Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

THIRD SEMESTER B.TECH (INSTRUMENTATION & CONTROL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: ELECTRICAL & ELECTRONIC MEASUREMENTS [ICE 2102]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed.

1A.	Derive the expressions for unknown capacitance, its series internal resistance, dissipation factor, loss angle and power factor using Schering bridge. Also draw the phasor diagram under balance condition.	**5**
1B.	With the help of schematic diagram and symbol, explain the working of electrodynamometer type wattmeter. Also show how the pointer deflection is proportional to the active power dissipated in the load.	**3**
1C.	With an example differentiate resolution and precision as applied to a voltmeter.	**2**
2A.	Sketch the basic Cathode Ray Tube. Name each section. Explain the phenomena of displaying a time varying signal on the CRT screen.	**5**
2B.	A Wein's bridge consists of the following constants arm AB, a resistance of 800Ω in parallel with a capacitance 0.4 μF, BC a resistance of 384Ω, CD a resistance 1200Ω and DA a resistance of 500Ω in series with a capacitance of 1μF. Find the frequency for which the bridge is balanced.	**3**
2C.	The voltages at opposite ends of 470Ω, ±5% resistor are measured as V1 =12V and V2=5V. The measuring accuracies are ±0.5V for V1 and ±2% for V2. Calculate the level of current and specify its accuracy. Also calculate the power dissipated in the resistor when the same current is displayed by an ammeter with ±2% accuracy. Determine the accuracy of the result.	**2**
3A.	Describe how the Q factor of a coil is measured using a Q meter.	**3**
3B.	With the block diagram and timing diagram explain the working of ramp type DVM.	**3**
3C.	With a block schematic, explain the working principle of digital energy meter.	**2**

3D.	With the help of neat circuit, explain the method of measurement of frequency using modulated ring technique.	**2**
4A.	With a figure explain construction and working of LED. With a circuit explain how is it used as a seven segment display.	**3**
4B.	With the help of necessary figures explain the working of optical recorder.	**3**
4C.	Draw and explain the circuit diagram for driving LCD (7 segment display). Illustrate how a decimal number ‘4’ is made to display using LCD.	**2**
4D	How digital frequency meter can be used to determine the ratio of two frequencies?	**2**
5A.	With neat diagram explain the working of basic Regulated Power Supply.	**4**
5B.	With block diagram describe the working of spectrum analyser	**4**
5C.	Illustrate the digital technique for the measurement of capacitance.	**2**