Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

FOURTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER EXAMINATIONS, APRIL/MAY 2017

SUBJECT: INTRODUCTION TO INDUSTRIAL INSTRUMENTATION [ICE 3281]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A.	Explain in detail on various functional elements of an Instrumentation system	**5**
1B.	Discuss the operation of unbonded strain gauges with the diagram	**3**
1C.	A resistance wire Strain gauge uses a soft iron wire of small diameter. The gauge factor is 4.2. Neglecting piezo resistive effects calculate poisson ratio.	**2**
2A.	Explain the working of linear variable differential transformer with its schematic.	**4**
2B.	Describe the phenomenon of quadratic approximation of RTD's	**3**
2C.	A thermistor has a RTC of -5% over a temperature range of 25°C to 50°C. If the resistance of thermistor is 100Ω at 25°C, what is the resistance at 35°C?	**3**
3A.	Describe the working of inclined tube manometer with its diagram.	**3**
3B.	A well type manometer uses mercury as the manometric fluid. The displacement of mercury in the well is 25mm. The area of well is 6500mm^2. The maximum span of manometer is 25kN/m^2. Calculate the inside diameter of the manometer tube. The density of mercury is 13.56×10^3kg/m^3.	**4**
3C.	Explain the method of flow measurement by venture meter.	**3**
4A.	Discuss in detail about hot wire Anemometer used for flow rates of fluid.	**5**
4B.	Describe the principle of measurement of level with Gamma rays.	**3**
4C.	Explain the method of measurement of thickness using reluctance variation transducer.	**2**
5A.	Describe the working of a cantilever beam used for measurement of force.	**3**
5B.	What is photovoltaic cell? Explain the working of photovoltaic cell with its diagram.	**4**
5C.	What are the different types of Electromagnetic transducers used for linear velocity measurement? Explain.	**3**