

## **HOMEWORK ASSIGNMENT # 3**

### **PART A:**

#### **1. Memory less system:**

**A system is memory less if its output at any time depends only on the value of the input at that same time.**

#### **System with memory:**

**A system is said to be with memory if its output at any time depends not only on the value of the input at that same time but also on the past and future times.**

#### **2. Causal system:**

**A system is said to be causal if the output at any time depends only on the present and past values of the input to the system.**

#### **Non causal system:**

**A system is said to be non causal if output at any time depends not only on the present and past values but also on the future values of the input to the system .**

### **3. Linear system:**

**A system is said to be linear if for the weighted sum of several signals the output is the superposition, that is the weighted sum of the responses of the system to each of those signals.**

#### **Non linear system:**

**A system is said to be non linear if the weighted sum of several signals of input do not match with the weighted sum of the responses of the output of the system.**

### **4. Time invariant system:**

**A system is said to be time invariant if the behavior and characteristics of the system are fixed over time, that is a time shift in the input signal results in an identical time shift in the output signal.**

#### **Time variant system:**

**A system is said to be time variant if there is a different shift in time for output signal, for some shift in the time for a input signal.**

### **5. Stable system:**

**A system is said to be stable if the bounded inputs yield bounded outputs.**

### **Unstable system:**

**A system is said to be unstable if the bounded inputs yield unbounded outputs.**