**Course Title: General Pathology (MLT 2nd Sec A and B)**

**Mid term assignment**

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**Bilal Mastan Bk**

1. Define the following terms with 2 physiological and pathological examples each.
2. Atrophy

Atrophy is the general physiological process of reabsorption and breakdown of tissues, involving apoptosis. When it occurs as a result of disease or loss of trophic support because of other diseases. It is termed pathological atrophy, although it can be a part of normal body development and hemostasis as well.

1. Hypertropy

It is the increase in the volume of an organ or tissue due to the enlargement of its component cell. It is distinguished from hyperplasia, in which the cells remain approximately the same but increase in number. Although both are two distinct processes. They frequently occur together, such as in the case of the hormonally-induced proliferation and enlargement of cells of the uterus during pregnancy.

1. Hyperplasia

It is the increase in the amount of organic tissue that results from cell proliferation. It may lead to the gross enlargement of an organ, and the term is sometimes confused with benign neoplasia.

1. Metaplasia

It is the transformation of one differentiated cell to another differentiated cell type. The change from one type of cell to another may be part of a normal maturation process, or caused by some sort of abnormal stimulus in simplistic terms.

1. How does the calcium ions influx affects the cell? write it in your own words.

Ans: When brain cells are overwhelmed by an influx of too many calcium molecules, they shut down the channels through which these molecules enter the cells. Until now, the “stop” signal mechanism that cells use to control the molecular traffic was unknown.

“Too much calcium influx clearly is a part of the normal dysfunction in Alzheimer disease and causes the normal damage during and after a stroke. It also contribute to chronic pain”.

1. What is free radical? What is the effect of Reactive Oxygen Specie(ROS) on the cell?

Ans: **Free Radical**: A type of unstable molecule that is made during normal cell metabolism. Free radicals can bebuild up in cell and cause damage to other molecules, such as DNA, lipids, and proteins. This damage may increase the risk of cancer and other diseases.

**Reactive oxygen specie (ROS):** In biological context, ROS are formed as a natural byproduct normal metabolism of oxygen and have important roles in cell signaling and hemostasis. However during times of environmental stress, ROS levels can increase dramatically. This may result in significant damage to cell structures. Cumulatively, this is known as oxidative stress. The product of ROS is strongly influenced by stress factor responses in plants, these factors that increase ROS production include droughts, salinity, chilling, nutrient deficiency, metal, toxicity and UV-B radiations. ROS are also generated by exogenous sources such as ionization radiations.

1. Write down some differences between Apoptosis and Necrosis.

Ans: Apoptosis, or programmed cell death, is a form of cell death that is generally triggered by normal, healthy processes in the body. Necrosis is the premature death of cells and living tissue. ... Caused by factors external to the cell or tissue, such as infection, toxins, or trauma.

1. Write a note on Air Embolism.

Ans: **Air Embolism**: Gas bubbles within the circulation can obstruct vascular flow and cause distal ischemic injury.

An air embolism, also known as a gas embolism, is a blood vessel blockage caused by one or more bubbles of air or other gas in the circulatory system. Air embolisms may also occur in the xylem of vascular plants, especially when suffering from water stress.

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The End..