**NAME: EBITIBITUWA DIVINE**

**COURSE: CELLULAR PATHOLOGY**

**MATRIC NUMBER: 18/MHS02/203**

**LEVEL: 300 LEVEL**

**ASSIGNMENY**

1. **WRITE EXPLICITLY ON FIVE DIAGNOSTIC TECHNIQUES USE IN PATHOLOGY, RELEVANT ILLUSTRATIONS AND EXAMPLES**
2. **CELLULAR ADAPTATIONPRECEDS CELL DEATH. DISCUSS. DIAGRAMS ESSENTIAL.\**

**SOLUTION**

**-WRITE EXPLICITLY ON FIVE DIAGNOSTIC TECHNIQUES USE IN PATHOLOGY, RELEVANT ILLUSTRATIONS AND EXAMPLES**

1. **MOLECULAR BIOLOGY TECNIQUE**

It is used in the manipulation and analysis of DNA, RNA, Protein, and lipid. It is also used to analyze biological markers in the genome and proteome. They test for certain genes, proteins, or other molecules in a sample of tissues, blood or body fluid and also check for certain changes in chromosome that cause the chance of developing a specific diseases, such as cancer e.g. Molecular cloning, gel electrophoresis, microarrays, polymerase chain reaction.

1. **HISTOPATHOLOGY**

It is the microscopic examination of biological tissues to observe the appearance of diseased cells and tissues in a very fine detail. The tissue is removed from the body followed by dissection then it is put in a fixative which is to prevent decay. The tissue is then processed and cut into very thin layers, stained, and examined under microscope to characterize the details of the cells in the tissue.

1. **MOLECULAR AUTOPSY**

It is a set of molecular techniques used in forensic medicine to determine the cause of death or the changes produced by disease in unexplained cases, in particular sudden unexplained deaths e.g. cardiac arrest. It is done by performing a molecular autopsy to obtain a sample of blood or tissue from the individual after death has occurred. DNA is then extracted from the blood sample for genetic sequencing. Then the DNA sequence is carefully analyzed to detect any gene mutations that may be a cause of sudden death.

1. **IMMUNOSEROLOGICAL TECHNIQUE**

It involves the body immune system, its functions and disorders. The test is on blood to determine the antibodies in the body, to determine compatibility in organ, tissue, and bone marrow transplantation. Also used to determine paternity, and to diagnose HLA-related disorders such as certain auto immune conditions e.g. Flocculation test, ELIZA. It is performed on clear liquid that separated from blood when it is allowed to clot

1. **DIAGNOSTIC MICROBIOLOGY**

It is used to confirm the suspicion of infectious disease and identify the etiologic agent, often by bacterial or fungal culture or virus isolation e.g. cholera, aspirate culture and sensitivity, Chlamydia. Microbiological examination plays an important role in the diagnosis and control of infectious disease. As such examination identifies micro-organisms likely to be involved in the disease and their susceptibility to chemotherapeutic agents, case-specific antimicrobial regimens can be made based on the results.

**-CELLULAR ADAPTATIONPRECEDS CELL DEATH. DISCUSS. DIAGRAMS ESSENTIAL.**

Cellular adaption precedes cell death because death is the last phase of any living organism. It all begins with cell injury; it is a variety of changes of stress that a cell suffers due to external and internal environmental changes.

When cells are injured, one of two patterns will result; reversible cell injury leading to adaptation of cells and tissue, or irreversible cell injury leading to cell death and tissue damage.

Cellular adaptation refers to changes made by a cell in repose to varying environmental changes; it may be physiologic or pathologic. So when cells adapt to cell injury, their adaptive changes are atrophy (it is a decrease in cell size), hypertrophy (it is an increase in cell size), hyperplasia (it is a increase in the number of cells), metaplasia (it occurs when a cell of a certain type is replaced by another cell type), dysplasia (it is the abnormal changes in cellular shape, size or organization.

Cell death occurs when the severity of the injury exceeds the cells ability to repair itself; it may occur by necrosis or apoptosis

