

2005 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

II B.TECH. I SEMESTER REGULAR EXAMINATIONS
ELECTRICAL AND ELECTRONIC MEASUREMENTS
(ELECTRONIC & INSTRUMENTATION ENGINEERING AND ELECTRONIC CONTROL ENGINEERING)

MAY 2005

TIME: 3 HOURS
MARKS: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Derive the expression for R_h in shunt type ohm-meter. Also prove with an example its suitability for very low resistance measurement.
2. With the help of a neat sketch and circuit connections for a single phase crossed coil, describe the working of polarized-vane power factor meter.
3. (a) Explain a ramp type digital volt meter using voltage to time conversion principle.
(b) A dual slope integrating type of A/D converter has an integrating capacitor of $0.1 \mu\text{F}$ and a resistance of 100 K if the reference voltage is 2 volt and the output of the integrator is not to exceed 10 volts, what is the max time the reference voltage can be integrated.
4. (a) What are the constituent elements of a Digital Multimeter?
(b) For measuring small values of capacitance, a 60 MHz source is to be used in a capacitance meter. What value of series resistance is required if the phase shift is to be kept below 5.7° for full scale capacitance reading of 1, 10, and 100 PF.
5. (a) Explain the working operation of differential deflection amplifier for an oscilloscope.
(b) Give the specifications of CRO.
6. (a) Explain the working operation of a storage CRT with multiple targets and two electron guns with secondary emission curves.
(b) With neat figure, explain schematic view of a bitable storage tube.
7. (a) Explain the term Capability of a 'phase lock' connected with function generator.
(b) Explain briefly about various types of signal generators.
(c) What is the necessity to have TTL output on a signal generator and a frequency counter?
8. (a) Explain with the help of a block diagram how the period can be measured?
(b) What is meant by time base error and explain a calibration method to improve the accuracy of it.