

## Assignment 2 (Dr. Sidhant Singh)

Subject: Electronics Instrumentation and Measurements

Course: B.Tech (ECE) 4<sup>th</sup> semester.

- Q1. Draw the basic block diagram of a digital frequency meter, sketch the system waveforms.
- Q2. A frequency meter with an accuracy of  $\pm 1 \text{ LSD} \pm (1 \times 10^{-5})$  is used to measure frequencies of 30 Hz, 30 MHz and 300 MHz. Calculate the percentage error for each measurement.
- Q3. Show how an ammeter, a voltmeter and a d.c. supply can be used to measure a resistance. Show the two possible connections, write the resistance equation for each and discuss the errors.
- Q4. Explain what is meant by the sensitivity of a Wheatstone bridge.
- Q5. Define the Q-factor of an inductor. Write the equations for inductor Q factor with RL series and parallel equivalent circuits.
- Q6. A Wein bridge circuit has the following components:  $C_1 = 0.2 \mu\text{F}$ ,  $C_2 = 0.4 \mu\text{F}$ ,  $R_1 = R_2 = 820 \Omega$ ,  $R_3 = 1.5 \text{ k}\Omega$ . Calculate the bridge balance frequency, and the required resistance for  $R_4$  to achieve balance.