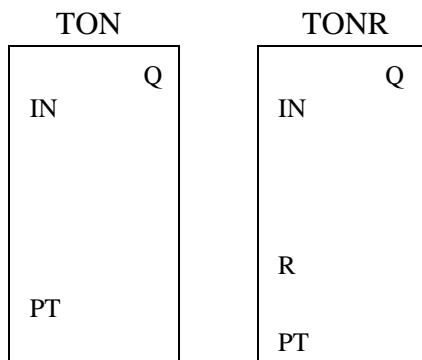


# EEE 442 PROGRAMMABLE LOGIC CONTROLLERS LABORATORY

## EXPERIMENT 2

### TIMERS

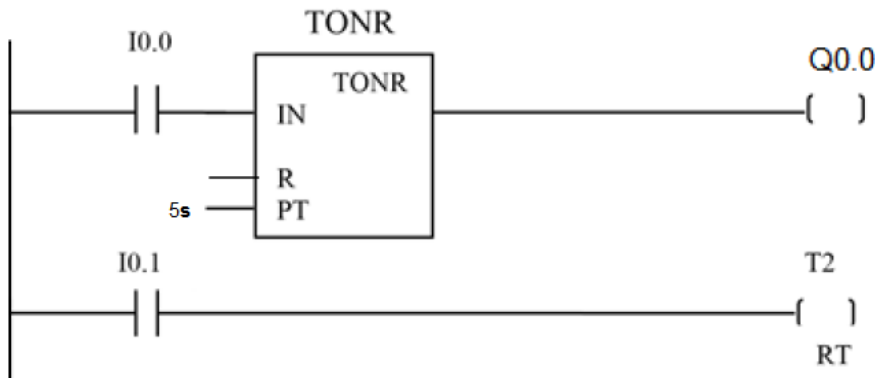
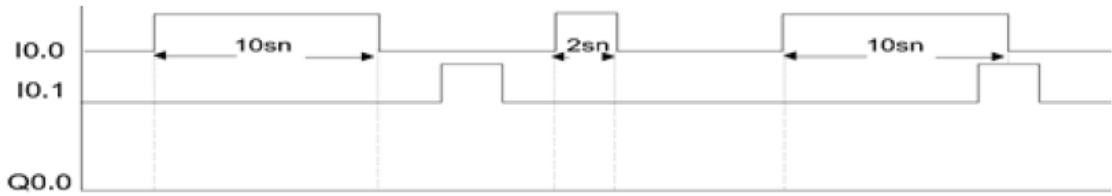
**Object:** In this experiment S7-1200 PLC timers and timers instruction will be introduced. The S7-1200 provides two different timer instructions: the On-Delay Timer(TON) and the Retentive On-Delay Timer(TONR). The two types of timers (TON and TONR) differ in the ways that they react to the state of the enabling input. Both TON and TONR timers time up while the enabling input is on; the timers do not time up while the enabling input is off, but when the enabling input is off a TON timer automatically resets and a TONR timer does not reset and holds its last value. To reset TONR timer the R (reset) instruction is used.



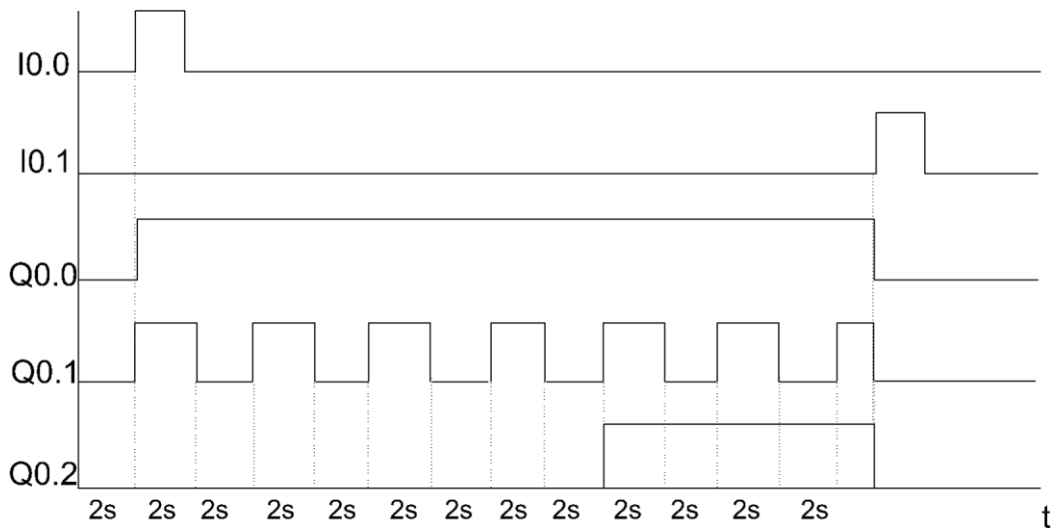
### PRELIMINARY WORK

**P.1** Write a PLC program which energises the output Q0.0(Q0.0=1) after 10 second of input(I0.0) is energised.(for 10 second delay use PT=10s). The program must be in the form of ladder diagram.

**P.2** For the given PLC program draw the waveform of Q0.0 according to given inputs I0.0 and I0.1.



**P.3** Write a PLC program, using timers, to produce the waveforms given below at the outputs named Q0.0, Q0.1, Q0.2. The program must be in the form of ladder diagram.



### EXPERIMENTAL PROCEDURE

**E.1** Verify the program which is written in P.1 using S7-1200 micro PLC.

**E.2** Verify the program which is written in P.2 using S7-1200 micro PLC.

**E.3** Verify the program which is written in P.3 using S7-1200 micro PLC.