

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER- IV(NEW) EXAMINATION – SUMMER 2015**

**Subject Code:2141705****Date: 01/06/2015****Subject Name:INDUSTRIAL MEASUREMENT I****Time:10:30am-1.00pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) 1. Define the following terms **02**  
 1) Resolution 2) Dead zone 3) Accuracy 4) Repeatability  
 2. What is stagnation point? **02**  
 3. Explain any two errors in detail. **02**  
 4. Rota meter is good in pulsating services? Is it true /false? **01**  
 (b) Describe the principle of level measurement using capacitance and show using equations how capacitance changes with level change. **07**
- Q.2** (a) Give principle, construction and working of electromagnetic flow meter. **07**  
 (b) 1. Describe with a neat sketch the working of an Air Purge method of level measurement system. **04**  
 2. Explain with a neat the working of a flow meter used for measuring unsteady flow of gases. **03**
- OR**
- (b) What is the difference between head meter and area meter? Explain any one area meter. **07**
- Q.3** (a) What is LVDT? Explain the Construction and working principle of LVDT. Discuss advantages and disadvantages. **07**  
 (b) 1. Thermal conductivity gauge. **04**  
 2. Explain Bourdon tube with all different shapes in detail. **03**
- OR**
- Q.3** (a) Describe the operation of an ultrasonic flow transducer. **07**  
 (b) Explain McLeod gauge for pressure measurement. Discuss advantages and disadvantages. **07**
- Q.4** (a) Describe with a neat sketch the working of Radiation pyrometer for temperature measurement system. Discuss sources of errors ,advantages and disadvantages. **07**  
 (b) 1. Convert 2000 °Fahrenheit to equivalent °Kelvin, °Celcius °Rankine and Reaumur values. **02**  
 2. What is the difference between orifice transducer and venturi transducer? **02**  
 3. What is Thermocouple? Explain cold junction compensating circuits. **03**
- OR**
- Q.4** (a) With neat diagram, explain the working of 2-wire, 3-wire and 4-Wire RTD. **07**  
 (b) Explain in detail thermoelectric Laws for thermocouple. **07**
- Q.5** (a) With neat diagram, explain the working of pitot tube in flow measurement. **07**  
 (b) A platinum thermometer (RTD) has a resistance of 100 Ω at 25°C (a) Find its resistance at 65°C if the platinum has a resistance temperature co-efficient of 0.00392/°C. (b) If the thermometer has a resistance of 150 Ω, calculate the temperature. **07**

**OR**

- Q.5** (a) With neat diagram, explain the working of Flapper-nozzle assembly for pressure measurement. **07**
- (b) With neat diagram, explain the working of Dead Weight Piston Gauge. **07**

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