - It includes organs such as the mouth, small and large intestines, liver, gallbladder, and pancreas
    - Eleven systems of the human body

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(B) Write difference between negative and positive feedback mechanism.

* **Negative Feedback systems**
  + Reverses a change in a controlled condition
    - Regulation of blood pressure (force exerted by blood as it presses again the walls of the blood vessels)
* **Positive Feedback systems**
  + Strengthen or reinforce a change in one of the body’s controlled conditions
    - Normal child birth

**Q 2:**(A) What is cell organelles?

* Ans: **The organelles in the cytoplasm are:**
  + Nucleus (Nucleus is the largest organelle inside a nuclear envelope (10-20 micron)
  + Mitochondriaa (It is called as power house of the cell )
  + Ribosomes (Tiny granules composed of RNA and protein )
  + Endoplasmic reticulum (Interconnecting membranous canals in the cytoplasm.
  + Golgi apparatus (Consists of stacks of closely folded flattened membranous sacs )
  + Lysosomes (Type of secretory vesicle with membranous walls formed by GA. )

(B) Write down detail of any four of cell organelles.

Ans: (1)Ribosomes:>

* Tiny granules composed of RNA and protein
* Present on the outer surface of the nuclear envelope and rough endoplasmic reticulum
* Make proteins for use within the cell such as enzymes required for metabolism

(2). Golgi apparatus:>

* Consists of stacks of closely folded flattened membranous sacs
* Proteins move from ER to GA where they are **packed into membrane-bound vesicles** called secretory granules.
* These vesicles move to the plasma membranes and fuse with it, when in need
* The contents then leave the cell by exocytosis

(3). Mitochondria:>

* It is called as power house of the cell
* Energy is made available in cell) by synthesizing ATP
* Most active cell types have the greater number of mitochondria

e.g. liver, muscle

* (4). Nucleus
  + Nucleus is the largest organelle inside a nuclear envelope (10-20 micron)
  + Nucleus contains body’s genetic material (gene)
  + The cells with nucleus are called
  + **eukaryotes** – cell with nucleus
  + **Prokaryote -** cell without nucleus
  + Nucleolus is present within the nucleus which involves in the manufacture or synthesis and assembly of the components of ribosomes.

**Q3:** (A) Writedown physiology of digestion.

Ans: The process by which food is broken down into simple chemical compounds that can be absorbed and used as nutrients or eliminated by the body is called digestion.

* The **gastrointestinal tract** (**digestive tract**, **digestional tract**, **GI tract**, **GIT**, **gut**,

or **alimentary canal**) is an organ system within humans and other animals which takes in

food, digests it and absorb energy and nutrients, and expels the remaining waste as feces.

* **The major organs of the digestive system:**
* Mouth.
* Pharynx.
* Esophagus.
* Stomach.
* Small Intestine.
* Large Intestine.
* Rectum.