**Mid-Term Assignment**

**Course Title: Human Physiology I**

**DT plus Rad 1st 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**

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

**Level Of Organization:**

1. **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

**2 CELLULAR LEVEL:**

* Molecules combine to form cells
* Cellsare thebasic structural and functional units of an organism.
* Many kinds of cells in the body.
* Muscle cells, nerve cells, epithelial cells, etc.

3 **TISSUE LEVEL:**

* Tissues are groups of cells and materials surrounding them.
* Four basic types of tissues:
* Epithelial
* Connective
* Muscular
* Nervous

1. **ORGAN LEVEL:**

* Tissues are joined together to form organs.
* Organsare 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.

1. **SYSTEM LEVEL:**

* A systemconsists 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.

1. **ORGANISMAL LEVEL:**

* All parts and Systems of the body functioning together .

**Homeostasis:**

A condition of equilibrium (balance) in the body’s internal environment. Maintain an almost constant internal environment.

* Narrow range is compatible with maintaining life
* Example
* Blood glucose levels range between 70 and 110 mg of glucose/dL of blood.
* Whole body contributes to maintain the internal environment within normal limits.

(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?

* **The organelles are:**
* Nucleus
* Mitochondria
* Ribosomes
* Endoplasmic reticulum
* Golgi apparatus
* Lysosomes
* Peroxisome
* Centrosome and centrioles
* Secretory vesicles

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

* **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.
* **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
* **Endoplasmic reticulum**
* Interconnecting membranous canals in the cytoplasm
* Two types
* Smooth ER – synthesizes lipids and steroid hormones, and associated with the detoxification of some drugs.
* Rough ER – Studded with ribosomes and are site of synthesis of some proteins.
* **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

**Q3:** (A) Write down physiology of digestion.

* **PHYSIOLOGY OF DIGESTION:**
* The mouth is the beginning of the digestive tract.
* Chewing breaks the food into pieces that are more easily digested, while saliva mixes with food to begin the process of breaking it down into a form your body can absorb and use.
* From pharynx food travels to the esophagus or swallowing tube.
* By means of a series of contractions, called peristalsis, the esophagus delivers food to the stomach.
* The lower esophageal sphincter keep food from passing backwards into the esophagus.
* The stomach secretes acid and powerful enzymes that continue the process of breaking down the food.
* When it leaves the stomach, food is the consistency of a liquid or paste.
* From there the food moves to the small intestine.
* The small intestine continues the process of breaking down food by using enzymes released by the pancreas and bile from the liver.
* Bile is a compound that aids in the digestion of fat and eliminates waste products from the blood.
* Peristalsis is also at work in this organ, moving food through and mixing it up with digestive secretions.
* The duodenum is largely responsible for continuing the process of breaking down food, with the jejunum and ileum being mainly responsible for the absorption of nutrients into the bloodstream.
* pancreas secretes enzymes into the small intestine.
* These enzymes break down protein, fat, and carbohydrates from the food we eat.
* Stool, or waste left over from the digestive process, is passed through the colon by means of peristalsis, first in a liquid state and ultimately in solid form as the water is removed from the stool.
* A stool is stored in the sigmoid colon until a "mass movement" empties it into the rectum once or twice a day.