

## TUTORIAL-12

EE 101: Basic Electronics

DEPARTMENT OF ELECTRONICS & ELECTRICAL ENGINEERING

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

(First question is the **Pre-Tutorial Assignment problem** to be solved in the space provided.)

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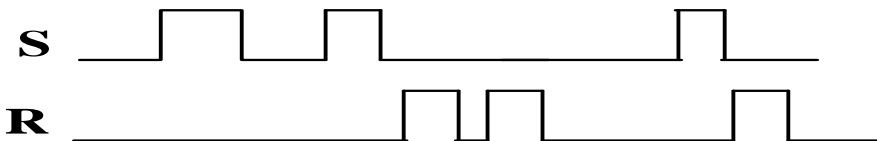
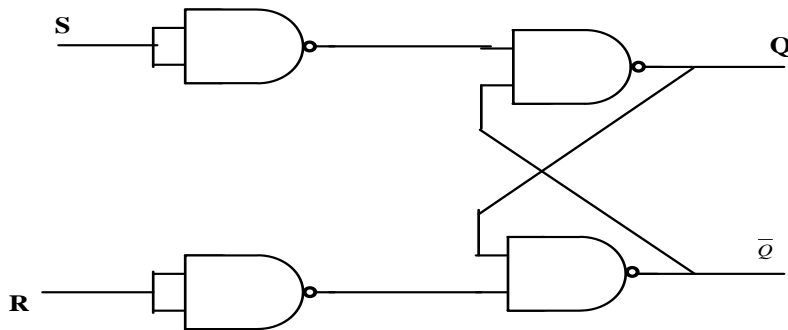
Name:

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1. An SR-latch, waveform for S and R are shown below. Draw the corresponding waveform Q assuming that the initial value of Q=0.



2. Design a 4-bit even parity checker circuit.
3. The waveform shown in Figure 1(a) are to be applied to the circuit shown in Figure 1(b); assuming the initial value of  $Q=0$ , determine the  $Q$  output.

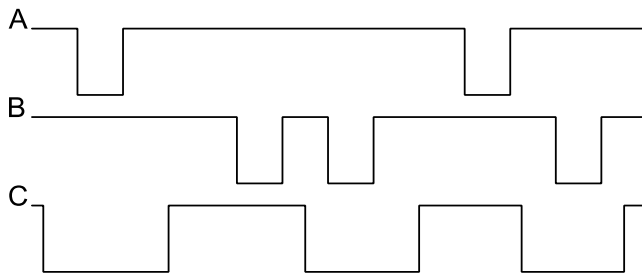


Figure 1 (a)

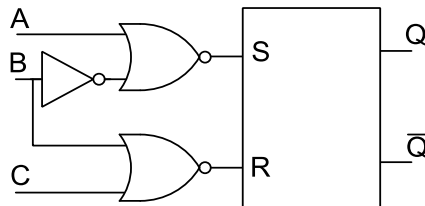


Figure 1 (b)

4. The series combination of  $10\ \Omega$  and  $10\ \text{nF}$  is in parallel with the series combination of  $20\ \Omega$  and  $10\ \text{mH}$ . (a) Find the approximate resonant frequency of the parallel network. (b) Find the  $Q$  of the RC branch. (c) Find the  $Q$  of the RL branch.
5.
  - (a) Find the  $Y_{\text{in}}$  of the network shown below.
  - (b) Determine  $\omega_0$  and  $Z_{\text{in}}(j\omega_0)$  for the network.

