CLASS: BE   SEMESTER : IV
BRANCH: EEE   SESSION : SP/19

**SUBJECT: EE4201 ELECTRICAL MEASUREMENT AND INSTRUMENTATION**
TIME: 3:00 HOURS   FULL MARKS: 60

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) A thermometer is calibrated 150°C to 200°C. The accuracy is specified within ±0.25 % of instrument   [2]
        span. What is the maximum static error?
Q.1(b) Obtain the relationship between electrostatic and electromagnetic system of units.   [4]
Q.1(c) What is error? Explain different types of error in measurement and instrumentation system.   [6]

Q.2(a) A moving coil of a meter has 100 turns, and a length and depth of 10 mm and 20 mm respectively.   [2]
        It is positioned in a uniform radial flux density of 200 mT. The coil carries a current of 50 mA. Find
        the torque on the coil.
Q.2(b) Define damping. Explain briefly about various types of damping in analog instrument.   [4]
Q.2(c) Write short note on D'Arsonval Galvanometer.   [6]

Q.3(a) Draw the phasor diagram of De-Sauty's bridge.   [2]
Q.3(b) Explain Murray loop test for localization of cable fault.   [4]
Q.3(c) Enlist the detectors used in case of AC Bridges. The AC Bridge shown in the figure is used to measure [6]
        the impedance Z. If the bridge is balanced for oscillator frequency f = 2 kHz, then the impedance Z
        will be
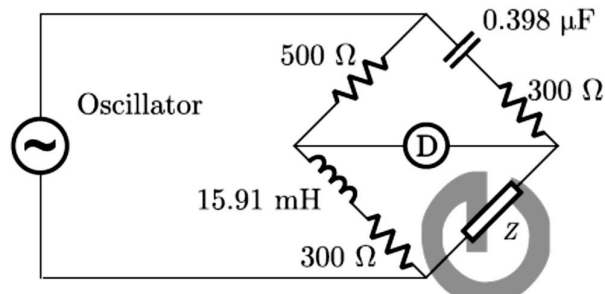
Q.4(a) Give the Circuit diagram of voltmeter used to read true RMS value.   [2]
Q.4(b) A reading of 120 is obtained when standard inductor was connected in the circuit of a Q-meter and   [4]
        the variable capacitor is adjusted to value of 300 pF. A lossless capacitor of unknown value *Cx* is
        then connected in parallel with the variable capacitor and the same reading was obtained when the
        variable capacitor is readjusted to a value of 200 pF. Find the value of *Cx* in pF.
Q.4(c) Discuss Dual Integrating type DVM.   [6]

Q.5(a) List comparison between analog and digital displays (only two).   [2]
Q.5(b) Write short note on LCD.   [4]
Q.5(c) Explain Strip Chart Recorder.   [6]

Q.6(a) Define primary and secondary transducer with example.   [2]
Q.6(b) Explain the principle of operation of Capacitive Transducer.   [4]
Q.6(c) Explain Hall-effect Transducer.   [6]

Q.7(a) Define Aquadag.   [2]
Q.7(b) Explain Time Base Generators.   [4]
Q.7(c) Write Short note on Dual Trace Oscilloscope.   [6]