Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

THIRD SEMESTER B.TECH. (INSTRUMENTATION &CONTROL ENGG.)

END SEMESTER EXAMINATIONS, NOV - 2017

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 expression for frequency using Wien's bridge. Draw the phasor diagram at balance. **4**

1B. A resistor R has a potential difference of 25V across its terminals and current of 63 mA, The voltage is measured on a 30V analog instrument with an accuracy of ±5% full scale. The current is measured on a digital measurement with a ±1mA error. Calculate resistance and Power dissipated and specify the tolerance in each measurement. **3**

1C. An AC bridge is working at 1000Hz, 10V with source connected between nodes A and C and detector connected between nodes B and D. AB = 0.2 μF, BC=500 Ω, AD=300 Ω||0.1μF, Determine the impedance of arm CD. **3**

2A. Draw and explain all parts of CRT. Brief the functions of blanking circuit and delay lines. **5**

2B. Discuss any three compensation techniques in single phase energy meter. **3**

2C. Draw the diagram of three phase induction type energy meter and label the parts. **2**

3A. Explain with an example how an analog data is stored and retrieved in digital storage instrument. **4**

3B. Brief the working of galvanometric type recorder with the diagram. **3**

3C. A Q meter is in resonance when supply voltage is 200mV with resonance frequency 1kHz, Internal resistance is 3 ohm and Inductive reactance is 95ohm. Calculate **3**

i. Value of variable capacitor of the Q meter.

ii. Voltmeter indication

iii. Q factor

4A. With diagram describe the working of Digital LCR meter for the measurement of inductance and capacitance (with an example each). **5**

4B. A DFM uses a time base consisting of a 1 MHz clock generator frequency divided by six decade counters. Determine the meter indication when the frequency is 2.91kHz and time base output is at the fifth decade counters. **3**

4C. Explain range changing in digital frequency meter with neat figure. **2**

5A.	With block diagram elaborate the working of regulated power supply	**5**
5B.	Explain the procedure of displaying fundamental frequency along with 2nd and 3rd harmonics of an ac signal using swept TRF spectrum analyser.	**3**
5C	Mention any two advantages and disadvantages of LED and LCD	**2**

****